Date of Report: 9/23/04

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[x] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[ ] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)

[x] 2. Interim Report Notes in Red have been added to the Initial Request by Darrel Ranken, STNF BAER Coordinator

[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Bear

B. Fire Number:CA-SHF-1893

C. State: CA

D. County: Shasta

E. Region: 5

F. Forest: Shasta-Trinity

G. District: Shasta Lake

H. Date Fire Started: 8/11/04

I. Date Fire Contained: 8/17/08

J. Suppression Cost: [redacted]

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 12
2. Fireline seeded (miles):8
3. Other (identify):

L. Watershed Number: 18020003120,180201010

M. Total Acres Burned: 10,484
NFS Acres(3515) Other Federal ( ) State ( ) Private (6969)

N. Vegetation Types:Ponderosa Pine/mixed conifer/hardwood, foothill mixed chaparral, lower montane mixed chaparral, oak woodland, seasonally wet meadow and riparian.

O. Dominant Soils: Holland, Nunes, Millsholm, Goulding,Marpa

P. Geologic Types: Pit formation (shale; siltstone; metavolcanic; limestone); Meta-andesites-dacites

Q. Miles of Stream Channels by Order or Class:
38 miles of intermittent, 90 miles of ephemeral

R. Transportation System

Trails: 8 miles Roads: 20 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 6,834 (65%) (low) 3,281 (31%) (moderate) 395 (4%) (high)

B. Water-Repellent Soil (acres): none

C. Soil Erosion Hazard Rating (acres):
760 (low) 6,931 (moderate) 2754 (high)

D. Erosion Potential: 9.5 tons/acre Pit River watershed 11.84 t/ac Cow cr. Watershed 8.95t/ac

E. Sediment Potential: 4,090 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5

B. Design Chance of Success, (percent): n/a

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 7.64

F. Design Flow, (cubic feet / second/ square mile): 252

G. Estimated Reduction in Infiltration, (percent): 25

H. Adjusted Design Flow, (cfs per square mile): 315

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Background: The Bear Fire started on Wednesday August 11 burning a total of 10,484 acres with containment occuring on Tuesday August 17 at 0800. The fire started on private lands burning approximately 80 homes and proceeding to burn onto National Forest Lands down to the shore of Shasta Lake. The portion of the burn on National Forest Lands is within the Shasta Lake National Recreation Area. Approximately 3515 acres burned on National Forest Land. The BAER Team worked closely with the local NRCS office to assess the entire fire area as the area contains mixed ownership. Much of the fire area re-bunred the area burned by the 1999 Jones fire. The grass, shrubs along with the knobcone pine re-established vigorously after the Jones

Fire. Many of the small trees burned in the Jones fire subsequently fell down and were completely burned during the Bear fire. Most of the vegetation in the intermittent and ephemeral stream channels that burned in the Jones fire also burned in the Bear fire.

Threats to Human Life and Property:

- Forest Road 33N86, leading to Jones Valley boat ramp, Forest Road 33N13, leading to Jones Valley Marina, and an unnamed service road off of 33N13. - There is an increased threat of flooding, hazard trees, and plugged culverts along these roads. The fire mostly burned with moderate severity with a few of the drainages burning at high severity. These roads are contained within the Shasta Lake National Recreation area, access Shasta Lake and receive a high amount of use year round.

- Clikapudi trail. Four out of five bridges burned creating a hazard for hikers, runners and bicyclists along this trail The multiple use trail within the Shasta Lake National Recreation area receives year round high use (approximately 40,000 visitor use days) and is by far the most popular trail in the national recreation area. In addition, hazard trees pose a risk for recreationists.

- Jones Valley Campground: There is an increased risk of flooding in the campground. There is a 48" culvert that drains into the campground with 36" & 24" culverts throughout the campground, leading to a potential flooding situation. Four plastic culverts throughout the campground burned leading to a potentially hazardous situation of campsite and campground road collapse. Several hazard trees were identified also.

Threats to Water Quality:

- Shasta Lake: There will be an increase in ash, sediment and debris from the fire area entering Shasta Lake. The Team evaluated the risk of increase sediment to fish habitat, spawning potential and recreational uses. The Team concluded that increases in ash, sediment and debris entering the lake would not constitute an emergency situation, therefore no treatments are recommended (see hydrology report for additional details).

Threats to Ecosystem Stability:

- Noxious/Invasive weeds – There is a high risk of invasion of noxious/invasive weeds in the fire area. Known species to occur throughout the fire area include star thistle (*centaurea solstitilas),* and annual grasses including Cheatgrass *(Bromus tectorum).* Other invasive weeds that occur in the area include; oatgrass, bromes, dogtail grass, filaree and hedge parsley.

  Uncleaned heavy equipment was used to construct fire suppression lines along with numerous trips by heavy equipment and engines into the fire area. Star thistle is especially problematic throughout the fire area. The meadow in Clikapudi creek is almost entirely composed of star thistle and acts as a seed source for the rest of the trail. In addition, the Backbone road (3W02) contains star thistle populations which could easily be spread by equipment and vehicles.

  Fire suppression lines may act as corridors carrying noxious weeds and invasive plants in to uninfested wildland areas. Uncleaned heavy equipment was used to construct fire suppression lines, along with numerous trips by heavy equipment and engines into the fire area can lead to new infestations. Following fire, soil nutrient conditions are more favored toward noxious weeds and invasive species, thus promoting their introduction over native species. The vegetation report contains additional information.

- TES species: Bald Eagle: The fire burned one (1) active nest within the fire area. There are four (4) nests total within the fire area. The Team determined that an emergency does exists regarding bald eagle nesting habitat.

Threats to Soil Productivity:

- Invasive/noxious weeds will increase from off road vehicle incursions and are the biggest threats to soil/site productivity in the fire area. The Team observed many off-highway vehicles (OHV) and vehicle tracks in the fire area while completing survey work. Disturbance could slow native plant

B. Emergency Treatment Objectives:

- Prevent the loss of life and risk to human safety.
- Reduce the risk to loss of property.
- Reduce the risk of degradation to ecosystem function and soil productivity.

Treatments designed to reduce the risk of potential adverse effects of the fire include:

1. Enhancement of culvert function on Forest Roads 33N13 and 33N86.
2. Felling of Hazard trees along high use areas.
3. Preventation and treatment of Noxious weeds in Clikapudi Meadow and dozer lines.
4. Hazard sign placement
5. Patrolling and fencing to limit illegal OHV use.
6. Drainage features on the Clikapudi Trail.
7. Temporary blocks to allow native vegetative recovery.
8. Thinning to protect eagle nesting tree.
9. Flood protection of three (3) campsites.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land **95** % Channel **85** % Roads **95** % Other **95** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	95	100	100
Channel	85	95	100
Roads	85	95	100
Other	90	100	100

E. Cost of No-Action (Including Loss): **$*****

F. Cost of Selected Alternative (Including Loss): **$*****

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology [**x**] Soils [x] Geology [ ] Range [ ]
[x] Forestry [x] Wildlife [ ] Fire Mgmt. [x] Engineering [ ]
[ ] Contracting [ ] Ecology [x] Botany [x] Archaeology [ ]
[x] Fisheries [ ] Research [ ] Landscape Arch [x] GIS

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H. **Treatment Narrative:**

The following are proposed emergency treatments for the Bear Fire. These treatments were developed based on BAER objectives, team recommendations or proven, effective treatments, line officer/agency administrator input, as well as interagency BAER team effort and discussion. Due to high values at risk, multiple treatments may occur in the same area to address the same emergency situation, thereby improving the overall effectiveness of mitigating the emergency. Preventative treatments are targeted at the high severity burn areas. Control treatments are targeted at areas downstream from high and moderate severity areas, as well as at specific high value at risk sites. Treatments with low probablility of success were eliminated by use of a preliminary least cost plus risk analysis to refine treatments.

Land Treatments:

1. *Natural Vegetative Recovery.*

Objective
This no cost treatment of allowing the on-site vegetative material sprout or germinate to reduce emergency conditions throughout the fire area.

Methods
Observe natural vegetative recovery during the first growing season.

2. *Fencing – Clikapudi Meadow and OHV access points off of Backbone Ridge Road*

Objective
The primary objective is to limit OHV incursion into Clikapudi Meadow. Clikapudi Meadow contains star thistle and heritage resources. The meadow also contains an erosive soil. The BAER team observed OHV incursions into the meadow causing displacement and rutting during the assessment. Fencing known access points off of Backbone Ridge road should help to minimize unauthorized use. This treatment will compliment the signing and OHV patrol also proposed.

Methods
Install a wire fence, (2) strands, approximately 1400 feet on three sides of Clikapudi Meadow. Place 1500 ft. of temporary wire fence, (2) strands, along known access points off of Backbone Ridge Road. The fence would be temporary in nature and at a minimum standard to protect the meadow and discourage unauthorized OHV use.

Cost: $***** for 2900 feet

3. Straw Mulch – Clikapudi Meadow

Objective

This treatment has multiple objectives. The first objective is to retard the spread of star thistle from this known infestation spot. The second objective is to protect heritage resource sites and soil productivity from accelerated runoff coming down and eroding the meadow. The soils in this meadow are considered erosive and star thistle makes a poor erosion control species.

Methods

Place certified weed free straw approximately 3-4in thick over approximately 5 acres. This treatment will be completed in conjuction with hand seeding of cereal and native grasses.

Costs: $ *********

4. Hand Seeding – Clikapudi Meadow

Objectives

This treatment has multiple objectives. The first objective is to retard the spread of star thistle from this known infestation spot. The second objective is to protect heritage resource sites and soil productivity from accelerated runoff coming down and eroding the meadow. The soils in this meadow are considered erosive and star thistle makes a poor erosion control species.

Methods

Hand spread seed before the straw mulch is applied. Species include Blue wildrye, Bicolor Lupine, and Cereal barley. Application rate would be approximately 15 lbs./acre.

Costs: $*********

5. Noxious weed assessment

Objective

To assess and spot treat new noxious weed (mostly star thistle) infestations on dozer lines. Early treatment will ensure the noxious weeds don't infest a new area.

Methods

Walk 3 miles of dozer lines on federal lands physically pulling star thistle from the ground. Dispose of them in a plastic bags. This treatment should be completed several times during the growing season to ensure all plants are treated.

Costs: $*********

7. *Campsite flood protection – Lower Jones Valley Campground*

Objective

Protection of campsites 4, 7 and 8 from overland flow resulting from flood flows overtopping the channel through the campground and the existing culverts. Flood flows could damage exist campsite facilities.

Methods

Install sandbag flood protection structures at campsites to protect from flooding.

Costs: $*********

8. *Nest tree protection*

Objective

A tree that contains a bald eagle nest was scorched along with all the surrounding vegetation. The fuel loading adjacent to the tree is high and is at high risk of completing burning the tree.

Methods
Fell the understory vegetation, pile and burn away from the nest tree.

Costs: $*****

Channel Treatments

1. *Straw wattles*

Objective
Stop downcutting of an ephemeral drainage into Clikapudi Meadow. Burn Severity was moderate above this drainage. Soils are considered erosive with slight downcutting already present. This treatment will help prevent accelerated runoff reaching the meadow and downcutting.

Method
Place two (2) straw wattles into a small ephemeral drainage above Clikapudi Meadow.

Costs: $*****

2. *Straw bale Check Dams*

Objective
To prevent further downcutting of three (3) ephemeral drainages, tributaries to Clikapudi Creek. Burn Severities were moderate above these drainages and they contain erosive soils.

Methods
Place three (3), five (5) bales each, check dams across the drainages. Keying the bales into the banks to ensure success and stability.

Costs: $*****

Roads and Trail Treatments:

1. *Jones Valley Road and Jones Valley Marina Road*: Many of the existing culverts in the burned area will be subjected to increased runoff, sediment loads and debris from the burned watersheds. Many of the culverts are currently clogged with sediment, ash and debris and should be cleaned out prior to storm runoff. The Jones Valley Marina Road contains many culverts that were fitted with plastic pipes that received damage due to the fire. In the intial BAER assessment 10 culverts in this condition were identified and were thought to be repairable. Subsequent closer inspection has determined that these culverts cannot be fixed and will have to be replaced with new culverts, some of which will be upsized to account for expected increased flows from the fire area. Six other culverts were also located that need replacement. Most of the 16 culvert replacements can be accomplished using a tunnel boring machine that allows for a new culvert to be inserted within the fill without removing the fill and the old culvert. This technique allows the road to stay open, eliminates the risk of having large fills bared to potential erosion, and is much cheaper than normal excavation of the fills.

Costs:

Inlet protection for Culverts: $*****
Cleaning inlet basins: $*****
Culvert Replacement: $*****

Total: $*****

2. *Culvert replacement in Lower Jones Valley Campground*: Four plastic culverts burned out in the Lower Jones Valley Campground. There is a risk of collapse trapping vehicles and flooding of the campground during a storm event. Culverts will be replaced with CMP to ensure longevity.

   Costs: $*****

3. *Drainage Features – Clikapudi Trail*

   Objective
   To control drainage on Clikapudi trail from the anticipated increased runoff from surrounding hillslopes. This will assist in maintaining trail tread and limit concentrated runoff below the trail

   Methods
   Place drainage control structures along the 1st .5 mile of the Clikapudi trail west of the Jones Valley Marina Road. The 1st .5 mile is steep with moderately burned slopes above the trail.

   Cost: $*****

4. *Storm Patrol – Jones Valley and Jones Valley Marina Road*s

   Objective
   This treatment will decrease the threat that post-burn runoff, sediment and debris will plug culverts, overtopping the road, possibly degrading the road prism and posing a threat to vehicular traffic.

   Method
   A team of two people will be available and respond as needed with shovels, etc. Patrols will be initiated based on local observations of significant precipitation/runoff events.

   Costs: $*****

6. *Hazard advisory signs*

   Objective
   The objective of this treatment is to advise the public of the presence of a burned watershed and associated safety issues.

   Methods
   Signs should be placed on both Jones Valley Boat Ramp road and Jones Valley Marina road.

   Suggested wording:

   'WARNING BURNED WATERSHED NEXT _ MILES – risk from flash floods, and debris.

   Costs: $*****

7. *Barrier Replacement – Posts*

   Objective
   Many wooden barrier posts preventing vehicle traffic off of both Jones valley road and Jones Valley Marina road burned. This could allow OHV use into the burned area. Unauthorized OHV use could spread noxious weeds and retard native vegetative recovery.

   Methods

Place approximately 2 foot wooden barriers in places vehicles can go off road, replacing the ones that burned. Posts should be placed close enough to together to discourage off highway traffic

Costs: $*****

8. *Barrier Replacement – Rales*

Objective
Several wooden barrier rails burned off of the Jones Valley Marina Road. This could allow OHV use into the burned area. Unauthorized OHV use could spread noxious weeds and retard native vegetative recovery.

Methods
Install 1 6X6 rail and one 4X6 rail in places vehicles can go off road, replacing the ones that burned

Costs: $*****

9. *Hazard Trees*

Objective
The fire burned both conifers and oaks along the Jones Valley Marina, Jones Valley road, Lower and Upper Jones Valley Campground and Clikapudi Trail. Many of the hazardous trees were felled by the fire suppression crews along both roads and the campgrounds. A hazard exists to the public and BAER crews working in these areas because of the burned out trees. This area is a high use, year round recreation area that is not feasible to close.

Methods
Identify and fell trees posing an immenent hazard to the aforementioned facilities. An initial survey was completed with the most dangerous trees already flagged on the main roads. The Forest may conduct a road side salvage sale.

Costs: $*****

10. OHV Patrol

Objective
To ensure vehicular traffic stay on the main roads, educate the public. This treatment will compliment several of the other treatments proposed for OHV's.

Methods
Patrol the high use areas in the fire five (5) times a week for the 1st four (4) months to establish a presences and provide public education. Patrol two (2) days a week the remainder of the year.

Costs: $*****

11. OHV signs

Objective
To inform and educate the public that they are entering a burned area and need to stay on the main roads to facilitate natural vegetative recovery.

Methods
Place 6 signs at highly visible locations throughout the fire area. Signs should by placed at least 4 feet high on sturdy posts to ensure longevity.

Costs: $*****

I. **Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

1. Monitor the effectiveness of treatments and no treatments to determine overall effectiveness of BAER rehabilitation efforts.

Because potential impacts to fisheries, water quality, and soil productivity were not considered to be watershed emergencies no hillslope and minimal channel treatments were recommended. Another reason for not recommending hillslope and channel treatments in the Bear Fire area is that both types of treatments were judged to have minimal benefits in the Jones Fire area. Because no hillslope treatments will be applied in the burn area it will be necessary to monitor the effectiveness of no treatments in order to validate that treatments were not required. Monitoring will consist of four field visits to areas that burned at high severities. The effectiveness of 'no treatment' will be evaluated.

Monitor debris inflow to Shasta Lake from tributaries and reservoir shoreline to assess treatment needs.

During the first winter following the Bear Fire there will be an increased potential for the accumulation of debris in Shasta Lake. Winter storms could wash small debris downstream to the reservoir. Dead trees on the shoreline could fall into the reservoir and be suspended when reservoir levels rise in the spring. Once suspended, large floating debris in the lake could be hazardous to boaters. Treatments to prevent debris suspension in Shasta Lake include the installation of floating booms in coves that receive debris and the removal of large debris that enters the lake from the shoreline. It is not possible to accurately budget for these treatments do to the uncertainty of how much debris will enter the lake and reservoir elevations that will be needed to determine boom lengths. Monitoring funds are requested for patrolling the reservoir shoreline and inlets to assess the need for debris control measures in response to winter storms.

Costs: $*** for both parts of this monitoring request.**

2. Noxious weed monitoring (dozer lines and know infestation areas) - year 2-3

Monitoring is designed to answer the following questions. Are noxious weeds invading the fire areat (dozer lines and other disturbed areas)? Did the initial treatment in Clikapudi Meadow diminish the popuation of star thistle?

Methodology: Survey the dozer lines and other disturbed areas for noxious weeds. Pull weeds present and put them in a plastic bag for disposal. Survey Clikapudi meadow for effectiveness of seeding, straw mulching and pulling treatments. A monitoring report will be prepared after year one and additional funds requested, if needed.

Cost: $*** Year 2 and 3.**

3. Bald Eagle (Fed. – Threatened) Nest Productivity of Dark Canyon and Jones Valley II nests in breeding season following fire.

Two nest territories lost nests as a result of the Bear fire. We recommend monitoring of these two territories to ascertain if eagles nest in existing nests or relocate and nest successfully in new nest trees during the 2005-breeding season.

Implementation: 10 days / territory X 2 territories = 20 days
$***** / day X 20 days = $*****
Administration: $***** X 5 days & $***** in boat fuel = $*****
Overhead $***** X .20 = $*****

TOTAL: **$*****

4. Shasta salamander (Fed. Sensitive species / Survey and Manage)

The Shasta salamander and Shasta Chaparral snail are FS Sensitive species, endemic to Shasta Lake. They were Survey and Manage species, prior to the 2004 FEIS, which is currently under litigation. We recommend monitoring of known Shasta salamander and Shasta chaparral sites and other suitable habitat during Fall/Winter 2004-2005 to determine if there is continued salamander and snail use of the area after the fire.

Implementation: 20 days X 2 people = 40 days X $*****/day = $*****
Administration: 8 days X $***** / day = $*****
Fuel/equipment use: $*****
Overhead: $***** X .20 = $*****
TOTAL: **$*****

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

		NFS Lands			Other Lands				All
		# of	Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Units	$		units	$	Units	$	$
A. Land Treatments									
Fencing	ft	2900							
Straw mulch	ac	5							
Hand seeding	ac	5							
sand bags	ea	70							
eagle nest	ea	1							
Subtotal Land Treatments									
B. Channel Treatments									
Straw wattles	ea	2							
straw bales checks	ea	3							
Subtotal Channel Treat.									
C. Road and Trails									
Culvert replacement	ea	17							
4 culverts	ea	4							
drainage -dikapudi	mi	0.5							
Hazard signs	ea	7							
Storm patrol	ea	1							
barrier post	ea	96							
barrier rail	ea	2							
OHV patrol	ea	1							
OHV signs	ea	6							
Hazard trees	ea	25							
Subtotal Road & Trails									
D. Structures									
Subtotal Structures									
E. BAER Evaluation									
Team	ea	30,300							
NX weeds	ea	2500							
Subtotal Evaluations									
F. Monitoring									
Eagle	ea	8,400							
salamander	ea	12,960							
no treatment	ea	1000							
Subtotal Monitoring									
G. Totals									

PART VII - APPROVALS

1. _/s/ Thomas A. Contreras (for)_____ _9/28/04___
J. SHARON HEYWOOD Date
Forest Supervisor

2. _____ _____
Regional Forester (signature) Date