USDA-FOREST SERVICE

FS-2500-8
Date of Report **June 21, 2001**

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

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

[ ] 2. Interim Report
[ ] 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: Cougar Fire

B. Fire Number: CA-MDF-181

C. State: CA

D. County: Modoc and Siskiyou

E. Region: 5

F. Forest: Modoc National Forest

G. District: Doublehead Ranger District

H. Fire Incident Job Code: 0509 P5F4RX

I. Date Fire Started June 8, 2011

J. Date Fire Contained: June 13, 2011

K. Suppression Cost: approximately $500,000 as of August June 13, 2011

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles 8 miles of Dozerline
2. Fireline seeded (miles): None
3. Other (identify): None

M. Watershed Number: HUC 6 Watersheds: 180102041002 (489 acres) and 18010204117 (1,301 acres)

N. Total Acres Burned: Total NFS acres 1,790

O. Vegetation Types: Ponderosa pine with a small component of white fir and incense cedar; the understory has various shrubs including: Manzanita, bitterbrush, chokecherry, and mountain mahogany.

P. Dominant Soils:

Soil Series	Slope (%)	Rock Outcrop (%)	Surface Soil Texture	Rock Fragments (%)	Erosion Hazard Rating	K-Factor	Hydrologic Group	Acres
Alcot	1-10%	5	Gravelly loamy coarse sand	35	low	.15	A	201
Alcot	5-35%	5	Very gravelly loamy sand	70	Moderate	.15	A	23
Alcot-Neer	5-30%	10	Gravelly loamy coarse sand	35	Moderate	.15	A	1,588
Menzel-Holland	15-40%	25	Gravelly coarse sand	35	Moderate	.15	A	132

Q. Geologic Types: Medicine Lake Highlands in the Cascade Geologic Province

R. Miles of Stream Channels by Order or Class: 0

S. Transportation System

Trails: 0 miles
Roads: 8.83 miles

PART III - WATERSHED CONDITION

A. Burn Severity by total and FS (acres):

Soil Burn Severity (Acres)	Acres	Percent
Unburned	17	1%
Low	442	25%
Moderate	1060	59%
High	271	15%
Total	**1790**	

B. Hydrophobic Soils: 135 acres.

C. Soil Erosion Hazard Rating (acres):

Low	201
Moderate	1,588
High	0

D. Erosion Potential: 1.2 tons per acre

E. Sediment Potential: Due to the lack of surface streams and hydrologic connectivity, the Cougar Fire will have no impact on sediment yield

F. Debris Flow Potential: Debris flow potential has not been exacerbated as a result of the fire.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-3

B. Design Chance of Success, (percent): NA

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

D. Design Storm Duration, (hours): NA

E. Design Storm Magnitude, (inches): NA

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

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

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

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Cougar Fire started on June 8, 2011 and is 1,790 acres in size. The fire includes burned area within two HUC 6 watersheds. There are no perennial or intermittent streams within the fire perimeter. The southern and eastern portions of the Cougar Fire are on gentle slopes. Lava reefs dissect the fire.

The soils are characterized by a deep surface layer of loose sand and gravel sized pumice. This soil type has very rapid infiltration and low erosion potential, even when soil cover is lacking. The climate is Mediterranean, hot in the summer and wet in the winter. Vegetation consists of east side pine with and understory of shrubs. Overall, the soil burn severity was mostly moderate, accounting for 59% of the fire. Due to high soil moisture content at the time of the fire, the surface organic layer was only partially consumed in the acres of moderate soil burn severity, and the subsoil was completely unaffected. Low soil burn severity accounted for 25% of the fire and was found in areas with light fuels. Fifteen percent of the fire area was found to have a high soil burn severity. The area of high burn severity where found where the fuels were continuous and the surface organic layer was completely consumed, leaving bare mineral soil. About half of the area tested in high soil burn severity showed water repellency.

Because of the low erosion potential, gentle slopes, and only partially consumed surface organic layer, the BAER Assessment Team determined that the Cougar Fire has not increased the post-fire watershed response, and has not increased the threat to life and property. The resource threat to the burn area is the potential of establishment of noxious weeds. A request is being made for Noxious Weed Detection surveys to be conducted in the spring/summer of 2012.

Summary of Watershed Response

Hydrologic Response: Due to the lack of surface streams and hydrologic connectivity, the Cougar Fire will have no impact on sediment yield to either the South Tule Lake Sump or Tionesta 6th field watersheds. Changes to the groundwater yield on the 6th filed watershed scale will be negligible because a small fraction of the entire watershed was burned in the fire.

Erosion Response: The soils in the fire area are deep gravelly course loamy sands. The Alcot and Neer Families are the most common soils in the fire area. These soils are characterized by a thick surface layer of loose pumice and gentle slopes (up to 20%). The loose, sandy nature of the surface pumice leads to very rapid infiltration rate and low runoff and erosion potentials. The Menel and Holland Families are found to a lesser extent in the fire area. These soils also have a surface pumice layer but are found on slightly steeper slopes (up to 40%) and include basalt rock outcropping.

Erosion response was determined using the Erosion Risk Management Tool (ERMiT). The parameters used in this model include soil type, soil burn severity, slope steepness, soil cover, and precipitation . The tool models the erosion yield one to 5 years after a wildfire. The erosion yield after the first year is modeled at 1.2 tons/acre, compared to a pre-fire erosion yield of 0.01 tons/acre. The erosion rate quickly decreases after the first year, and returns to pre-fire rates by year five. There will be a short term impact of soil productivity, especially in the high soil burn severity areas, but long term productivity will not be affected. This is a fire adapted ecosystem, therefore there is no emergency related to soil productivity that would require any type of mitigation measure for this fire.

Geologic Response: The Cougar fire is within the Medicine Lake Highlands. The Highlands volcano is a shield volcano that is composed primarily of andesitic lava flows of Tertiary aged materials.

The underlying geology of the medicine lake is andesitic and rhyolitic lava flows. Extrusive formations from several flows that are mainly quaternary in age. Much of the volcanism was plinan in nature and left huge deposits of ash, pumice, tuff and cinders. The area is rife with lava tubes, caves and collapses. Of note are the volcanic glass flows, which are very high in silica content. Slopes tend to be low and extremely rugged. There are no known lava tubes, caves or collapses in the fire area and none were identified during the BAER field survey. There are no geologic resources at risk.

Values at Risk

The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2010-1**, was used to evaluate the Risk Level for each value identified during Assessment:

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	RISK		
Very Likely	**Very High**	**Very High**	**Low**
Likely	**Very High**	**High**	**Low**
Possible	**High**	**Intermediate**	**Low**
Unlikely	**Intermediate**	**Low**	**Very Low**

Life: There are no Forest System 3, 4, or 5 roads within the fire perimeter. There is little traffic within the fire perimeter except during hunting season.

Risk Assessment – Threats to travelers from burned hazard trees falling onto the forest roads within fire perimeter.

Probability of Damage or Loss: Unlikely. Road use is infrequent.

Magnitude of Consequence: Moderate. There could be injury due to trees falling onto vehicles.

Risk Level: Low

Property: There is no private property or facilities within the fire perimeter. Based on the minimal watershed response, the BAER Assessment Team determined that residences and private property adjacent to the fire area were not at an increased risk as a result of the Cougar Fire.

Risk Assessment – Forest Roads

Probability of Damage or Loss: Unlikely. This determination is based upon the lack of channelization and low flow volumes within the affected area that could potentially affect the roads and minimal change in watershed is expected.

Magnitude of Consequence: Minor. The existing drainage structures are expected to be fully functional after the fire because minimal change in watershed response is expected and so minor, if any, road damage would not be expected occur.

Risk Level: Very Low

Water Quality and Quantity: There is no risk to water quality due to the lack of surface streams and hydrologic connectivity.

Risk Assessment – Water Quality

Probability of Damage or Loss: Unlikely. This determination is due to the minimal change in watershed response and the lack of surface streams present.

Magnitude of Consequence: Minor. This determination is due to the minimal change in watershed response. No streams are present which could be affected.

Risk Level: Very Low.

Threats to Soil Productivity: There is no emergency to soil productivity due to low erosion hazard rating.

Risk Assessment – Soil Productivity

Probability of Damage or Loss: Unlikely. This determination is due to the minimal change in watershed response.

Magnitude of Consequence: Minor. This determination is due to the minimal change in watershed response.

Risk Level: Very Low.

Threats to Cultural Resources: Archival research and GIS analysis indicated that 8 cultural resource sites occur within the Cougar Fire perimeter. One of these sites was found during field reconnaissance of the fire; it was impacted by the fire. During fire suppression field work conducted by the line qualified archeologist indicated three original sites were directly impacted by fire line construction made by heavy equipment. These sites will be rehabilitated using suppression funds. Money from fire line rehab will be used to protect the 3 sites next to the dozer lines.

The post fire conditions with the Cougar Fire do not place heritage resources at risk due to erosion, storm runoff, or debris flows.

Risk Assessment – Cultural Resources – threat from erosion on sites.

Probability of Damage or Loss: Unlikely. This determination is due to the minimal change in watershed response.

Magnitude of Consequence: Minor. This determination is due to the minimal change in watershed response. Sites are on very gentle slopes, soils are very porous and little erosion is expected.

Risk Level: Very Low.

Risk Assessment – Cultural Resources – threat of vandalism.

Probability of Damage or Loss: Possible. This determination is due to sites adjacent to forest roads. Sites are not known to the and travel is infrequent on the forest roads within the fire area.

Magnitude of Consequence: Moderate. It is unknown at this time what site value would be lost if vandalism was to occur.

Risk Level: Intermediate. The Forest Archeologist has chosen to not camouflage or barricade the sites, as more attention from the public would be drawn to them.

Threats to Wildlife: The wildlife concerns for the Cougar Fire are: loss of vegetative cover and invasion of non-native noxious weeds. There are no Federally listed species within or directly adjacent to the fire perimeter; therefore, thre are no wildlife concerns with repect to BAER. Due to the lack of list species, no wildlife report was written for this assessment.

Threats to Botany: The potential values at risk for sensitive plants are the stability and viability of sensitive plant populations. However, there are no known occurrences of any threatened, endangered, or sensitive plant species within or adjacent to the Cougar Fire. Therefore, there are no botany concerns with respect to BAER.

Native Vegetation Recovery and Noxious Weeds: No wash stations were available for fire suppression equipment entering the site. Equipment came from CalFire and several northern California forests where a variety of noxious weed species occur, potentially transporting weed seeds to the Cougar Fire area. Cheatgrass, yellow tumblemustard, and woolly mullein are present on and adjacent to the burned area, and were present prior to the fire. Cheatgrass and other non-native plant species may increase in some areas following the fire, but the native plant species here are adapted to fire and have already begun re-sprouting within the burned area. The vegetation can be expected to recover to a mix of native and non-native

vegetation, although the non-native species may increase. The pre-burn presence of non-natives also indicates prior disturbance and an increased vulnerability to noxious weed establishment if noxious weed seeds were transported to the site on fire suppression equipment.

Risk Assessment – Native Vegetation Recovery and Noxious Weeds

Probability of Damage or Loss: Likely. Fire suppression equipment was not washed and the equipment may have carried weed seeds into the fire area.

Magnitude of Consequence: Moderate. If noxious weeds become established, they could displace native vegetation, degrade habitat function, negatively impact wildlife species, and lower ecosystem stability. This effect is considerable and potentially long term.

Risk Level: High.

B. Emergency Treatment Objectives

As noted above, there are no threats to life within or adjacent to the Cougar Fire. Establishment of noxious weeds and the potential degradation of native vegetation exist as a result of the Cougar Fire. For these reasons the primary treatment objectives are to minimize continued degradation of native vegetation. Noxious weed detection surveys will be used to monitor these threats.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land -- % Channel -- % Roads/Trails -- % Protection/Safety -- %

C. Probability of Treatment Success

	1	3	5
Land	n/a	n/a	n/a
Channel	n/a	n/a	n/a
Roads/Trails	n/a	n/a	n/a
Protection/Safety	n/a	n/a	n/a

E. Cost of No-Action (Including Loss): None

F. Cost of Selected Alternative (Including Loss): See Appendix A: Summary of cost-risk analysis.

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology	[X] Soils	[X] Geology	[ ] Range	[ ] Public Information
[ ] Forestry	[X] Wildlife	[ ] Fire Mgmt.	[X] Engineering	[ ] Inter-agency coordinator
[ ] Contracting	[ ] Ecology	[X] Botany	[X] Archaeology	[ ] NRCS
[ ] Fisheries	[ ] Research	[ ] Landscape Arch	[X] GIS	

Team Leader: Cathy A Carlock

Email:ccarlock@fs.fed.us Phone: 530-279-8331 FAX: 530-279-8309

Core Team Members:

- Judy Perkins -Botanist
- Joe Blanchard –Soil Scientist/Hydrologist
- Celia Yamagiwa -GIS
- Mary Flores - Wildlife
- Peggy O'Keefe – Roads Engineer

H. **Treatment Narrative**

The proposed treatments on National Forest System lands can help to reduce the impacts of the fire, but treatments will not completely mitigate the effects of the fire.

The treatments listed below are those that are considered to be the most effective on National Forest System lands given the local setting including topography and access.

Land Treatments

Invasive Plants: An emergency situation has been determined for the recovery of native vegetation due to threats from invasive noxious weed infestation. The unknowing introduction of invasive noxious weeds into areas disturbed by fire and fire suppression has the potential to establish persistent noxious weed populations due to their accelerated growth and reproduction and a release from competition with natives. These persistent populations could affect the structure and habitat function of plant communities within the burn area. Forest Service direction is to minimize the establishment of non-native invasive species to prevent unacceptable degradation of the burned area. Consequently, delayed

assessment of roads, dozer lines, and drop points is necessary to detect the spread and introduction of noxious weeds in the first year after fire. Assessing the establishment of noxious weeds and treating small outlying populations before they expand, will prevent the noxious weeds from becoming serious threats to the recovery of native plants. See weed risk assessment for additional details.

Invasive Plants Treatment

Item	Unit	Unit Cost	# of Units	Cost
TEAMS Contract Surveyor	Day	$950	10	$9,500
GS-11 Botanist	Day	$306	4	$1,224
Total Request				**$10,724**

Channel Treatments

None recommended.

Road and Trail Treatments

None recommended.

Protection/Safety Treatments

None recommended.

I. Monitoring Narrative

None recommended.

Recommendations:

No recommendations.

This report is an initial funding request based on a rapid assessment. If additional treatment needs are identified through more site specific on the ground investigation in cooperation with interested agencies, and noxious weed detection surveys, interim requests for additional funding will be filed. These funding requests will identify the purpose for each treatment, and specific treatment specifications, locations, and number of each treatment.

Part VI – Emergency Stabilization Treatments and Source of Funds

	NFS Lands			
Line Items	**Units**	**Unit Cost**	**# of Units**	**BAER Funds**
A. Lands Treatments				
NoxiousWeed Detection Surveys	Each	$10,724	1	$10,724
			Subtotal Land Treatments	*$10,724*
B. Channel Treatments				
			Subtotal Channel Treatments	*$0*
C. Roads and Trails				
	Each			$0
			Subtotal Roads and Trails	*$0*
D. Protection and Safety				
Interagency Coordination	Days			$0
Sign Installation	Each			$0
			Subtotal Protection and Safety	*$0*
E. BAER Assessment				
Assessment Team	Each	$12,334.00	1	$
			Subtotal Assessment	*$12,334.00*
F. Monitoring				
Treatment Effectiveness	Each			$0
			Subtotal Monitoring	*$0*
G. Totals				
			Previously Approved	n/a
			Totals for this Request	**$10,724.00**

PART VII - APPROVALS

1. /s/ Kimberly H. Anderson — June 22, 2011
   Forest Supervisor (signature) — Date

2. /s/ Daniel J. Jirón (for) — June 27, 2011
   Regional Forester (signature) — Date

All other documents are in the Project Record Binder as well as on the Cougar Fire BAER "O" drive.

Fire Name	Cougar Fire
Location	Modoc National Forest
Date	June 21, 2011

EACH MAP ZONE REPRESENTS A SYSTEM OF LINKED TREATMENTS AND ASSOCIATED VALUES AT RISK

MAP ZONE C - VALUES AT RISK (VAR)

Map link #	***Life and Safety***	Description

PLEASE NOTE: IF PUBLIC SAFETY IS A FACTOR, B/C RATIO SHOULD NOT BE RELEVANT AND SHOULD STRICTLY BE AN ACCOUNTING EXERCISE

Map link #	***Non-Market: Cultural Values***	Description

Map link #	***Non-Market: Ecological***	Description

Map link #	***Market Values: Direct***	Description	Total
			$ -
			$ -

Map link #	***Market Values: Loss-of-Use***	Description	
			$ -
			$ -
			$ -

Probability of experiencing the loss with no treatment (enter as decimal)		
Source of loss probability with no treatment:	**Expert Opinion**	
	Market Resource Value	**$ 0**

TREATMENT DESCRIPTION

Map link #	***Proposed treatment***	Total
No map	Noxious Weed Detection Surveys	$ 10,724.00
		$
		$ 0

Probability of experiencing loss if treatment occurs (enter as decimal)	0
Source of loss probability with treatment: Expert Opinion	
Total Treatment Cost	$10,724.00
VAR CALCULATION RESULTS	
REDUCTION IN PROBABILITY OF LOSS	
EXPECTED BENEFIT OF TREATMENT	$
Expected Benefit/Cost ratio of treatment for market resources only (economically justified if > 1.0)	
IMPLIED MINIMUM VALUE OF PROTECTING NON-MARKET RESOURCE VALUES	
	1

Comments	