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

j.bruggink edit june 28,2006

Date of Report: June 27, 2006

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

[**X**] 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

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Adaven

B. Fire Number: NV-ELD-000063
PCode:

C. State: Nevada

D. County: Nye

E. Region: 4

F. Forest: Humboldt-Toiyabe

G. District: Ely

H. Date Fire Started: June 19, 2006

I. Date Fire Contained: June 21, 2006

J. Suppression Cost: $300,000 (estimate as of 6/20/2006)

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (identify): N/A

L. Watershed Number (HUC): 160600141004, 160600141006

M. Total Acres Burned:
NFS Acres(534) BLM (403) State (0) Private (59)

N. Vegetation Types: Wyoming big sagebrush with indian ricegrass, needle and thread grass, galleta, and squirreltail on the lower elevation toeslope areas. Pinyon pine/juniper with black sage and indian ricegrass on the upper slopes. Pinyon encroachment in the Wyoming sagebrush ranges from moderate in the northeastern section to light through most of the toeslope areas.

O. Dominant Soils: Gravely silt loam, shallow. Surface has quartzite gravel and cobbles, approximately 20-25% cover. Cryptogamic soils (biological soil crusts) were observed throughout the topographically flatter areas of the burn. (There is no published soil survey for this area.)

P. Geologic Types: Quaternary alluvium overlaying Ordovician quartzite bedrock. Intermittent streams drain to the southeast from steep moutainous terrain with rock outcrops to an alluvial valley. A few small springs are located within the burned area.

Q. Miles of Stream Channels by Order or Class: 2 miles of first order intermittent streams

R. Transportation System: Trails: 0 miles Roads: 0.8 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 293 (low) 241 (moderate) 0 (high)

A Burned Area Reflectance Classification (BARC) map was created by the Remote Sensing Application Center (RSAC), and was used to define vegetation afftected by fire at unburned, low, moderate, and high ratings. The BARC map was varified by observation in the field and used to calcuated the burn severity acres presented above. The unburned and low reflectance areas within the burned area perimeter were combined to calcuated the total acreage for low burn severity.

B. Water-Repellent Soil (acres): 0

C. Soil Erosion Hazard Rating (acres): 534 (low) 0 (moderate) 0 (high)

D. Erosion Potential: (tons/acre) (a precison estimate would be good whenever we show results from models such as 1.05 tons/acre +- 50%, I think the documentation for the ERMit models has that info, if not the WEPP model on which it is based has that in the documentation)

Treatment	Year following the fire				
	1st year	2nd year	3rd year	4th year	5th year
Untreated	1.05	0.71	0.16	0.02	0.02
Seeded	1.05	0.2	0.02	0.02	0.02

Values calculated by the Erosion Risk Management Tool (ERMiT) (Robichaud and others, 2006)

E. Sediment Potential: (cubic yards / square mile)

Treatment	Year following the fire				
	1st year	2nd year	3rd year	4th year	5th year
Untreated	672	454	102	13	13
Seeded	672	128	13	13	13

Values based on resuts from the Erosion Risk Management Tool (ERMiT) (Robichaud and others, 2006)

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 85

C. Equivalent Design Recurrence Interval, (years): 25

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 1.8

F. Design Flow, (cubic feet / second/ square mile): 124

G. Estimated Reduction in Infiltration, (percent): 1.2

H. Adjusted Design Flow, (cfs per square mile): 125

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Threats to Human Life

Field reviews within and downstream of the burn confirmed that there are no situations where human occupancy of flood prone areas exists. Therefore, the effects of the fire do not appear to have created any significant threats to human life.

Threats to Property

Field reviews within and downstream of the burn confirmed that there are no situations where private property is within ~~human occupancy of~~ flood prone areas ~~exists~~. Therefore, the effects of the fire do not appear to have created any significant threats to private property ~~human life~~.

Threats to Water Quality

Field reviews within and downstream of the burn confirmed that there are no significant threats to water quality in the intermittent drainages. There will be sediment and ash output and minor, inconsequential changes to chemical quality but the effects to on-site and downstream water quality are expected to be minor.

Threats to Habitat

The canyon bottoms on the west side of the burned area represent potential habitat for Penstemon concinnus, an R4 sensitive species. These plants grow in barren washes and other barren microsites in pinyon/juniper/black sage communities. No plants were located during the field review, but surviving roots and crowns may be present in the area. Invasion of cheatgrass and/or thistle into this system may have a detrimental effect on the suitability of the habitat.

Threats to Long-term Soil Productivity and Ecosystem Integrity

Field reviews within the burn and within older burns in the area indicate there are serious and significant threats to long-term soil productivity and ecosystem integrity. This threat is related to an expected increase in noxious and invasive weeds, primarily scotch thistle (*Onopordum acanthium*) and cheatgrass (*Bromus tectorum*). The threat is due to past management of the area coupled with consumption of rangeland vegetation by the fire.

Past management decisions of allowing fire exclusion, heavy grazing pressure, and invasion of exotic plants has resulted in a burn area where biogeochemical and vegetation succession processes have been interrupted. As a result, desired natural revegetation of the burn area is not expected to occur. An examination of two burned areas, approximately eight and fifteen years old, north of the Adaven fire showed heavy infestation of cheatgrass in unseeded areas and moderate infestation in seeded areas. Perennial grasses are nearly absent in the unseeded toeslope areas of these older burns (similar to the area to be seeded), while slopes and rocky areas show excellent recovery of native perennial grasses. Small patches of unburned areas in the Adaven fire showed low densities of perennial grasses in the lowest elevations, where grazing pressure has probably been heavy in the past. Many of the grasses in the lower elevations were observed growing under sagebrush canopies and in the moderate intensity

areas these grasses were often charred to the base of the crown, limiting the potential for regrowth. The lower portions of the Forest Service land sustained the greatest burn intensity at 87% moderately burned.

Treatment	Total Acres	Percentage of each area		
		Not Burned	Low Intensity	Moderate Intensity
FS lower – to be seeded	174	1.2	11.6	87.2
FS upper – no seeding	360	25.9	49.3	24.8

These acreages are based the Burned Area Reflectance Classification (BARC) map generated by RSAC. The small unburned areas described previously were too small to see in the satellite photos.

The burn is adjacent to a road that receives moderate levels of recreational and residential use. The ranches and homes along the road west of the burned area are heavily infested with scotch thistle, whitetop (*Cardaria draba*), and other weeds. The scotch thistle is less than one mile from the edge of the burned area. In addition, the burned area receives moderate ATV use. Users are primarily residents and guests of the homes and ranches on nearby private land. Their vehicles travel through infested areas before entering the burned area.

It is expected the burn area will see minimal production of native grasses in the lower areas and a rapid expansion of cheatgrass and possibly scotch thistle. This invasion will result in very poor range land condition, increased fire frequency, and associated loss of long-term soil productivity.

Threats to Heritage Resources

Review of records for historic and prehistoric sites in the area confirmed that there are no significant threats to heritage resources.

B. Emergency Treatment Objectives:

The goal of the burned area emergency rehabilitation is to:

- Ensure native plant communities are established in a timely fashion in order to reduce or eliminate a threat to long-term soil productivity and protect the ecological integrity of the ecosystem.

Treatment objectives to achieve the goal are:

- Control expected invasion by cheatgrass (*Bromus tectorum*) through application of native seed mix.
- Control expected invasion by scotch thistle (*Onopordum acanthium*) through herbicide application.

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

Land 90 % Channel NA % Roads NA % Other NA %

D. Probability of Treatment Success:

Treatment	Years after Treatment		
	1	3	5
Land	75	85	90
Channel	NA	NA	NA
Roads	NA	NA	NA
Other	NA	NA	NA

E. Cost of No-Action (Including Loss): $317,400

The no-action cost was calculated using the BAER cost/risk analysis worksheet (USDA Forest Service, 2006). Costs associated with future fire surpression and noxious weed treatment were evaluated in the analysis.

F. Cost of Selected Alternative (Including Loss): $173,321

The cost of the selected alternative was calculated using the BAER cost/risk analysis worksheet (USDA Forest Service, 2006). Direct costs associated with aerial seeding and monitoring of noxious weeds and native vegetation regrowth were evaluated as well as the cost associated with the risk of failure in the first year following treatment.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Ron Hudson

Email: rjhudson@fs.fed.us Phone: 775-778-6122 FAX: 775-778-6199

H. **Treatment Narrative:**

Land Treatments:
Aerial seed 174 acres of Wyoming big sagebrush/ricegrass community type on Forest Service lands with a native seed mix (see table for species) to re-establish native vegetation and control cheatgrass (*Bromus tectorum*). Conduct the seeding application during November 2006, shortly before normally expected snowfall.

The grasses used in the mix are known to be present in the unburned areas within the fire. Seeded species should replace plants that were burned too severely to recover. Unburned islands within the fire should provide a seed source for shrub and forb species. From examination of an old burn a few miles north of the Adaven fire we know that aerial seeding of squirreltail and Indian ricegrass has been successful in this area. Seeds for these species can be difficult to obtain, especially during years with many large fires. If any of these species are unavailable, the seeding rate for the other species should be increased so that the total number of seeds per square foot is at least 60. A cover crop will not be used due to the low probability of success at this site. The site is hot and arid, bordering on a Mojave desert type, and sterile grass or cereal cover crops are not likely to grow well enough to compete with cheatgrass.

The following table shows the amount of pure live seed (PLS) targeted for the 174 acres. The price estimates are based on an average price and PLS list from the Ely BLM office. (This is some very expensive seed for emergency response objectives. We need to document that no other alternative species can be used to reach objectives)

Plant Species	Seeding Rate (lb. PLS*./acre)	Pure Live Seeds per Pound*	Estimated Cost of PLS/Lb.**	Pure Live Seed Per Foot^2	Total Cost of PLS for 174 Acres
Squirreltail (*Elymus elymoides*)	5 lb.PLS/ac	192,000	$29.57	22.0	$25,725.90
Indian ricegrass (*Achnatherum*	7 lb.PLS/ac	141,000	$17.09	22.7	$208,815.62~~,922~~

hymenoides)					
Galleta (*Hilaria jamesii*)	4 lb.PLS/ac	160,000	$47.36	14.7	$32,962.56~~16,480~~
TOTAL	**16 lb/ac**			**59.4**	**$79,504.08**

Monitor the above land treatments for up to three (3) years for implementation success and effectiveness in meeting project objectives. If monitoring indicates these treatments are ineffective or less than desirable, the monitoring team may develop alternative treatments and request subsequent funding.

Aerial seeding was selected over less expensive seeding methods, such as ATV or range drill, because it would not disturb the soil. Soil distrubance would likely be very harmful to cryptogamic soils, which are very fragile (especially when dry), as well as creating conditions that favor noxious weed establishment.

Livestock will not be permitted to graze on the seeded area for at least two years after the treatment. If monitoring indicates that invasive plants, lack of recovery, or unauthorized livestock use are concerns, the timeline to reintroduce livestock grazing will be extended by one year, or until rehabilitation objectives have been met.

Channel Treatments: None

Roads and Trail Treatments: None

Structures: None

I. **Monitoring Narrative:**

Scotch thistle and whitetop

~~For a period of three years after the fire (2007, 2008, and 2009), roads in t~~The burned area will be monitored for the presence of noxious weeds. New weed locations will be documented with GPS positions and photographs following Forest Service protocols. Local weed treatment crews will conduct the monitoring and treat with herbicide as necessary. Monitoring will occur at least once in early summer and once in fall to prevent weeds from maturing in the burned area. Monitoring levels may be increased if weeds are detected in the area. If additional monitoring of treatments is necessary beyond 1 year, an interim 2500-8 request will be submitted. A monitoring report following the first year monitoring results will be submitted before any interim requests are made.

Cheatgrass

~~For a period of two years, m~~Monitor four (4) line-intercept transects strategically placed within the burn perimeter. Line intercepts will also measure effectiveness of seeding treatment. Local or forest staff will conduct the monitoring. Each transect will be read twice ~~yearly~~ (spring and fall) in 2007~~ and 2008~~.

If the above monitoring indicates treatment has been ineffective or less than desirable, the monitoring team may decide to request additional funding to re-seed with the same or alternate seed mix or spray acreage infested with thistle. If monitoring of treatments beyond 1 year is needed, a justification and interim request will be submitted for year 2. A monitoring report following year 1 results will be submitted before any requests are made for funding of monitoring in year 2.

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

Line Items	Units	Cost	Units	SULT $	$		units	$	Units	$	$
A. Land Treatments											
Aerial Seeding	acres	58	174	$10,092	$0			$0		$0	$10,092
Seed	acres	456.92	174	$79,504	$0			$0		$0	$79,504
Implementation Team	total	1,000	1	$1,000	$0			$0		$0	$1,000
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$90,596	$0			$0		$0	$90,596
B. Channel Treatments											
NA				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treat.				$0	$0			$0		$0	$0
C. Road and Trails											
NA				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road & Trails				$0	$0			$0		$0	$0
D. Structures											
NA				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Structures				$0	$0			$0		$0	$0
E. BAER Evaluation											
Team of 2 specialist	total	3,000	1	$0	$3,000			$0		$0	$3,000
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Evaluation				$0	$3,000			$0		$0	$3,000
F. Monitoring											
Invasive Species	total	2,000	1	$2,000	$0			$0		$0	$2,000
Seeding Vegetation	total	2,500	1	$2,500	$0						$2,500
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$4,500	$0			$0		$0	$4,500
G. Totals				**$95,096**	**$3,000**			**$0**		**$0**	**$98,096**

Formatted: Font: (Default) Arial, 11 pt

BIBILIOGRAPHY

Hulen, J.B., F. Golf, J.R. Ross, L.C. Bortz, and S.Robert. April 1994. Geology and Geothermal Origin of Grant Canyon and Bacon Flat Oil Fields, Railroad Valley, Nevada. AAPG Bulletin, V. 78, No. 4, Pages 596-623.

Miller, J.F., R.H. Frederick, and R.J. Tracey. 1973. Precipitation-Frequency Atlas of the Western United States, Volume III Nevada. U.S. Department fo Commerce, National Oceanic and Atmospheric Administration, National Weather Service

Robichaud, Peter R.; Elliot, William J.; Pierson, Frederick B.; Hall, David E.; Moffet, Corey A. 2006. Erosion Risk Management Tool (ERMiT) Version 2006.06.20. Moscow, ID: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Available online at http://forest.moscowfsl.wsu.edu/fswepp/.

USDA Forest Service. 2006. Burned Area Emergency Responce (BAER) Website. Available at: http://fsweb.gsc.wo.fs.fed.us/baer/.

USDI Bureau of Land Management and USGS Forest and Rangeland Ecosystem Science Center. 2001. Biological Soil Crusts: Ecology and Management, Technical Reference 1730-2. Bureau of Land Management, Denver, CO. 110 Pp.

U.S. Geological Survey (USGS). September 1999. The National Flood-Frequency Program: Methods for Estimating Flood Magnitude and Frequency in Rural Areas in Nevada. USGS Fact Sheet 123-98

PART VII - APPROVALS

1. _____ _____
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date