Nelder Grove Hazardous Fuels Reduction Project

Detailed Project Description Narrative

Project Description and Summary:

The Bass Lake Ranger District has determined the need to reduce hazardous fuel accumulation of dead and down fuels within 100 ft of the trail system in and around the Nelder Grove Historical Site Area, including around specimen trees associated with the trail systems. The trail and road systems that are within the proposed project consist of The Chimney Tree Trail, Shadow of the Giants Trail, the Bull Buck Trail and road system leading to the Graveyard of the Giants. This is 6.5 miles of trails, and 167 acres of fuels reduction work along the trail systems. A crew of ten to 13 people would be used to feed dead and down fuels into a pile and burn it. Crew members and forest volunteers would be utilized to stock pile selected logs from down fuels. Log diameters of 4" to 12" and minimum of 8' lengths would be stock piled. Down redwoods would be repurposed in and around Nelder Grove trail system and campground as building materials. The logs would also be used to repair trail fencing, fencing around the specimen trees and as needed in the campground.

The overall project objectives are to return the grove to a healthier and natural state by trying to accomplish three goals:

- Reduction of fuel loading, to a condition that if a fire started and moved into Nelder Grove it would not have severe affects to large specimen trees, trail systems, and wildlife habitat.
- Protection and improvement of the watershed.
- Improvement of visual aesthetics and safety for visitors by cleaning up in and around the trail systems.

Currently the fuel buildup is at 84 tons per acre (**Error! Reference source not found.**), with the fuel goal of 10 tons per acre and 20 tons per acre along the trail systems and around the large specimen trees. (**Error! Reference source not found.**) Fuel loading in this area has also become extremely hazardous due to blow down, work that was done in 2001 and overall lack of management. (**Error! Reference source not found.**) Reducing fuel loading would not only reduce fire intensity from a wildfire, and would also aide in achieving the long term goal of reintroducing fire lands outside of the trail systems of Nelder Grove. Prescribed fire will also catalyze sprouting in seed beds of the giant sequoias for which regeneration is fire dependant. Fuels reduction as mentioned before would aide in the protection of complete devastation to sensitive botanical and wildlife habitat.

The protection and improvement of watershed with California Creek and Nelder Creek watersheds which both run through Nelder Grove is an objective that could be completed with prescribed fire. Prescribed fire would aid in the reduction of the post wild fire effects within the creek system, which include soil loss and increased sedimentation. Much research has been done on the aftermaths of fire on the ecosystems and watershed. "High severity burn area experience higher rates of soil loss from erosion, increased flows of runoff, greater duff reduction, loss in soil nutrients, and soil heating. If the organic layers are consumed and mineral soil is exposed, soil infiltration and water storage capacities are reduced. Such impacts may last weeks or decades, depending on the fire's severity and intensity, any remedial measures,

and the rate of vegetative recovery. Burning also reduces the amount of rainfall interception by the forest canopy and reduces evapotranspiration by the forest vegetation" (Robichaud 2011). Crew members would pull logs to designated pile sites, reducing fuels within and around the creek beds to aide them to recreate their natural state. Also research has shown that "Loss of soil from hill slope produce several significant ecosystem impacts. Soil movement into streams, lakes, and riparian zones may degrade water quality and change the geomorphic and hydrologic characteristics of these systems and soil loss from hillsopes may alter future site productivity" (Robichaud 2011). These are adverse effects we are hoping to reduce or avoid.

Safety, aesthetics enhancement, and education are additional objectives because of the high public use of Nelder Grove. With Nelder Grove located south of Yosemite and receiving overflow from the park, and also having many visitors locally from the valley, the Serra National Forest (SNF) needs to ensure that they are able to enjoy the grove safely and take in all it has to offer. Not only will this fuels reduction project enhance aesthetics by removing dangerous overhung and down logs from the view shed visitor safety will be increased. **Error! Reference source not found.**

Many local camps are near Nelder Grove including Camp Adahi, and Calvin Crest. The youth that come to these camps have either never been to their local mountain area, do not know the importance of the watersheds, and have never enjoyed the beauty of giant sequoias. Camps bring their campers to the grove educating them on the importance of keeping our forest clean and healthy, and how the forest impacts their everyday lives in the valley. The SNF wants these visitors to leave with an impression that will alter the way they see our local mountains, so they have a desire to participate in the protection and preservation of their local resources. These local camps are bringing new knowledge to a diverse group of youth that can take this information home to their families and continue the education process. Not only are we protecting the public's safety but also creating the future stewards, local government and firefighters that will be protecting and ensuring that Nelder Grove is a resource that the public can continue to enjoy. **Error! Reference source not found.**

<u>Environmental Setting:</u>

Nelder Grove is a very special place valued and enjoyed by many which provides important ecosystem services. It is one of approximately 75 naturally occurring sequoia groves in California. It is approximately 1,500 acres in size, with 101 mature Giant Sequoia trees (*Sequoiadendron giganteum*) and numerous young growth sequoias. Other values associated with the Nelder Grove: historic logging camp buildings/equipment; Native American prehistoric sites, wildlife habitat for various species including Pacific fisher(Martes pennant)/California Spotted Owl(Strix occidentalis occidentalis/American Goshawk(Accipiter gentilis); watershed for domestic and agricultural water supplies; and sensitive botanical species Lady Slipper (Cypripedioidea). Nelder Grove includes several visitor oriented amenities which include interpretive sites, campground and trail system focused on the largest of the specimen trees. (**Error! Reference source not found.**.IMGP1010996_NGPic6) Nelder Grove is visited by over 3,000 people per year. These visitors range from local camps (for youth educational programs), tourists, and local community members with a vested interest in the grove itself.

The Nelder Grove Hazardous Fuels Reduction Project is within the Nelder Grove Historic Area (Nelder Grove) on the Sierra National Forest-Bass Lake Ranger District. It is located in Madera County; it is east of Highway 41, south of the Wawona Entrance to Yosemite National Park and north of the town of

Oakhurst. Elevations in Nelder Grove range from 4,920 to 6,280 feet above mean sea level with slopes averaging 0 to 60%. It is located at Latitude 119.586 X Longitude 37.439.

Nelder Grove was logged in the late 1800's, early 1900's with the most recent harvesting being completed in 1996 to 2001, where only trees hazardous to public safety were removed. There has been no management of the forest after those years. During this period active fire suppression became policy, so all fires occurring in Nelder Grove were suppressed at the smallest size possible. There have been few fires recorded within Nelder Grove until last year. A human- caused fire started within the grove; the fire was contained at about two acres due to the quick reaction of the local federal firefighting agency. Fire history has shown several larger fires have occurred within close proximity to its boundary which were suppressed before entering Nelder Grove. Forest structure has changed from open stands of sequoia and pines to tightly growing closed stands, with sequoia dominating the upper reaches and encroachment of true fir and cedar in the understory. This change has created the unnatural accumulation of dead and down limbs, branches, logs and trees (averaging 84 tons/acre) to such a degree that it is difficult or in some places it is not possible to walk amongst the forest or see the area from the trails. (**Error! Reference source not found.**) It has also changed the way fire travels through the forest. Nelder Grove has transitioned from an area that had frequent low intensity fires, to one where fire occurs infrequently and has the potential to be of high intensity.

With the predicted changes in climate and the changes in forest structure, concerns have grown over the potential effects a fire of high intensity could have within Nelder Grove. Although sequoias are generally known to be a fire adapted species, a wildfire with high intensity could pose a threat to the sequoia's continued viability. The inclusion of true firs/cedars and dead/down fuels have created a "ladder" under the larger specimen tree's crowns that did not occur before (**Error! Reference source not found.**). Fire has the potential to climb this "ladder", and threaten the specimen trees. With this increased intensity from the fuel build-up, there is an increased potential for severe effects from fire. This could lead to a loss of understory trees, mid story trees and even in some cases the specimens trees themselves. In the worst of cases, the area could be left devastated with nothing remaining, but blackened trees. But the loss of conifer forest would not be the only loss. With nothing left on the ground, water from winter/spring storms have the potential to cause erosion of the soil, channeling sediment into stream courses and deteriorating water quality. Wildlife species that depend on the old forest ecosystem provided by Nelder Grove would be forced to move to other forest locations. Visitors to this area would no longer be able to enjoy the area for the values they once did. What took 3,000 years to create would be starting over and take multiple life times to re-create with the potential for it to not return.

Work Plan and Schedule:

Nelder Grove has limited operating periods due to wildlife/plant species in the area, smoke management days, high visitors and elevation that will be taken into consideration while completing this project. We will continue this project past the span of the grant. Compiling to San Joaquin air quality is one of the determining factors prior to pile burning. In addition Nelder Grove is at a higher elevation so access to the project is weather dependant. Currently we are estimating 70 work days per calendar year for this project. Work will begin in spring/winter of 2012 with archeology surveys starting within Chimney Tree trail. Archeologist will be working with a fuel technician and determining eligible sites to begin piling dead and down fuels and marking prehistoric sites. The archeology surveys will be ongoing process as the project progresses to each trail system. We will be dividing the work by the four mentioned trail systems.

We have determined that of the four trail system the Chimney tree trail has the most workable days, and has the heaviest fuel loading (**Error! Reference source not found.**). We would begin work on this trail system first; beginning in the fall of 2012 crew personnel would be able to begin the burning process of the project. Fuel loading is estimated to be between 60-84 tons an acre on this trail system. Production rate for piling and burning on this trail system would average between .25 to .3 of an acre a day. The SNF would like to complete the work on Chimney Tree Trail at the end of December 2013, 30.25 acres of piling and burning and the reduction in fuel loading to 10-20 tons per acre.

The second trail we would begin would be the Bull Buck trail which has a fuel loading of about 40-60 tons per acre. Bull Buck trail leads to the Bull Buck tree which is a staggering 248' tall and has a 100' circumference at the base (**Error! Reference source not found.**). This trail has fewer hazards and less work increasing our production rate to an average of .3 to .5 acres of work a day, we used .5 acres a day to determine our timeline. We would begin work after Labor Day from September 2013 to December 2013, with an estimated 50 work days. We would accomplish our goals on Bull Buck trail of 12.09 acres of pile burning and reducing fuel loading to 10 to 20 tons per acre by the end of 2013.

We would then move on to the Shadow of the Giants between January 2014 – May 2015 with an estimated 90 work days in this time frame we would hope to accomplish 30 -48.38 acres of pile burning. The production rate of .3 to .5 acres of work a day was also used for this trail system, using .5 acres a day to determine the timeline. We would complete the 48.38 acres and reduction in fuel loading to 10-20 tons per acre by the end of May 2015

The last trail we would work on would be the three mile trail Graveyard of the Giants, and an estimated 72.57 acres of burning. We would begin work in the fall of 2015 and the anticipated completion in the fall of 2016. We would accomplish 72.57 acres of piling and burning and reduce fuel loading to 10-20 tons per acre.

Detailed Project Deliverables	***Timeline***	***Goals Accomplished***

Chimney Tree Trail : (1.25 mile trail system) = 30.25 acres of work -production rate being an average of .3 acres a day	-Work beginning in fall of 2012: September 2012 to December 2012 -Estimated 50 work days in this time frame	-Accomplish 10-20 acres of pile burning
Chimney Tree Trail: (10.25-20.25 acres of work)	-Work beginning in winter of 2013: January 2013 - May 2013 -Estimated 20 work days in this time frame	-Accomplish 6.0-10.0 acres of pile burning
Chimney Tree Trail: (4.25-10.25 acres of work)	-Work beginning after Labor Day: September 2013 – December 2013 -Estimated 50 work days in this time frame	-Accomplish 4.25-10.25 acres of pile burning -Reduce fuel loading to 10-20 tons per acre ***Chimney Tree Trail Completed**
Archeology & Botany Input	-Input completed by Labor Day 2013, on Bull Buck trail	-Flag appropriate sites to pile and burn
Bull Buck Trail : (.5 miles of trail system) = 12.09 acres of work -production rate being an average of .5 acres a day	-Work beginning after Labor day: September 2013 - December 2013 -Estimated 50 work days in this time frame	-Accomplish 6-12.09 acres of pile burning -Reduce fuel loading to 10-20 tons per acre ***Bull Buck Trail Completed**
Archeology & Botany Input	-Input completed by November 2014: On Shadow of the Giants trail	-Flag appropriate sites to pile and burn
Shadow of the Giants: (2miles of trail system) = 48.38 acres of work -production rate being an average of .5 acres a day	-Work beginning in Winter 2014: January 2014 – May 2014 -Estimated 20 work days	-Accomplish 5-15 acres of pile burning
Shadow of the Giants : 33.38-43.38 acres of work	- Work beginning after Labor Day: September 2014 – December 2014 -Estimated 50 work days in this time frame	-Accomplish 20-30 acres of pile burning
Shadow of the Giants : 10-15 - acres of work	- Work beginning in winter 2015: January 2015 – May 2015 -Estimated 20 work days in this time frame	-Accomplish 10-15 acres of pile burning -Reduce fuel loading to 10-20 tons per acre ***Shadow of the Giants Trail Completed**
Archeology Surveys	-Survey beginning and completed by Labor Day 2015: on Graveyard of the Giants trail	-Flag appropriate sites to pile and burn
Graveyard of the Giants: (3miles) – 72.57 acres -(production rate being an average of .5 acres a day)	- Work beginning after Labor Day: September 2015 – December 2015 -Estimated 50 work days in this time frame	-Accomplish 20-30 acres of pile burning
Graveyard of the Giants: 42.57-52.57 acres of work	- Work beginning in Winter of 2016: January 2016 – May 2016 -Estimated 20 work days in this time frame	-Accomplish 5-15 acres of pile burning
Graveyard of the Giants: 27.57-37.57- acres of work	- Work beginning in Fall of 2016: September 2016 – December 2016 -Estimated 50 work days in this time frame	-Accomplish 20-30 acres of pile burning -Reduce fuel loading to 10-20 tons per acre

Restrictions, Technical/Environmental Documents and Agreements

Restrictions/Agreements:

No property restrictions apply. All project activity will occur on National Forest System Lands and be implemented by the Sierra National Forest.

Regulatory Requirements and Permits:

Nelder Grove hazardous fuels reduction project is a categorically excluded project under NEPA, with a decision memo signed, completed and on file at the Sierra National Forest, Bass Lake Ranger District. In addition Nelder Grove is exempt from CEQA.

During the project proposal process we are required to collaborate with our specialist groups which include: Botanist, Land/Recreation, Hydrologist, Range, Biologist, Archeologist, and Silviculturist, prior to a Decision Memo being signed and approved by our District Ranger. Working with our specialist they are able to give feedback on sensitive species/habitat, archeological sites and any concerns they might have. Archeology, Botany, Wildlife, Hydrology and Recreation have given us procedures and guidelines we have to adhere to in the process of this project. We have worked with our specialists and have developed limiting operating periods for our wildlife to ensure we are protect and preserve prehistoric sites within the project. Our botanist report includes a map of sites we need to avoid, for the protection of Lady Slipper Orchid. Included in this report all equipment should arrive on sites free and clear of noxious weeds. Our hydrologist report states that we need to follow LRMP standard and guidelines for this project, due to Nelder Creek and California Creek running through the proposed project. Due to the high use of visitor and following the request of our Lands and recreation they would prohibit work from Memorial Day to Labor Day. Each of these factors were taken into consideration when setting up our work schedule to obtain our project objectives. Please see provided documentation under Regulatory Requirements and Permits, Project proposal forms submitted by our specialists.

California Environmental Quality Act (CEQA):

All NEPA for the Nelder Grove hazardous fuels reduction project has been completed by the SNF, Bass Lake Ranger District under a Categorical Exclusion and Decision Memo, which is on file at the Bass Lake Ranger District office in North Fork. In addition this project is Exempt from CEQA: Article 19 15304: ”Class 4 consists of minor public or private alterations in the condition of the land, water, or vegetation which do not involve the removal of healthy, mature, scenic trees except for forestry and agricultural purposes.” (Fuels management activities is under this example)

Organizational Capacity Narrative:

Currently the Bass Lake Ranger District has a fuels and fire organization (fuels/fire) that work on a variety of different projects throughout the year. The fuels organization is made up of a division chief, two fuels specialist, and two fuels technicians. The fire organization is made of a division chief, three battalions, two 20 person hotshot crews, seven type 3 engines (5 people per day), seven patrols and one water tender. Fuels/fire have been involved in fuels/hazard work reduction, wildland/prescribed fires, archeology, fencing/trail work, and various restoration projects. Many of our personnel have aided in prescribed fires on the Mariposa Grove, in Yosemite National Park. Yearly the fire crew can complete 100-150 acres of fuels reduction work and 200-500 acres of prescribed burn projects. The fuels/fire is also capable of completing highly sensitive projects, complying with standards and guidelines, and ensuring the protection of resources.

Our fuels department will be overseeing the entire project and working closely with the project/crew leader, archeologist, wildlife biologist, botanist and district ranger to ensure that the project is done efficiently and to the benefit of the various resources and wildlife. Currently the fire organization is the district biggest work force. The SNF be utilizing this highly skilled fire organization to make up a crew of 10-15 people per day to carry out and complete the Nelder Grove project over the three year span of the grant. In addition we will have fire prevention/patrols to monitor the trail and the Nelder Grove area during and after periods of burning.

In addition the SNF be utilizing our community supporters to assist in removal and clean up of dead and down logs.

Cooperation and Community Support:

There have been many interested people within the Forest Service and within the public that have been very supportive of the protection and conservation of the giant sequoias in Nelder Grove. There also is community excitement about the concept of reducing fuel loading and reintroducing fire in the grove, after many years of suppressing the natural cycle. Our stakeholders know the importance of fuels reduction in Nelder Grove and see the need. The biggest obstacle in management of Nelder Grove is lack of funding.

The Forest Service has received letters of support from Friends of Nelder Grove, Camp Adahi, and Calvin Crest. Many of our supporters have already volunteered time in maintaining Nelder Grove. In the past, Camp Adahi, and Friends of Nelder, have taken on the responsibility of cleaning and maintaining the Nelder Grove area. In addition, they have joined forces with the Forest Service and aided the recreation department in the removal of hazard trees. The Forest Service will be utilizing the help of volunteers from the Friends of Nelder, Camp Adahi, and Calvin Crest to remove and stock pile selected logs from the down fuels. We will be utilizing our fire/fuel personnel, wildlife biologist, and botanist to further educate these supporters prior to working in the area. We are hoping that this project with continue to strengthen and grow our working relationships with these supporters to the benefit of Nelder Grove.

Long-Term Management and Sustainability:

This project is considered the first step in the long term management of Nelder Grove. The long term goals for Nelder Grove would be to continue to expand fuel reduction efforts in and around the trail systems, current infrastructure and specimen trees where accumulations would be at such a level that prescribed fire could be reintroduce into this fire dependent ecosystem. Along with this goal, a long-term management plan for Nelder Grove would address the preservation, protection and restoration of the Historic Area and the values it holds for wildlife, watershed, botanical species, and the visitors who come to see it.

Performance Measures:

The overall project objectives are to return the grove to a healthier and natural state by trying to accomplish three goals:

- Reduction of fuel loading, to a condition that if a fire started and moved into Nelder Grove it would not have severe affects to large specimen trees, trail systems, and wildlife habitat.
    - Our main measuring tool will be the reduction of fuel loading using the Browns Plan Intercept fuel loading down and woody debris. This will be used for all objectives.
    - Before and after pictures will be taken.
    - Reduction of fuel loading to 10-20 tons per acre.
    - Pile burn acres completed
- Protection and improvement of the watershed.
    - The reduction of fuel loading to 10-20 tons per acre will aide in the reduction of a high intensity fire, leading to the protection of the watershed.
    - The removal of fuel with allow the natural flow of water to occur.
- Improvement of visual aesthetics and safety for visitors by cleaning up in and around the trail systems.
    - The reduction of fuel loading and hazardous trees with allow visitors enjoy the area safely.
    - Removal of hazardous tree along the trail systems increase the safety of visitors.
    - Before and after pictures of the reduction of hazardous trees taken down.