



**USDA Forest Service Watershed Condition Framework
FY2011 TRANSITION WATERSHED RESTORATION ACTION PLAN
Sequoia National Forest
Hume Lake Ranger District
Mill Flat Watershed**

1. Summary

a. Watershed Name and HUC: Mill Flat Creek 180300100703

b. General Location:

Mill Flat Creek is one of the main tributaries to the Kings River on the western slope of the Sierra Nevada and flows north into the Kings River above Pine Flat Reservoir. It is located approximately 35 air miles southeast of Fresno, California. (See attached map at the end of this document).

c. Total Watershed Area: 31,292 acres; NFS area within watershed: 85%.

d. Watershed Characterization:

• **General Physiography:**

Elevation ranges from about 900 to 7,000 feet in the drainage, which is predominately granite bedrock with alluvial fans and basins. Vegetation ranges from chaparral and oak woodlands covering the lower portions of the watershed to pine and mixed conifer (including giant sequoia) at the upper elevations. Riparian vegetation consists of stringers of willow, sycamore, and some aspen, usually along creeks or meadow edges. Flows from the watershed are variable. Although extreme flows occur rarely, variations in flows can and do change rapidly in this watershed.

• **Land Use:**

Historical logging in the late 1800s affected this watershed. Much of this watershed was owned by the early lumber companies (Sanger Lumber, later Kings River Lumber Company, and eventually Hume-Bennett) before transferring back into Forest Service lands in the early 1930s. Over 70 percent of this watershed now lies within the Giant Sequoia National Monument. Fuels, range, and recreation management are currently the primary land uses for this watershed.

• **General Overview of Concerns:**

The primary concerns in this watershed center on fire susceptibility and sediment contributions from roads to streams. This watershed has a moderate to high fire susceptibility rating. The upper reaches of the watershed border on wildland-urban interfaces, it contains significant cultural resource (both historic and pre-historic), and contains portions of four giant sequoia groves. Fire is a threat to all of these resources plus the watershed itself. Watershed inventory work has been completed and shows a significant amount of sediment delivery from the road system that lies within this watershed. General road maintenance activities, road drainage reconstruction (culvert replacement, over-side drainage repair, etc.), and road decommissioning work has been identified and is needed within this watershed.

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• **Important Ecological Values:**

This watershed contains a Critical Aquatic Refuge, providing habitat for native fish, amphibian, and aquatic invertebrate populations. Most of this watershed also lies within the Giant Sequoia National Monument, portions of the congressionally designated Kings River Special Management Area, and is adjacent to and drains directly into a wild and scenic river (South Fork of the Kings River). This watershed also contains a small portion of Kings Canyon National Park (Grant Grove home of the second largest giant sequoia and Nations' Christmas Tree; the General Grant Tree).

• **Current Condition Class:** 2.1 **Target Condition Class:** 1.2

e. Key Watershed Issues

1) Attributes/Indicators within FS control to affect

ATTRIBUTES /INDICATOR	REASON FOR RATING
(1.2) Water Quality Problems 2.0- Fair, Functioning at Risk	Sediment contribution from roads into Mill Flat Creek. Field inventories have been completed for all of the roads within this watershed. Improve drainage structures.
(3.1) Aquatic Habitat – Habitat Fragmentation 2.0- Fair, Functioning at Risk	Presence of road related problems associated with aquatic organism passage.
(3.2) Large Woody Debris 2.0- Fair, Functioning at Risk	Large woody debris due to wildfire and recreation (OHV activity).
(4.3) Aquatic Invasive Species 3.0-Poor, Impaired	Presence of chytrid fungus and Sacramento Perch (SACP).
(5.1) Riparian /Wetland Vegetation – Vegetation condition, 2.0- Fair, Functioning at Risk	Based on human impacts (roads). <i>(Note: original rating was partially based on range condition. Since that rating, a new range report (June of 2011) shows that range conditions are functioning properly. Site visits in 2011 indicated that livestock were not adversely affecting either vegetation or physical channel characteristics of riparian areas.</i>
(6.2) Roads & Trails – Road Maintenance, 2.0- Fair, Functioning at Risk	Road maintenance is lacking in this area. Wet weather use (winter) is causing significant damage (seasonal road closures needed) and increase road maintenance.
(6.3) Roads & Trails – Proximity to Water, 3.0-Poor, Impaired	Several trails and roads (user created) are within streamside zones. Roads need to be moved or abolished.
(7.1) Soil Productivity 2.0- Fair, Functioning at Risk	Soil nutrient and hydrologic cycling processes are impaired and the ability of the soil to maintain resource values and sustain outputs is compromised in 7 % of the watershed. This places the watershed just slightly into a rating of fair.
(8.2) Wildfire – Wildfire Effects and Fire Condition Class, 2.0- Fair, Functioning at Risk	Immediately following the Highway Fire (2001), soil and ground cover conditions showed some post-fire runoff and erosion concerns but are not sufficient to jeopardize long-term watershed condition integrity. From this experience, wildfire effects from high intensity fires may persist for 2 to 5 years after an event of this nature.
(10.1) Rangeland Vegetative Condition, 2.0- Fair, Functioning at Risk	<i>Note: Rating needs to be changed from original rating based on the latest range report that was completed in June of 2011. It found that range conditions are functioning properly. Key range areas reflect satisfactory rangeland health with stable or upward range trend as a</i>

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	<i>result of increasing availability of browse and a stable herbaceous forage base.</i>
(11.1) Terrestrial Invasive Species – Extent and rate of spread, 3.0-Poor, Impaired	Yellow star thistle is present in this watershed. Needs to be controlled to prevent further spread.
(12.1) Insects and Diseases, 2.0- Fair, Functioning at Risk	20% to 40 % of the forested land in the watershed is at imminent risk of abnormally high levels of tree mortality due to insects and disease.

2) Attributes/Indicators that require other parties to address

ATTRIBUTES /INDICATOR	REASON FOR RATING
(2.1) Water Quantity Flow Characteristics 2.0- Fair, Functioning at Risk	Sequoia Dam and Lake lying on private property. Also several stock ponds that lie on private property.
(12.2) Forest Health – Ozone, 3.0-Poor, Impaired	The San Joaquin Valley lies within one of the worst airsheds in the nation. The air district does not currently meet federal ozone guidelines. This watershed lies within the San Joaquin Valley Air District and is affected by the Ozone and pollution that rises from the valley floor.

2. Watershed Characteristics and Conditions

a. General Context/Overview of the Watershed

This watershed flows into the Kings River which makes up a portion of the Tulare Lake Basin located in the Southern San Joaquin Valley about equidistant from the cities of Fresno and Bakersfield. The geology and rock types found in this watershed are mainly granite and decomposed granite, with protrusions of basalt from volcanic activity on the edge of the Sierra Nevada Batholith. The climate in this area is Mediterranean with distinct wet and dry seasons.

This watershed contains the Mill Flat Critical Aquatic Refuge which supports the Western Pond Turtle and native fisheries. It provides water for municipal, agricultural, contact and non-contact recreation, and both warm and cold water fisheries.

The dominant vegetation in the upland sections of this watershed is mixed conifer with oak woodlands, chaparral, and grass located in the lower sections. Riparian areas are generally steep and narrow, consisting of stringers of willow, aspen and sycamore along the creeks and meadow edges. Minimal riparian vegetation is located in those A type channels with bedrock, boulder substrate encompassing approximately a quarter of the area. Recent wildfires in the watershed are recovering with grass and shrub species with some pine becoming established.

b. Watershed Conditions

The watershed is considered functioning at risk. Portions of the uplands are recovering from wildfire and are in fair to good condition. Aquatic habitats are being impaired in several areas by sediment delivery from roads within the watershed. There is also some habitat fragmentation due to drainage structures and road proximity to streams.

3. Restoration Goals, Objectives, and Opportunities

a. Goal Identification and Desired Condition

The overall goal and desired condition for this watershed is to move it from a watershed functioning at risk to one that is functioning properly. In addition, our desire is to maintain the watershed in a functioning condition once we achieve that condition.

b. Objectives

i. Alignment with National, Regional, or Forest Priorities

- a. National Priorities** – Restoration of the Mill Flat Watershed is aligned with the USDA Forest Service Strategic Plan for FY 2007 – 2012. Implementation of this Watershed Action Plan would reduce the threats from: (1) the risk of loss from catastrophic wildland fire caused by hazardous fuel buildup; (2) reduction of sediment delivery into streams from the existing road and trail network; (3) introduction and spread of invasive species; (4) fragmentation of the aquatic ecosystem due to drainage structures, disease, and competing species; and (5) unmanaged recreation.

Goal 1. Restore, Sustain, and Enhance the Nation's Forests and Grasslands
(USDA Objectives 6.1, 6.3, 6.4)

Objective 1.1 – Reduce the risk of communities and natural resources from wildfire.

- a. Performance Measure: Number and percentage of acres treated to restore fire-adapted ecosystems that are move toward desired conditions and maintained in that desired condition. Reduce wildfire susceptibility from high/moderate to low/moderate conditions.

Objective 1.5 – Restore and maintain healthy watersheds and diverse habitats.

- a. Performance Measure: Percentage of watershed in class 1 condition.
- b. Performance Measure: Acres and miles of terrestrial and aquatic habitat restored consistent with forest plan direction.

Means and strategies for Accomplishing Goal 1 is to develop and apply detection, prediction, prevention, mitigation, treatment, and restoration methods, technologies, and strategies for addressing disturbance. Maintaining resilient land and water conditions at the watershed level and restore deteriorated lands and waters. Develop and implement conservation strategies to conserve endangered, threatened, and other at-risk species. Monitor the status of congressionally and presidentially designated areas (Kings River Special Management Area, Wild and Scenic Kings River, and Giant

Sequoia National Monument) and manage them to protect and enhance the values for which they were designated.

Goal 4. Sustain and Enhance Outdoor Recreation Opportunities (USDA Objective 6.3)

Objective 4.1 – Improve the quality and availability of outdoor recreation experiences.

a. Performance Measure: Percentage of recreation sites maintained to standard.

e. Performance Measure: Percentage of road system intended for passenger-car use that is suitable for passenger-car use.

Means and Strategies for accomplishing Goal 4 include providing tools, guidance, and resource management to provide safe recreation use and to prevent or mitigate the ecological impacts of recreation activities. Provide recreational opportunities consistent with the area's physical, biological, and social characteristics and capabilities. Use private, nongovernmental, and interagency partnerships to accomplish collaborative recreation/tourism plans.

- b. **Regional Priorities** – Restoration of the Mill flat Creek Watershed is directly aligned with Region 5's Ecological Restoration Strategy. The goal of retaining and restoring ecological resilience to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms is the focus of this action plan. A reduction in non-point-source pollution, reduction of fuels, and restoration of meadows and springs will provide for a more sustainable ecosystem through accelerated recovery. Restoration of this watershed would also help to reduce the carbon inventories in addition to improving water quality and aquatic habitat, especially within the Mill Flat Critical Aquatic Refuge.
- c. **Forest Priorities** – Restoration of the Mill Flat Creek Watershed is aligned with our forest Priorities. This watershed is located within the **Giant Sequoia National Monument**. Presidential Proclamation provides direction for the Protection of the Objects of Interest within the monument. This includes, but is not limited too, restoring natural function (ie; hydrologic connectivity in a stream system) and protecting the overall resource from future harm. It includes the principles of ecological restoration and protection of ecosystems to be responsive to stressors. Public access and recreation in the monument must be consistent with the purposes of the monument and provide for safe recreational use while preventing and mitigating ecological impacts of recreation activities. The protection of giant sequoia groves (portions of 4 groves lie within this watershed)

while foremost in the proclamation is dependent on a healthy, resilient, and sustainable ecosystem.

This watershed flows into and a small portion is within the **Wild and Scenic Kings River**. Restoration of this watershed meets the Implementation Plan for the Kings, Kings South Fork and Kings Middle Fork, Wild and Scenic Rivers. Management activities will focus on providing a wide range of recreation experience settings while maintaining and enhancing the natural ecosystem and its processes.

A large portion of the Mill Flat Creek Watershed also falls within the congressionally designated **Kings River Special Management Area**. The restoration objectives for management are similar to those stated above and follow the plan for this special area (Implementation Plan for the Kings River Special Management Area).

This watershed also contains a **Critical Aquatic Refuge (Mill Flat CAR)**. CARs are designated to protect known locations of threatened, endangered, sensitive, vulnerable populations, or local populations of rare plant, animal or aquatic species. This CAR is designated to protect the Western Pond Turtle and the associated native fisheries. Restoration activities would further the protection afforded these species and others within this watershed.

The restoration of the Mill Flat Creek Watershed meets the current Forest's **Land and Resource Management Plan** direction as amended by the **Sierra Nevada Plan Amendment**. The Riparian Conservation Strategy provides objectives that are achieved through this action plan.

Riparian Conservation Objective #1 – Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses.

Riparian Conservation Objective #2 – Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.

Riparian Conservation Objective #3 – Ensure a renewable supply of large down logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the riparian conservation area (RCA).

Riparian Conservation Objective #4 – Ensure that management activities, including fuels reduction actions, within RCAs and Critical Aquatic Refuges (CARs) enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.

Riparian Conservation Objective #5 – Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

Riparian Conservation Objective #6 – Identify and implement restoration actions to maintain, restore, or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.

- ii. Alignment with State or local goals
All projects will be aligned with the State of California and Fresno County goals. Any needs for water quality waivers will be made through the Central California Water Quality Control Board.

c. Opportunities

- i. Partnership Involvement
Potential partners in this priority watershed include, but are not limited too, the National Park Service (Kings Canyon National Park), Sequoia Lake YMCA (Reedley College – Natural Resources Department – Forestry/Park Technology Program), Kings River Conservation District, Fresno County Recreation and Game Commission, Fresno County Planning and Resource Management Department, Fresno County Resource Advisory Committee, Oak to Timberline Fire Safe Council, volunteers (Off High Vehicle, site stewards (cultural resources), etc.), grazing and special uses permittees, and various private property owners. Roles will vary depending on the project and could include contributed labor or dollars towards a specific project.
- ii. Outcomes/Output
 - a) Performance Measure Accomplishment
The expected performance measure accomplishments to be achieved when this watershed restoration action plan is fully implemented would be those identified under the national, regional, and local priorities.
 - b) Socioeconomic Considerations:
Completion of this restoration plan will help to contribute to the local economy directly by providing contracting work to implement several of the proposed projects. Indirectly, restoration efforts will enhance and continue recreational activities that will contribute to the local economies by providing jobs in the tourism industry.

d. Specific Project Activities (Essential Projects)

a. Essential Project #1 – Davis Road Maintenance Project (FS Road 12S01)

- Attribute/Indicator Addressed – Water Quality Problems (1.1), Habitat Fragmentation (3.1), and Riparian/Wetland Vegetation – Vegetation Condition (5.1).
- Project Description – Repair and/or replace 9 stream crossings (mostly culvert replacement and 1 low water-crossing). Replace approximately 40 culverts, including 36 which are undersized at 12 inches with larger 18 to 24 inch culverts, and several 18 or 24 inch culverts which are damaged and require replacement. Approximately 5,500 ton of rock aggregate will be added to approximately 3.75 miles of road. Repair/replace/re-establish road drainage structures including overside drains with flumes, rolling dips, ditches, and culvert inlets on the entire 11.5 miles of roadway. Repair and create turnouts were needed to eliminate user-created segments that have evolved by vehicle traffic trying to avoid poorly maintained sections of the road. Clear vegetation to improve visibility and sight distance.
- Partners Involvement – None at this time. Potential is there for some private property owners in the area to help contribute dollars or labor towards the project.
- Timeline: Starting in Spring of 2012 and continuing for 1 year, depending on funding
- Estimated costs and associated Budget Line Item – Total estimated cost is \$500,000. BLI would be CMLG, CMRD, NFRW,

b. Essential Project #2 – Pine Ridge Fuels Reduction Project

- Attribute/ Indicator Addressed –Wildfire Effects and Fire Condition Class (8.2) and Insects and Diseases (12.1).
- Project Description – Treat approximately 2,039 acres to reduce fuel loading in the Pine Ridge Area (southwest area of the watershed). Of these 2,039 acres, 706 acres would be masticated and under-burned with the remaining acres being treated with under-burning (prescribed fire) only. A small portion of this project lies within a Wildland Urban Interface (WUI) zone.
 - Partners Involvement: None at this time. Approximately 261 acres of private property lie within the project area. Potential for individual landowners through local fire safe council to complete fuels work on their property in conjunction with the work being done on federal land.
 - Timeline: Starting in fall of 2012 and continuing for 3 years, depending on funding
 - Estimated costs and associated Budget Line Item - \$870,000. BLI would be WFHF, NFVW

c. Essential Project #3 – Big Stump Fuels Reduction Project

- Attribute/ Indicator Addressed –Wildfire Effects and Fire Condition Class (8.2) and Insects and Diseases (12.1).
- Project Description – Treat approximately 735 acres to reduce fuel loading in the big Stump Giant Sequoia Grove (southeast area of the watershed). Of this 735 acres, approximately 250 acres lie within this watershed with the rest lying in the adjacent watershed. The acres being treated in this watershed would be through under-burning (prescribed fire) only. All of these acres project lies within a Wildland Urban Interface (WUI) zone.

- Partners Involvement: National Park Service (Kings Canyon National Park). We have been working with the Park Service to implement a joint burning operation in this grove since it lies across both jurisdictions. There is potential for Sequoia Lake and individual landowners through the local fire safe council to complete fuels work on their property in conjunction with the work being done on federal lands.
 - Timeline: Starting implementation in fall of 2013 and continuing for 3 years, depending on funding
 - Estimated costs and associated Budget Line Item - \$50,000 (total to complete entire project would be \$150,000). BLI would be WFHF, NFWW
- d. **Essential Project #4 – Routine Road Maintenance**
Attribute/ Indicator Addressed – Road & Trails – Road Maintenance (6.1) and Habitat Fragmentation (3.1).
- Project Description – Routine Road Maintenance within the watershed covering approximately 30 miles of road per year of maintenance level 2 and 3 roads. Work would consist of grading, ditch cleaning, culvert cleaning and maintaining the drainage structures.
 - Partners Involvement: None at this time. Private property owners and permittees could contribute dollars or labor if warranted.
 - Timeline: Starting in spring of 2012 and continuing, depending on funding
 - Estimated costs and associated Budget Line Item - \$45000 per year. BLI would be CMRD
- e. **Essential Project #5 – Millwood OHV Staging Area**
- Attribute/ Indicator Addressed – Road & Trails – Road Maintenance and Proximity to Water (6.1 and 6.2); Riparian/Wetland Vegetation – Vegetation Condition (5.1)
 - Project Description – Redesign the Millwood OHV Staging Area that is located along Mill Flat Creek in the southwest corner of this watershed. Looking at redesigning parking areas to help prevent sediment flows into the creek, eliminating user created routes in the area to help with erosion problems and the destruction of cultural artifacts, and re-establishing vegetation cover in some areas damaged by illegal OHV activity.
 - Partners Involvement: Cultural Resource Site Stewards would contribute labor to monitor the project. OHV funds would be used to help implement the project.
 - Timeline: Starting in summer 2012 and continuing for 1 year, depending on funding
 - Estimated costs and associated Budget Line Item - \$150,000. BLI would be CMRD, CMEX
- f. **Essential Project #6 – Road Related Watershed Improvement Needs Inventory Projects**
- Attribute/ Indicator Addressed – Water Quality Problems (1.2); Road & Trails – Road Maintenance (6.1); Habitat Fragmentation (3.1) and Riparian/Wetland Vegetation – Vegetation Condition (5.1).
 - Project Description – Implement proposed WINI projects that have been identified within this watershed that includes replacement of culverts to allow for aquatic

organism passage and for the recommended closure (decommissioning) of several user created and maintenance level 1 and 2 roads within this area.

- Partners Involvement: None at this time.
 - Timeline: Starting in 2012 and continuing for the next 5 years, depending on funding
 - Estimated costs and associated Budget Line Item - \$25,000 per year. BLI would be CMRD, NFVW
- g. Essential Project #7 – Sampson Grazing Allotment**
- Attribute/ Indicator Addressed – Riparian/Wetland Vegetation – Vegetation Condition (5.1); Terrestrial Invasive Species – Extent and rate of spread (11.1).
 - Project Description – The re-issuance of a grazing special use permit for the Sampson allotment that lies entirely within this watershed. Current range conditions are excellent and this is something we want to maintain.
 - Partners Involvement: None at this time.
 - Timeline: Starting in 2012 and continuing for the next 5 years.
 - Estimated costs and associated Budget Line Item - \$10,000 to finish the NEPA. Unknown costs at this time to maintain the current or future range improvements. BLI would be NFRG, RBRB
- h. Essential Project #8 – Seasonal Road Closure**
- Attribute/ Indicator Addressed – Water Quality Problems (1.2) and Road & Trails – Road Maintenance (6.1)
 - Project Description – Implement a seasonal road closure on the Davis Road (12S01) from Mill Flat Campground to Fox Springs. A winter closure of this road will help reduce damage to the road and the run-off due to damaged road drainage because of wet weather use. The proposal is to install a gate near Mill Flat Campground and utilize the existing gate located at Fox Springs.
 - Partners Involvement: None at this time.
 - Timeline: Starting in winter of 2012 and continuing.
 - Estimated costs and associated Budget Line Item - \$10,000 (NEPA costs and Gate installation). BLI would be CMRD, NFVW
- i. Essential Project #9 – Weed Abatement**
- Attribute/ Indicator Addressed – Terrestrial Invasive species – Extent and rate of spread (11.1)
 - Project Description – Continue monitoring known yellow starthistle sites within the watershed and use hand pulling if still viable. Look at developing a new invasive EA for the use of herbicides on the District if needed which would include the known sites in this watershed.
 - Partners Involvement: None at this time. Potential includes private property owners and the County of Fresno. Also, the National Resource Conservation Service (NRCS) through the local Resource Conservation District may be a potential partner.
 - Timeline: Starting in 2011 and continuing.
 - Estimated costs and associated Budget Line Item - \$5,000 per year (Estimated cost for a new NEPA decision to use herbicides would be around \$25,000 to cover the entire District). BLI would be NFVW

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j. Essential Project #10 – Sacramento Perch Project

Attribute/ Indicator Addressed – Aquatic habitat – Habitat Fragmentation and Aquatic Invasive Species (4.3).

- Project Description – Study and look at possibly eliminating Sacramento Perch from Mill Flat Creek and its tributaries to improve the habitat for the native fish association and western pond turtle in the Mill Flat Creek Critical Aquatic Refuge.
- Partners Involvement: None at this time. California Department of Fish and Game may be a potential partner.
- Timeline: Starting in 2013 and continuing till completed, depending on funding
- Estimated costs and associated Budget Line Item - \$25,000 plus cost of implementation. BLI would be NFWF, NFWW

e. Costs:

	Planning	Design	Implementation	Project Monitoring	Totals
FS Contribution	\$130,500.00	\$49,500.00	\$1,360,000.00	\$55,000.00	1,595,000.00
Partner Contribution (both in kind and \$)	\$51,000.00	\$1,000.00	\$75,000.00	\$4,000.00	131,000.00
Total	\$181,500.00	\$50,500.00	\$1,435,000.00	\$59,000.00	1,726,000.00

f. Timelines and Project Scheduling

FY	Task	FS Cost	Partner cost
11	Begin NEPA Work for half of the proposed Projects	\$48,500.00	\$27,000.00
12	Complete all NEPA for all projects/Begin design work	\$102,000.00	\$25,000.00
12	Complete Design work	\$29,500.00	\$0.00
12 thru 14	Begin and Complete Implementation of Projects	\$1,360,000.00	\$75,000.00
13 thru 15	Begin and Complete Project Monitoring	\$55,000.00	\$4,000.00

g. Other Partners

Limited opportunities do exist to bring in other partners throughout the design and implementation of this watershed action plan. The Southern Sierra Conservation Cooperative, made up of members from the federal land management agencies in this area (Forest Service, Park Service, BLM) along with several non-government organizations (NGOs)(Sequoia Riverlands Trust, Sierra Business Council, Conservation Biology Institute) and state agencies (Sierra Nevada Conservancy) are interested in research and projects addressing climate change and the stress factors (fire, invasive species, pollutants, human uses) on ecosystems that cross jurisdictional boundaries in this area. This watershed may present opportunities to pursue vegetation work (fuels reduction) and studies in the oak woodlands and mixed conifer vegetation types that would be of interest to this conservation cooperative.

4. Restoration Project Monitoring and Evaluation

a. The forest will monitor:

Specific monitoring plans will be developed for each individual project. The forest will continue to monitor the Stream Condition Inventory Plots that have been established in this watershed before, during and after implementation of these projects. Depending on the project, monitoring could continue up to 3+ years after implementation.

b. Monitoring will be done in cooperation with:

Monitoring will be done in cooperation with adjacent landowners where warranted along with local state and other federal agencies when needed. Opportunities to engage partners from academia and volunteers will also be pursued. Some monitoring may take up to 3+ years after project implementation.

Action Plan Date: **September 30, 2011**

Reviewing Official and Title: **Kevin Elliott – Forest Supervisor**

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