USDA-FOREST SERVICE FS-2500-8 (7/00)

Date of Report: 12-12-02

**SEQUOIA**
**BURNED-AREA REPORT**
(Reference FSH 2509.13)

## PART I - TYPE OF REQUEST

A. Type of Report

[ ] 1. Funding request for estimated WFSU-SULT funds
[**X**] 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
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

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

## PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Sequoia

B. Fire Number: P43560

C. State: Utah

D. County: Washington

E. Region: Intermountain (R4)

F. Forest: Dixie National Forest

G. District: Pine Valley

H. Date Fire Started: 7/14/2002

I. Date Fire Contained: 8/19/2002

J. Suppression Cost: $3,000,000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): approximately 7 miles
2. Fireline seeded (miles): 0
3. Other (identify): 8 Helispots, 2 Spike Camps and 3 Dip Sites rehabilitated

L. Watershed Number:

| Watershed Name | Watershed Number | Total Acres of the Watershed | Acres Burned | % of Watershed Affected by the Sequoia Fire |
|---|---|---|---|---|
| South Ash Creek | 150100080410 | 8963 | 5057 | 56% |
| Leap Creek | 150100080408 | 8266 | 2890 | 35% |
| Upper Ash Creek | 150100080407 | 41812 | 115 | 0.3% |

M. Total Acres Burned: 8,062
NFS Acres(8,062) Other Federal ( ) State ( ) Private ( )

N. Vegetation Types:

| Vegetation Type | Acres Burned | % of Vegetation Type Burned within the fire perimeter |
|---|---|---|
| Mountain Brush | 2609 | 32% |
| Mixed Conifer | 2213 | 27% |
| Ponderosa Pine/Mountain Brush | 922 | 11% |
| Rock/Mixed Conifer | 1704 | 21% |
| Pinyon-Juniper/Mountain Brush | 539 | 7% |
| Pinyon-Juniper | 75 | 2% |
| Total | 8062 | 100% |

O. Dominant Soils: The soils in the Sequoia fire perimeter are dominantly shallow to moderately deep soils (<40 inches deep) ranging from 15 to 70 percent slopes. The soils are found on hillslopes, steep colluvial slopes and mountain slopes.

P. Geologic Types: Dominantly monzonite porphyry with a minor amount of sedimentary sandstones and shales.

Q. Miles of Stream Channels by Class: 25.37 miles of intermittent streams and 9.26 miles of perennial streams.

R. Transportation System

Trails: 6.48 miles Roads: 1.28 miles

## PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3108 (39%) (unburned and low) 4647 (58%) (moderate) 307 (3%) (high)

B. Water-Repellent Soil (acres): 15 acres

C. Soil Erosion Hazard Rating (acres):
922 (low) 7066 (moderate) 74 (high)

D. Erosion Potential: 0.09 to 0.92 tons/acre/year

E. Sediment Potential: <650 cubic yards / square mile

## PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2 to 4

B. Design Chance of Success, (percent): 70%

C. Equivalent Design Recurrence Interval, (years): 2

D. Design Storm Duration, (hours): NA

E. Design Storm Magnitude, (inches): NA

F. Design Flow, (cubic feet / second/ square mile): 209

G. Estimated Reduction in Infiltration, (percent): 0 to 0.2

| Watershed | Area (ac) within Fire Perimeter | High Burn Severity (ac) | Hydrophobic Soils (ac) | Reduced Infiltration (%) |
|---|---|---|---|---|
| Leap Creek | 2,890 | 120 | 6 | 0.2 |
| South Ash Creek | 5,057 | 188 | 9.4 | 0.2 |
| Upper Ash Creek | 116 | 0 | 0 | 0 |

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

| Drainage | Area (mi^2) | Mean Elevation (ft.) | Discharge (cfs) | Cfs/mi^2 | Remarks |
|---|---|---|---|---|---|
| **Leap Creek** | **4.5** | **7082** | **172** | **38** | **At fire perimeter** |
| **Mill Creek** | **7.0** | **7281** | **209** | **30** | **At 72 inch culvert** |
| **Harmon Creek** | **1.6** | **7210** | **101** | **63** | **At fire perimeter** |
| **Harmon Creek** | **2.7** | **7039** | **134** | **50** | **At bridge** |

## PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

**Threats to Property and Human Life:** The following values were identified "at risk" during the initial phase of the Sequoia BAER evaluation process:

- Browse Guard Station
- Harmon Creek Bridge on Browse Road (037)
- 6 foot diameter Mill Creek culverts on Browse Road (037)
- Interstate 15 / Leap Creek crossing
- Washington County Water Conservancy District Leap Creek Diversion

The team determined all of these values at risk do not warrant emergency response at this time. These structures will be monitored to determine if a future need for treatments is required.

**Threats to Unacceptable Resource Degradation:** The Bonneville Cutthroat Trout habitat is "at risk" in the Leap, Mill, Harmon and South Ash Creek drainages because of increased water temperatures, sedimentation and lack riparian vegetation. Monitoring of hydrologic cross sections and riparian vegetation will determine if treatments are necessary.

**Threats of Noxious Weeds and Invasive Plant Invasion:** To determine the need for future treatments, monitoring will be conducted to document if increased noxious weed and invasive plants invasion is occurring within the wildfire perimeter. Current concerns with noxious weeds being transported in from the ICP and existing populations on Harmon Creek will call for this monitoring.

**Threats to Heritage Resources:** Known historic (Browse Guard Station) and prehistoric sites in Mill Creek will need additional protection. Log erosion barriers are recommended to minimize the threat to these resources.

B. Emergency Treatment Objectives:

The primary purpose of the proposed emergency rehabilitation is to take prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to unacceptable resource degradation, property and human life, long-term soil productivity and noxious weeds and invasive plants. The emergency treatments being recommended by the Sequoia BAER Team are specifically designed to achieve the following results.

1) Provide for public safety (road and flood hazard identification) and promote fire recovery by communicating the post fire hazards to the public.

2) Monitor recovery of habitat for Bonneville Cutthroat Trout with the Utah Department of Wildlife Resources.

3) Limit colonization and/or expansion of noxious weeds and invasive plants species onto National Forest System lands.

4) Provide monitoring of invasive and noxious vegetative species to consider potential emergency treatments that may be required in the near future.

5) Provide protection for historic and prehistoric heritage resources in the Browse Guard Station Area.

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

Land **100** % Channel **NA** % Roads **NA** % Other **NA** %

D. Probability of Treatment Success

| | Years after Treatment | | |
|---|---|---|---|
| | 1 | 3 | 5 |
| Land | 55% | 60% | 65% |

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

| **Value at Risk** | **Estimated Cost** |
|---|---|
| Loss of Bonneville Cutthroat Habitat (9 miles estimated) | $900,000 |
| Damage to Property (Browse Guard Station, Roads and Debris Flows on Adjacent Lands) | $100,000 |
| Noxious Weed and Invasive Plant Encroachment | $50,000 |
| **Total** | **$1,050,000** |

F. Cost of Selected Alternative (Including Loss):

| **Treatments Selected** | **Estimated Cost** |
|---|---|
| Installation of log erosion barriers (LEBs) to protect Browse Guard Station and prehistoric sites adjacent to Mill Creek. | $6,000 |
| Installation of a hazard warning sign | $200 |
| Loss of Bonneville Cutthroat Habitat (9 miles estimated) | $900,000 |
| Damage to Property | $50,000 |
| Noxious Weed and Invasive Plant Encroachment | $5,000 |
| **Total** | **$961,200** |

| **Monitoring Selected** | **Estimated Cost –FY03** | **Estimated Cost – FY04** | **Estimated Cost – FY05** |
|---|---|---|---|
| Noxious Weed and Invasive Plant Monitoring | $1,500 | $1,500 | $1,500 |
| **Total** | **$1,500** | **$1,500** | **$1,500** |

G. Skills Represented on Burned-Area Survey Team:

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

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H. **Treatment Narrative:**

Land Treatments:

**Log Erosion Barrier Protection for the Cultural Resources near Browse Guard Station**

Felling of trees to slow expected gully erosion is necessary for the historic Browse Guard Station and other prehostic sites near Mill Creek. This treatment covered approximately 0.5 acres to the southwest of the Browse Guard Station. The purpose is to reduce the amount of downcutting and water that is being directed toward two cultural resources sites. Installation occurred on July 29-30, 2002 with a follow up treatment on November 7, 2002.

**Photo 1 – The log erosion barriers installed have successfully captured nearly 5 inches of sediment from 2 storms. The barriers also have been successful at diverting the water flow from both the Browse Guard Station and pre historic cultural resource sites in the area.**

I. **Monitoring Narrative:**

Noxious Weed and Invasive Plant Monitoring

Monitor new locations of scotch thistle and implement control actions as specified in the Noxious Weed Amendment to the Dixie Forest Plan (2000). A current scotch thistle outbreak has occurred in Harmon Creek approximately 0.5 miles south of the fire perimeter. Also of concern is a noxious weed infestation that can occur along the Browse road due to increased fire traffic that orginated from a Scotch thistle source located at the Incident Command Post. This monitoring will require 2 field days (crew of 2 on horse or hiking) and 1 day to assemble the monitoring report.

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

| | | Unit | # of | WFSU | Other | # of | Fed | # of | Non Fed | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **Line Items** | **Units** | **Cost** | **Units** | **SULT $** | **$** | **units** | **$** | **Units** | **$** | **$** |
| | | | | | | | | | | |
| **A. Land Treatments** | | | | | | | | | | |
| Cultural Resource | sites | 3,000 | 2 | $6,000 | | | $0 | | $0 | $6,000 |
| Protection | | | | $0 | | | $0 | | | |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| *Subtotal Land Treatments* | | | | $6,000 | | | $0 | | $0 | $6,000 |
| **B. Channel Treatments** | | | | | | | | | | |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| *Subtotal Channel Treat.* | | | | $0 | | | $0 | | $0 | $0 |
| **C. Road and Trails** | | | | | | | | | | |
| Hazard Sign Install | sign | $200 | 1 | $200 | | | $0 | | $0 | $200 |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| *Subtotal Road & Trails* | | | | $200 | | | $0 | | $0 | $200 |
| **D. Structures** | | | | | | | | | | |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | | | $0 | | $0 | $0 |
| *Subtotal Structures* | | | | $0 | | | $0 | | $0 | $0 |
| **E. BAER Evaluation** | | | | | | | | | | |
| BAER Team | days | $300 | 40 | $12,000 | | | $0 | | $0 | $12,000 |
| LandSat | scene | $650 | 1 | $650 | | | | | | $650 |
| **F. Monitoring** | | | | | | | | | | |
| Noxious Weed and | days | $300 | 5 | $1,500 | | | $0 | | $0 | $1,500 |
| Invasive Plant Monitoring | | | | | | | | | | |
| **G. Totals** | | | | **$20,350** | | | **$0** | | **$0** | **$20,350** |
| | | | | | | | | | | |

## PART VII - APPROVALS

1. /s/ Mary Wagner — 12/12/2002
   Forest Supervisor (signature) — Date

2. _____ — _____
   Regional Forester (signature) — Date