

Date of Report: 04/13/05

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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)
2. Interim Report #4 **Notes in Red were added to the Initial Request by Darrel Ranken, STNF BAER Coordinator on 4/13/2005**
 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: BearB. Fire Number: CA-SHF-1893C. State: CAD. County: ShastaE. Region: 5F. Forest: Shasta-TrinityG. District: Shasta LakeH. Date Fire Started: 8/11/04I. Date Fire Contained: 8/17/08J. Suppression Cost: XXXXXXXXXX

K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 12
 2. Fireline seeded (miles): 8
 3. Other (identify):

L. Watershed Number: 18020003120,180201010M. 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 occurring 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-burned 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 a user fee boat ramp on Shasta Lake and receive a high amount of use year round. Due to recent rain storms at the end of September 04 accelerated erosion causing excessive rilling and sedimentation of culverts has occurred above FR 33N86 from the upper Jones Valley Campground to the Jones Valley boat ramp. Excessive rilling from this first storm has set the stage for continued erosion and sedimentation of culverts which threatens one of the main recreational roads on Lake Shasta. Culvert replacement procedures prescribed in the initial BAER Report have not been completed (contracts were awarded November 1st).

Currently (as of April, 2005) the sections of road over the new culverts have a crushed aggregate surface course. This road receives heavy traffic and as a result, vehicles are compacting and displacing the aggregate surfaces causing rough, uneven, and un-safe road conditions. Historical traffic counts have been recorded as high as 726 Average Daily Traffic and we know that traffic has only increased since this data was collected.

The public has filed numerous complaints about the road's condition. Included was a report of a wheel being torn off a boat trailer and a spring broken on another trailer. We suspect that other damage to public vehicles and/or boat trailers is occurring that has not been reported. Warning signs have apparently not been effective. Some of the culvert fills are large - serious injury could occur if a vehicle was to leave the roadway due to the uneven condition of the road surface.

There are also soil erosion issues to contend with as a result of the culvert replacements. The crushed aggregate berms (constructed to temporarily replace the pre-existing A.C. berms) have been repeatedly scoured by run-off across the aggregate surface course. This condition in turn has caused erosion problems over the newly placed fill. The aggregate berms need to be replaced with asphalt to provide the necessary protection.

- 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). Due to the threat of road fill failure resulting from culvert plugging potential the threat to water quality has become more imminent. Road surface and fill erosion at the culvert replacement sites are causing sediment to enter stream channels.

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 solstitialis*), and annual

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 exist 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 recovery, increase the spread of noxious/invasive weeds and decrease soil fertility. Approximately 4% acres of the Bear fire burned at high severity. The majority of this is on Private lands in the Painter Creek Watershed. Productive Holland soils occur within the Clikapudi and Wildcat Watersheds and are sensitive to erosion which could degrade their productivity. The majority of soils within the fire area contain a very gravelly surface which will mulch and protect the soil surface (see the soils report for additional details) Moderate burn severity areas are also susceptible to accelerated erosion, potentially decreasing productivity. The first rains of the season have resulted in severe erosion on slopes that experienced high intensity burning, although these soils did not appear to be hydrophobic at the time of assessment they displayed such characteristics during the heavy precipitation events of early October. Further soil erosion will occur if no cover is provided for the slopes.

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. Straw mulching above forest road 33N86.
3. Felling of Hazard trees along high use areas.
4. Prevention and treatment of Noxious weeds in Clikapudi Meadow and dozer lines.
5. Hazard sign placement
6. Patrolling and fencing to limit illegal OHV use.
7. Drainage features on the Clikapudi Trail.
8. Temporary blocks to allow native vegetative recovery.
9. Thinning to protect eagle nesting tree.
10. 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:

- Hydrology Soils Geology Range
- Forestry Wildlife Fire Mgmt. Engineering
- Contracting Ecology Botany Archaeology
- Fisheries Research Landscape Arch GIS

Team Leaders: Todd J. Ellsworth, Inyo N. F. / Darrel Ranken, S-T N.F.

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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 probability 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. *Hillslope mulching.*

Objective

This treatment of heli-mulching to treat emergency hillslope erosion and sedimentation conditions above forest road 33N86.

Methods

Helicopter straw mulching of 2 tons/acre over a 350 acre area.

Cost: \$***** for 350 acres.

3. *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

4. *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 conjunction with hand seeding of cereal and native grasses.

Costs: \$*****

5. *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 initial 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.

This is a supplement to the original request for road surface work on the Jones Valley Road 33N86. The original amount requested for road surface repair was \$*****. This request covered placement of asphalt concrete (A.C.) over all areas that were damaged during the culvert replacement project – including pavement overlays on sections that were damaged by heavy equipment while stockpiling and removing excavated materials. This amended request is for \$***** and includes only that work needed to make the road safe and to prevent soil erosion. The treatment includes repair of the road surface over the culverts replaced by BAER treatments for safety and erosion control.

Costs:

Inlet protection for Culverts: \$*****

Cleaning inlet basins: \$*****

Culvert Replacement: \$*****

Road Safety & Erosion Control: \$*****

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 Roads*

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 – Rails*

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 Klikapudi 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 imminent 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 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 be 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.)

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

Line Items	Units	Unit Cost	NFS Lands			Other Lands			All
			# of Units	WFSU SULT \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$
A. Land Treatments									
Fencing	ft		2900						
Heli-mulch	ac		350						
Straw mulch	ac		5						
Hand seeding	ac		5						
sand bags	ea		70						
eagle nest	ea		1						
<i>Subtotal Land Treatments</i>									
B. Channel Treatments									
Straw wattles	ea		2						
straw bales checks	ea		3						
<i>Subtotal Channel Treat.</i>									
C. Road and Trails									
Culvert replacement	ea		17						
Road Safety & er/cntl	ea		1						
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 signs	ea		6						
Hazard trees	ea		25						
<i>Subtotal Road & Trails</i>									
D. Structures									
<i>Subtotal Structures</i>									
E. BAER Evaluation									
Team	ea		30,300						
NX weeds	ea		2500						
<i>Subtotal Evaluations</i>									
F. Monitoring									
no treatment	ea		1000						
<i>Subtotal Monitoring</i>									
G. Totals									

PART VII - APPROVALS

1. /s/ Thomas A. Contreras (for) 04/19/2005
J. SHARON HEYWOOD Date
Forest Supervisor

2. _____
Regional Forester (signature) _____
Date