

SADDLE COMPLEX



FS-2500-8
BURNED-AREA REPORT

Date of Report: 10/3/2011

BURNED-AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST**A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds
☐ 2. Accomplishment Report
☐ 3. No Treatment Recommendation

B. Type of Action

- ☒ 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 DESCRIPTIONA. Fire Name: Saddle Complex (Idaho Portion) B. Fire Number: ID-SCF-011175C. State: IDAHO D. County: LemhiE. Region: R-4 F. Forest: Salmon-ChallisG. District: North Fork Ranger District H. Fire Incident Job Code: P4GA5TI. Date Fire Started: 08/18/2011 J. Date Fire Contained: 0% will not be contained until significant weather event occurs.K. Suppression Cost: \$1,911,160 as of Sept 30, 2011**L. Fire Suppression Damages Repaired with Suppression Funds**

1. Fireline waterbarred (miles): 1.27 miles
2. Fireline seeded (miles): None
3. Other (identify): Hazard tree removal along the length of the 7.8 mile 60065 road

M. Watershed Number: Horse Creek 1706020701N. Total Acres Burned: 16,700 acres (Salmon-Challis)
NFS Acres(16,700) Other Federal () State () Private ()O. **Vegetation Types:** Vegetation consists of Lodgepole Pine, Subalpine fir and Douglas-fir/grouse whortleberry, beargrass, pinegrass and Idaho Fescue.P. **Dominant Soils:** The most common soil type is Granitic soil EOCT-4, which is a shallow to moderately deep, light color, has loamy sand to sand textures, 30-50% gravel and 0 to 20% cobble and stone. The most

common soil derived from granitic (G120c) parent material on the cool-moist aspect is soil IUCE-4. Soil IUCE-4 is shallow to moderately deep, brown in color, has loamy sand textures, 15 to 35 percent gravel and 5 to 20 percent cobble and stone. This soil is well covered by vegetation and litter. The more common soils derived from granitic (G120cn) parent material on the cold-moist aspect are soils EPCT-m and EOCT-4. Soil EPCT-m is moderately deep, light in color, has loamy sand textures, 20 to 30 percent gravel and 0-5 percent cobble and stone. Soil EOCT-4 is moderately deep, light in color, has loamy sand textures, 15 to 20 percent gravel and 30 to 60 percent cobble and stone.

Q. Geologic Types: The dominant geologic type is granitic, the majority can be summarized by the landtypes G109j-1 (Strongly Dissected Cryic Basinland in Granite), G109d (Granitic Cryic Headlands), G120c (Strongly Dissected Mountain Slopelands in Granite) and G120cn (Strongly Dissected Mountain Slopelands In Granite).

G109j-1: This landtype occupies a position lower than the surrounding land. This may be a result of displacement from the original position by faulting or uplift. This unit is characterized by a well incised dendritic pattern, convex slopes, and concave drainage bottoms. Near surface rock and rock outcrops occur over 10-20 percent of the area. The drainage gradients are relatively flat, usually less than 8 percent. Slopes average between 30-60 percent. Large meadows occur along the streams. The difference in relief is about 800 feet. This landtype occurs between 6400 and 7200 feet. The granitic rock suite forms the bedrock.

G109d: This landtype comprises the headlands of minor drainages in the cryoplanated lands and was formed by the accumulation of snow and ice, usually on the windward side of the ridge. This was the initial development stage of a cirque. Soil and rock materials were not carried by major ice currents, nor were the bedrock deeply stripped. Fan shaped dissections have developed due to the concentrations of water on the steep slopes. The slopes are concave, have 55 to 70 percent slope gradients, are 1000 to 2000 feet long and are mapped at elevations above 6500 feet. These lands occur adjacent to and usually on the windward side of glaciated areas. The granitic and border zone rock suites form the bedrock.

G109c: The dominant slope forming process on these lands is fluvial action. Side slopes are steep with numerous dissections from 30 to over 50 feet in depth. These dissections are often less than 500 feet apart. The slopes are generally north and west facing with gradients of 50 to 65 percent. Ridges are relatively sharp with little exposed bedrock. Because of the numerous deep drainages there are strongly contrasting aspects. In this unit, however, the dominant aspect is cool and moist. Dry and warm aspects may range up to 40 percent of the unit. This unit has been mapped at elevations between 4000 and 6500 feet. The granitic and border zone rock suites form the bedrock.

G120cn: The dominant slope forming process on this landtype is fluvial action. The slopes are dissected by drainages spaced less than 500 feet apart and entrenched 30 – 50 feet in depth. Slopes are generally north and east aspects, are convex, with slope gradients of 50-65 percent and are mapped at elevations between 4500 and 6500 feet. Inclusions of warmer aspects may occupy up to 30 percent of the unit. The granitic rock suite forms the bedrock.

Landtype No.	Dominant Climate	Soil No.	Slope Range	Inherent Erosion Hazard¹	Slump Hazard²
G109j-1	Dry	EOCT-4	30-60	4-5	2
G109j-1	Moist	EOCT-4	30-60	3-4	1
G109c	Dry	IUCE-4	25-60	3-4	1
G109c	Moist	IUCE-4	25-60	3-4	1
G120cn	Cold Moist	EPCT-m, EOCT-4	50-65	3-4	1
G109d	Moist –Wet	IOCT-4	40-70	2-3	1

¹**Inherent erosion hazard** – Rated for bare soil conditions according to five qualitative classes. These classes are based on the ability of the soils to take in water, the resistance of the soil surface to dispersion under the impact of rainfall and surface water movement, the effect of coarse fragments that reduce surface detachment, and the effect of topography. Climate was considered a constant.

Rating Classes: 1- Very Low, no appreciable hazard of erosion.

- 2 - Low, Sufficiently resistant to erosion to permit exposure of bare soil under minimal precautionary restrictions.
- 3 - Moderate, Sufficiently resistant to erosion to permit limited and temporary exposure of bare soil during development or use.
- 4 - High, Unprotected bare soil will erode sufficiently to severely damage productive capacity or will yield high volumes of sediment.
- 5 - Very High, Unprotected bare soil will erode sufficiently to severely and permanently damage the productive capacity of the soil or will yield excessively high volumes of sediment.

²Slump Hazard – The relative hazard for lineal bow-shaped failure of slopes to occur in any given year under natural conditions. The area as a whole has a relatively low hazard for these kinds of failures. Most of them will occur on finer textured soils that are in seeps, low spots or at the toes of slopes. A few have occurred as a structural failure in weathered bedrock or slippage along joining planes in the bedrock.

Rating Classes: 1 – Very Low, 2 – Low, 3 – Moderate, 4 – High, 5 – Very High

R. Miles of Stream Channels by Order or Class: Perennial streams within the fire perimeter totals 50.91 miles. Named perennial streams include: East Fork Reynolds Creek (4.23 miles), Horse Creek (7.07 miles), Saddle Creek (2.74 miles), Woods Fork Horse Creek (2.58 miles) and Unnamed Streams (34.30 miles).

S. Transportation System

Trails: 0.64 miles Roads: 20.92 miles of system roads, 17 miles of non-system roads

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3,160 (low) 6,920 (moderate) 3,849 (high) 2,771 (unburned)

B. Water-Repellent Soil (acres): 3,849

C. Soil Erosion Hazard Rating (acres):
4,930 (low) 8,583 (moderate) 3,187 (high)

D. Erosion Potential: 10-15 tons/acre

E. Sediment Potential: 4,700-7,100 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 1-3 (grasses), 2-5 (woody), 10-50 (conifers)

B. Design Chance of Success, (percent): 80%

C. Equivalent Design Recurrence Interval, (years): 100

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 4.2

F. Design Flow, (cubic feet / second/ square mile): Each design was specific to pipe location and drainage area.

G. Estimated Reduction in Infiltration, (percent): 23% Decrease

H. Adjusted Design Flow, (cfs per square mile): 63% Increase

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Field reviews within and downstream of the burn perimeter identified the following BAER Values at Risk:

- 1. Roads: Due to the vastness and severity levels of the burn, hillslope erosion and run-off rates are expected to increase along the main access routes to the Gattin ranch properties including Salmon-Challis roads 038, 065, 044, as well as the Woods Creek and Horse Creek Pass Roads. During the BAER team field review, it was noted that many inside ditches, ditch relief pipes and culverts are either plugged, or not large enough to appropriately carry anticipated runoff volumes and sediment loads.



Figure 1. Year-round residence at Gattin Ranch.

- Forest Development Road 60044 – Several inside ditches are currently full, as well as numerous inside ditch relief pipes are presently blocked or not large enough to transport higher runoff rates. Failure of these features could result in the loss of the road prism.



Figure 2. Typical non-function ditch relief pipe.

- Forest Development Road 60065 – Several drainage features including drain dips, inside ditches, ditch relief pipes and culverts are currently blocked, not functioning, or not of appropriate size to carry larger drainage runoff. Failure of these features could result in the loss of road prism and exacerbate sediment delivery to the Upper Horse Creek, the Woods Fork and Horse Creek stream systems. This route provides the only access to year round residences at the Gattin Ranch. Even short periods of closure would leave residents unable to access food and medical services.



Figure 3 Example of undersized culvert needing improvement to increase the flow and debris passage capacity.



Figure 4. Example of culvert needing modification to avoid road closure, damage to infrastructure, and provide for aquatic organism passage.

- 2. Buildings: It was also noted that with increased runoff potential, housing directly below the quicksand bog area, is at a slight risk of flooding.
- 3. Municipal Water: The public water supply system for the Gattin ranch is also located in the quicksand bog drainage and has the potential to be damaged from fire related flood flows. Due to successful burnout operations, the quicksand bog riparian filter strip was left unburned and much of the area surrounding the drainage was kept to low and moderate burn levels, which should mitigate the risk of flooding and damage to the property or water system.
- 4. Water Quality and Listed Species Habitat – In addition to the potential failure of drainage features along FD roads, 044 and 065 non-system roads and user created routes within the Horse Creek drainage area are steep and unmaintained. The potential for these roads to transport sediment and increase runoff to Horse Creek is high. Aquatic resources of concern include Horse Creek and its tributaries. Horse Creek has populations two Federally listed fish species; Bull Trout and Steelhead. Fire effects on these aquatic resources include the potential of increased stream sedimentation from surface and road erosion and the increased potential for debris flows within the fire perimeter.



Figure 5. Non-system unauthorized route contributing sediment to Horse Creek.

- 5. Soil Productivity – Fire effects include the potential for increased soil erosion and stream sedimentation until vegetative recovery has restored ground cover to pre-fire conditions. Although the fire burn was intense in the Horse Creek/Woods Fork drainage, the severity levels were intermixed throughout, scorching ground cover and woody debris in isolated areas, while leaving root crowns and larger debris on a majority of the hillslopes.



Figure 6. Regrowth on Bear grass root crowns.

- 6. Native Plant Communities - The threat of invasive species spread presents a concern with respect to the goal of maintaining native desirable plant communities in order to maintain the structure and function of the local ecosystem. Invasive species concerns include known noxious weed source

vectors and high use/traffic areas such as FDR 065, 044, the Horse Creek Hot Springs and campground, as well as within and around the Gattin Ranch.

The critical values at risk and threats to them have a high risk with a likely probability of damage or loss and moderate magnitude of consequence.

Saddle Complex BAER Risk 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

Probability of Damage or Loss: The following descriptions provide a framework to estimate the relative probability that damage or loss would occur within one to three years (depending on the resource):

Very likely- nearly certain occurrence (>90%)

Likely- likely occurrence (>50% to < 90%)

Possible- possible occurrence (>10% to <50%)

Unlikely- unlikely occurrence (<10%)

Magnitude of Consequences:

Major- Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.

Moderate- Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects.

Minor- Property damage is limited in economic value and/or to few investments; damage to natural or cultural resources resulting in minimal, recoverable or localized effects.

B. Emergency Treatment Objectives:

- Temper fire effects on federally listed threatened species (steelhead and bull trout) by reducing the amount of sediment delivered to streams.
- Lessen potential post fire effects on the existing transportation system by providing drainage systems on Forest System roads that are adequate to move additional post fire runoff while protecting infrastructure.
- Conduct unauthorized route closure and stabilization (installing drainage and ripping) on a user created, non-system route within the Horse Creek drainage. -This is to reduce potential post fire effects to listed aquatic species habitat and water quality.
- Mitigate negative effects on long-term ecosystem function by spraying noxious weeds during the first year following fire.

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

Land **80** % Channel ___ % Roads/Trails 90 % Protection/Safety ___ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	90	90
Channel			
Roads/Trails	80	90	90
Protection/Safety			

E. Cost of No-Action (Including Loss):_ **\$698,200 (includes rehab and restoration required to repair damage from storm events immediately following fire.**

F. Cost of Selected Alternative (Including Loss):_ **Treatment cost + 20% loss with treatments installed (\$98,000+ (.20(\$698,200)) = \$234,000**

Values at Risk Summary

MAP ZONE A	Value Type	Value at Risk	Implied Value and/or Benefit Cost
	Life and Safety	No	
	Non-Market: Cultural Values	Yes	
	Non-Market: Ecological Values	Yes	
	Market Values: Direct	Yes	\$ 100,000
	Market Values: Loss of Use	Yes	\$ 126,000
	Total Market Resource Value		\$ 226,000
	Proposed Treatment		\$ 94,440
	Reduction in Probability of Loss		0.70
	Expected Benefit of Treatment		\$ 158,200
	Exp B/C Ratio of Treatment for Market Resources Only		1.7
	Implied Minimum Value (IMV) of Protecting Non-Market Resource Values		Justified

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input type="checkbox"/> Range	<input type="checkbox"/>
<input type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input checked="" type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input type="checkbox"/> Archaeology	<input type="checkbox"/>
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

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H. Treatment Narrative:

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments: Invasive and Noxious plants will be treated where found in the fire area. This treatment is considered a monitoring treatments as it is an Early Detection Rapid Response to the fire. It is described under Monitoring.N/A

Channel Treatments: N/A

Roads and Trail Treatments:

The objective of the emergency response treatment is to protect and mitigate the loss to road infrastructure and reduce the risks to critical listed species habitats and downstream water quality.

The treatments are designed to increase the flow and debris passage capacity at road crossings.

A total of 9 perennial channel culverts, 2 ephemeral channel culverts and 23 other drainage features (install rolling dips, clean or replace cross drain culverts) would be implemented to increase flow and debris passage anticipated as a result of the changed condition in fire area.

Culvert #	Existing size	Anticipated Flow	Recommended size to accommodate adjusted peak flows and increased debris passage.
12	None	12-14 cfs	24 inch
15	24 inch	86-99 cfs	60 inch
24	24 inch	84-93 cfs	60 nch
26	15 nch	9-12 cfs	30 inch
28	None	12-14 cfs	30 inch
29	24 inch	175-207 cfs	60 inch
32	24 inch	45-54 cfs	48 inch
33	24 inch	45-54 cfs	36 inch
34	15 inch	18-22 cfs	24 inch
35	24 inch	56-71 cfs	54 inch
36	24 inch	24-31 cfs	42 inch

All culverts will be buried $\frac{1}{2}$ of their depth to allow for a natural stream substrate and provide for aquatic organism passage to meet Forest Service direction. Flow capacities were modeled for open channel flow with natural substrate occupying $\frac{1}{2}$ of pipe volume.

See attached map for locations of culvert replacements and drainage feature improvements.

Protection/Safety Treatments: Warning signs will be placed on roads entering the fire area from the Idaho and Montana sides warning visitors of potential hazards they might encounter in the fire area.

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.)

Description- Due to the potential for invasive species spread and adverse impact on the native plant communities of the local ecosystem, one site visit is needed during the 2012 growing season in an effort to perform Early Detection Rapid Response (EDRR).

Purpose- Invasive plants are a serious threat to the stability and function of native plant ecosystems. Often these plants rapidly colonize a burned area, reducing other plant abundance and diversity. There is a real potential for Spotted Knapweed, among other invasive plants, to take a foothold within the disturbed area if it is not identified and treated within the first growing season after the fire.

Location- 38 miles of road including the 60044, 60065, 60067 and the 60304 roads within the burned area perimeter present a concern, due to the presence of noxious weed species (Spotted Knapweed) and known infestations within and adjacent to this corridor.

Design- Perform Early Detection Rapid Response to Locate and treat new and known invasive and noxious plant species infestations during early stages of spread. Treatment is to prevent the spread of invasive and noxious plants beyond pre fire conditions. Select herbicide, application rate, and time of application based upon specific weeds being treated, and access to the location of the potential invasion.

Part VI – Emergency Stabilization Treatments and Source of Funds

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands			All Total \$
			# of Units	BAER \$		# of units	Fed \$	# of Units Non Fed \$	
A. Land Treatments									
				\$0	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Land Treatments</i>				\$0	\$0		\$0	\$0	\$0
B. Channel Treatments									
				\$0	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0	\$0	\$0
C. Road and Trails									
Culvert Modification IDIQ Contract	Unit	6,496.00	11	\$71,456	\$0		\$0	\$0	\$71,456
Road Drainage Work (dips, inside ditch)	Unit	4,000.00	1	\$4,000	\$0		\$0	\$0	\$4,000
Unauthorized Route Closure and Stabilization	Unit	4,355.00	1	\$4,355	\$0		\$0	\$0	\$4,355
COR Pete Schuldts	Days	298.00	14	\$4,172	\$0		\$0	\$0	\$4,172
Hydrologist	Days	181.00	3	\$543	\$0		\$0	\$0	\$543
Implementation Leader	Days	345.00	3	\$1,035	\$0		\$0	\$0	\$1,035
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Road & Trails</i>				\$85,561	\$0		\$0	\$0	\$85,561
D. Protection/Safety									
Warning Signs and Installation	Unit	200.00	2	\$400	\$0		\$0	\$0	\$400
				\$0	\$0		\$0	\$0	\$0
				\$0	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Structures</i>				\$400	\$0		\$0	\$0	\$400
E. BAER Evaluation									
David Deschaine	Days	345	7	\$2,415	\$0		\$0	\$0	\$2,415
Jeremy Back	Days	181	7	\$1,267	\$0		\$0	\$0	\$1,267
Pete Schuldts	Days	298	3	\$894	\$0		\$0	\$0	\$894
Diane Schuldts	Days	335	2	\$670	\$0		\$0	\$0	\$670
<i>Insert new items above this line!</i>				---	\$0		\$0	\$0	\$0
<i>Subtotal Evaluation</i>				\$5,246	\$0		\$0	\$0	\$5,246
F. Monitoring									
EDRR									
Diane Schuldts	Days	335	10	\$3,350	\$0		\$0	\$0	\$3,350
John Miller	Days	150	7	\$1,050	\$0		\$0	\$0	\$1,050
Gary English	Days	120	6	\$720	\$0		\$0	\$0	\$720
Katrina Knight	Days	120	6	\$720	\$0		\$0	\$0	\$720
Kallie McFarland	Days	120	6	\$720	\$0		\$0	\$0	\$720
Jake Speich	Days	110	6	\$660	\$0		\$0	\$0	\$660
Brandon Heaton	Days	110	6	\$660	\$0		\$0	\$0	\$660
Materials/Supplies	Unit	5,000	1	\$5,000	\$0		\$0	\$0	\$5,000
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Monitoring</i>				\$12,880	\$0		\$0	\$0	\$12,880
G. Totals				\$98,841	\$0		\$0	\$0	\$104,087
Previously approved									
Total for this request				\$98,841					

PART VII - APPROVALS

1. James P. Tucker for October 4, 2011
Forest Supervisor (signature) Date

2. _____
Regional Forester (signature) _____
Date