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

Date of Report: 7/28/03

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: Gramm Complex

B. Fire Number: WY-MB2F-000081

C. State: Wyoming

D. County: Albany/Carbon

E. Region: 2

F. Forest: Medicine Bow Routt National Forest

G. District: Laramie Ranger District

H. Date Fire Started: 7/14/03(Grm);7/16/03(6Mile)

I. Date Fire Contained: 7/23/03(Grm); 7/22/03(6Mile)

J. Suppression Cost: 1.88 million (6/24/03)

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 7.0 (Grm); 3.6 (6Mile)
2. Fireline seeded (miles): 7.0 miles (Grm); 1.4 miles (6Mile)
3. Other (identify): See 7/21/03 Suppression Rehabilitation Plan

L. Watershed Number: 101800100203(Grm); 101800020101(6Mile)

M. Total Acres Burned: 920(Grm); 200(6Mile)
NFS Acres(**100%**) Other Federal ( ) State ( ) Private ( )

N. Vegetation Types: Lodgepole pine

O. Dominant Soils: Typic Haplocryalfs and Typic Dystrocrepts that are loamy-skeletal

P. Geologic Types: Metatsedimentary and Metavolcanic rocks

Q. Miles of Stream Channels by Order or Class: 1.0 miles perennial(Grm) 0.6 miles intermittent(Grm) 0.4 miles perennial(6Mile) 0.3 miles intermittent(6Mile)

R. Transportation System

Trails: 1.0 miles (Grm); 0.0 miles (6Mile) Roads: 7.75 miles (Grm); 0.0 (6Mile)

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 432(Grm) (low) 183(Grm); (moderate) 305(Grm); (high)
140(6Mile) (low) 0(6Mile) (moderate) 60(6Mile) (high)

B. Water-Repellent Soil (acres): 250 acres (approximently 67 percent of high severity burn area)

C. Soil Erosion Hazard Rating (acres):
225 (20%) (low) 785 (70%) (moderate) 110 (10%) (high)

D. Erosion Potential: 7.2 tons/acre

E. Sediment Potential: 1080 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): N/A – no land treatments recommended

C. Equivalent Design Recurrence Interval, (years): N/A – no land treatments recommended

D. Design Storm Duration, (hours): N/A – no land treatments recommended

E. Design Storm Magnitude, (inches): N/A– no land treatments recommended

F. Design Flow, (cubic feet / second/ square mile): N/A – no land treatments recommended

G. Estimated Reduction in Infiltration, (percent): N/A – no land treatments recommended

H. Adjusted Design Flow, (cfs per square mile): N/A– no land treatments recommended

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Gramm:

Fire Effects Summary: The Gramm fire occurred in tributaries to Boswell Creek, which is tributary to the Laramie River above Jelm, Wyoming. The 920 acre fire burned lodgepole pine in a mosaic pattern around the perimeter of the fire, with a high intensity crown fire in the center of the burn area. High severity burn areas comprise approximately one-third of the burn area. Strongly hydrophobic soils were found at the soil surface on about 40 to 50 percent of the high severity burn areas. The hydrophobic layer was low at depths greater than one inch in these

areas. Fine organic matter and unburned roots were found in the majority of field sample sites in the high severity burn areas and conditions are generally conducive to natural revegetation.

Potential Threats to Ecosystem Integrity: Increased erosion, runoff and the potential for noxious weeds spreading in the burn area are all potential threats to ecosystem integrity after fires. Due to the fire consuming vegetative and ground cover, as well as the hydrophobic soil conditions, a moderate degree of increased erosion and runoff are expected in the high severity burn areas. Most soils in the area are on moderate to flat slopes and have a moderate post-fire erosion rating for rill and gully formation. The high severity burn areas do generally have viable root systems just below the soil surface as well as seed sources from in and around the burn area which will allow natural revegetation to occur. Stream channels and riparian areas were unburned or burned in a mosaic pattern. The channels are small, low gradient, and still contain ground cover and/or woody debris that will minimize channel erosion. Erosion and increased streamflows are likely within the range of natural variability for this landscape and may have some adverse effects on roads in the area, but do not pose a significant risk to ecosystem integrity.

Musk thistle, a noxious weed, is present within and adjacent to the burn area. Ground disturbance from the fire may have created conditions conducive to the spread of musk thistle and other noxious weeds. *Spread of noxious weeds in the burn area could adversely affect the composition and function of vegetation in the area.*

Potential Threats to Life: Burned trees (snags) falling can be a significant hazard after fires. Snags posing an immediate hazard along open roads were removed as a result of fire suppression activities. The Gramm area is easy to access and receives heavy public use, including use from nearby residential properties. Potential for injury or death from burned trees falling exists for anyone within the burn area over the next several years.

Flooding as a result of increased runoff after fires can increase the risk of drowning. There are no known residences in floodprone locations for at least 10 miles downstream of the fire, where any flooding would have reached the Laramie River and pose an insignificant risk from flooding.

Potential Threats to Property: Increased runoff has the potential to damage property. The greatest risk is to roads particularly *within and downhill of the high severity burn* areas. *National Forest System Roads (NFSR) 549 (Vienna Road) and 518 as well as a crossing in the abandoned railroad grade are at risk from potential erosion of the road surface and fill as well as threats to road stream crossings from increased runoff from the burn area.* No infrastructure *downstream* of the burn area is believed to be at risk from increased runoff.

The headwaters of a tributary of Boswell Creek cross NFSR 549 twice within the fire perimeter in Section 10. At both crossings, the tributary is a small swale, with no defined stream channel. An 18 inch culvert is located at both crossings. The increased flow from the fire may cause the swale to flow water during spring runoff for several years, however the culvert capacity appears to be sufficient due to the small size of the watershed (less than ¼ square mile) and the fact that the stream has not flowed enough water to create a channel under pre-fire conditions. This same tributary crosses NFSR 549 south of the fire, about ½ mile downstream of the railroad grade crossing. The tributary is likely still a swale, rather than a defined channel, and has a very low gradient. This downstream crossing has a low risk, even with increased flow from the fire as it currently runs very little water during runoff and has a very gently gradient.

NFSR 518 has one stream crossing located at the northern fire perimeter. The fire perimeter is the road in this location, and the headwaters tributary crossing is an aspen riparian area with no

defined stream channel. As there is no burned area above this crossing, so it is not at risk from fire effects. Gramm Creek crosses 518 near the town of Gramm, however none of the watershed above of this crossing was burned, and so there is no fire effects risk to this crossing either.

The old railroad grade which runs through the fire area has had the tracks removed, and the grade is drivable through the fire area. Four stream crossings are located along this grade which may have increased flows from the burned area. Heidrich Creek crosses the railroad grade west of the burned area in Section 9. This crossing is judged to not be at risk since less than 25% of the watershed above this crossing was within the fire perimeter and only 15% of the watershed was moderate to high severity burn. The existing culvert capacity should be sufficient for the expected small increase in flow.

The tributary of Boswell Creek that crossed the Vienna Road also crosses the railroad grade just east of the Vienna Road. An 18 inch culvert is located at this crossing, which again is a swale, with no signs of a scoured channel. This culvert is in good condition and should be able to accommodate any expected increases in streamflow.

The headwaters of a tributary of Gramm Creek crosses the railroad grade in Section 10. A 36 inch culvert is located at this crossing, which is a swale with no defined stream channel. This culvert is also in good condition and should be able to accommodate any increases in flow conditions.

A major tributary of Gramm Creek crosses the railroad grade near the section line between sections 3 and 10. This stream is located in a wide valley with wet meadows and numerous beaver dams both above and below the railroad grade. Beaver Dams had been built above the grade, covering two culverts, (both 36 inch culverts). A third, 42 inch culvert is located in the fill, but is approximately 6 feet higher in elevation than the other two culverts. The fire burned most of the beaver dam that covered the two lower culverts, however other beaver dams, on either side currently keep water from flowing through the culverts. One of the 36 inch culverts is flowing a small amount of water and there appears to be minor piping both through the fill and around some of the culverts. Approximately 2/3rds of the watershed above this crossing is within the fire area, and about 25% of the watershed has a high severity burn. The existing culverts provide enough flow capacity to accommodate projected flow increases from the fire, but currently flow through the culverts are impeded by debris and lack of a direct flow path to the culverts. This crossing and the associated 50 foot fill above the culvert is at risk of failure.

Threats to Public Water Supply Systems: The City of Laramie diverts surface water from the Laramie River near the Town of Woods Landing. The Gramm Fire is located in the headwaters of two tributaries of Boswell Creek, which flows into the Laramie River approximately 10 miles above Woods Landing. The Gramm Fire burned 920 acres or approximately 0.6% of the watershed of the Laramie River above Woods Landing. A low frequency, high intensity rainstorm could increase suspended sediment concentration at the water intake, requiring additional cleaning of filtration equipment. The risk of this occurring would be low, from 2 to 5%. Due to the low probability of occurrence, short term disturbance and lack of effective treatment options, no treatment is recommended.

Summary of Emergency Watershed Conditions: *Based on our evaluation of the fire effects, we have determined that emergency watershed conditions exist as a result of potential risks to property (damage to NFSR 549, 518 and the abandoned railroad grade) and ecosystem integrity (spread of noxious weeds).*

SixMile:

Fire Effects Summary: The Sixmile Fire occurred in the headwaters of SixMile Creek and another unnamed tributary to the North Platte River. The 200 acre fire burned in a mosaic pattern. High intensity burn areas comprise approximately 30 percent of the burn area. Strongly hydrophobic soils were found at the soil surface on about one-third of the high severity burn areas. The hydrophobic layer was low at depths greater than one inch in these areas. Fine organic matter and unburned roots were found in the majority of field sample sites in the high severity burn areas and conditions are generally conducive to natural revegetation.

Potential Threats to Ecosystem Integrity: Increased erosion, runoff and the potential for noxious weeds spreading in the burn area are all potential threats to ecosystem integrity after fires. Due to the fire consuming vegetative and ground cover, as well as the hydrophobic soil conditions, increased erosion and runoff are expected in the high intensity burn areas. Most soils in the area are on moderate slopes and have a moderate post-fire erosion rating for rill and gully formation. The high severity burn areas do generally have viable root systems just below the soil surface as well as seed sources from in and around the burn area which will allow natural revegetation to occur. Large portions of small headwater stream channels were burned and may concentrate flows and cause channel erosion in localized areas. Erosion and increased streamflows are likely within the range of natural variability for this landscape and do not pose a significant risk to ecosystem integrity. The Platte River Wilderness, which is managed to allow natural process to dominate the landscape, is immediately downstream of the fire area.

Noxious weeds were not observed but may be present within and adjacent to the burn area. Ground disturbance from the fire may have created conditions conducive to the spread of noxious weeds. *Spread of noxious weeds in the burn area could adversely affect the composition and function of vegetation in the area.*

Potential Threats to Life: Burned trees (snags) falling can be a significant hazard after fires. The SixMile burn area is difficult to access with no roads or trails and receives limited public use, therefore potential for injury from burned trees falling is very low.

Flooding as a result of increased runoff after fires can increase the risk of drowning. There are no known residences in floodprone locations for at least ten miles downstream of the fire, where any flooding would have reached the North Platte River and pose an insignificant risk from flooding.

Potential Threats to Property: Increased runoff and streamflow after fires have the potential to damage downstream infrastructure. There are no roads located downstream of the fire, however there is an abandoned jeep trail, now an abandoned USFS trail. The trail fords Sixmile Creek approximately 1.5 miles downstream of the fire. Flows will increase slightly at this crossing as only 12% of the watershed above the crossing is within the fire perimeter, with only about 4% of the watershed having a high severity burn. There is a low risk of increased erosion that may occur as a result of the slightly increased flows, however as the trail is abandoned there is no risk of infrastructure loss.

Threats to Public Water Supply Systems.
The Town of Saratoga diverts surface water from the North Platte River approximately 46 miles downstream of Sixmile Creek. The Sixmile Fire burned 0.2% of the watershed of the North Platte above the diversion. A very high intensity rainstorm (25 to 50 year recurrence interval) this summer could contribute enough ash laden runoff to temporarily increase and suspended

sediment concentration at the water intake, which would require the town to either suspend diverting water or increase cleaning of filtration equipment. The risk of this occurring is low, perhaps as low as 2 to 5%. Due to the low probability of occurrence, short term disturbance and lack of effective treatment options, no treatment is recommended.

Summary of Emergency Watershed Conditions: Based on our evaluation of the fire effects, we have determined that no emergency watershed conditions exist as a result of the Sixmile fire.

B. Emergency Treatment Objectives:

Land Treatments:

Hazard Information: Minimize the risk of injury or death by providing information on risks and abatement actions for hazards associated with being in a burn area.

Noxious Weed Monitoring: Identify populations of noxious weeds within the burn area as early as possible so effective treatments can be planned and implemented to control noxious weeds and ensure ecosystem function.

Roads and Trail Treatments:

NFSR 549 and 518 road systems: Improve road drainage to accommodate expected increases in runoff in high severity burn area and minimize damage to road system.

Old Railroad Grade Stream Crossing: Ensure culverts are clean and drainage pattern goes into culvert under 50 foot abandoned railroad grade, to minimize risk of crossing failure and significant sediment input into tributary to Gramm Creek. Due to limited access hand crews and tools are recommended for this work.

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

Land **n/a** % Channel **n/a** % Roads **50** % Other **n/a** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	N/A		
Channel	N/A		
Roads	50	80	80
Other	N/A		

E. Cost of No-Action (Including Loss): **$24,205** Includes: failure of railroad grade crossing and associated environmental impact; increased maintenance and infrastructure loss on NFSR 549 and 518; loss of ecosystem integrity due to noxious weeds. Does not include: Potential injury or loss of life.

F. Cost of Selected Alternative (Including Loss): **$10,275**

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology (C.2Purchase) [**X**] Soils (T.John) [ ] Geology [ ] Range [ ]
[X] Forestry (C.Cobb) [ ] Wildlife [ ] Fire Mgmt. [ ] Engineering [ ]
[ ] Contracting [ ] Ecology [ ] Botany [ ] Archaeology [ ]
[ ] Fisheries [ ] Research [ ] Landscape Arch [ ] GIS

Team Leader: Dave Gloss

Email: dgloss@fs.fed.us Phone: 307.326.2510 FAX:307.326.5250

H. **Treatment Narrative:**

The following treatments have been proposed to mitigate the threat to life, property, and loss of site productivity:

Land Treatments:

Hazard Information: Provide information to potentially affected parties on the potential risks (snags, burned root holes) and actions to minimize risks associated with burn areas. Send letters to residents in the vicinity of the burn area; post information and signs at local businesses and access points to burn area.
Noxious Weed Treatments: Monitor within fire perimeter to determine if existing noxious weed populations are expanding and develop treatment objectives if necessary to control spread into burn area.

Roads and Trail Treatments:

NFSR 549 and 518 road systems: Applies where road traverses high intensity burn area: a) install up to five new relief culverts, b) construct up to 15 new driveable dips, and c) reestablish drainage on road template and ditch.

Old Railroad Grade Stream Crossing: Clean debris and re-establish drainage to three culverts under old railroad grade on tributary to Gramm Creek (T12N, R78W, center of boundary line between Sections 3 and 10).

I. **Monitoring Narrative:**

Monitoring will focus on implementation and effectiveness of BAER treatments. Implementation monitoring will be provided by on-site work supervisors and include documentation of the number, type, location and that road and trail treatments are implemented. Effectiveness monitoring will determine if road drainage is adequate to accommodate expected flows and determine if abandoned railroad grade culverts remain open and able to accommodate expected streamflows. Effectiveness monitoring is planned for three periods: late summer 2003; early summer 2004 and late summer 2004. A Monitoring Plan will be submitted to the Regional BAER Coordinator in 2003. Annual BAER monitoring and accomplishment reports will be sent to the Regional Office in 2003 and 2004.

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

			NFS Lands				Other Lands			All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$	units	$	Units	$	$
A. Land Treatments										
Hazard Info	ea	550	1	$550	$0		$0		$0	$550
Monitor Weeds	days	100	5	$500	$0		$0		$0	$500
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Land Treatments				$1,050	$0		$0		$0	$1,050
B. Channel Treatments										
N/A				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
New Culverts	ea	600	5	$3,000	$0		$0		$0	$3,000
New Driveable Dips	ea	75	15	$1,125	$0		$0		$0	$1,125
Existing rd drainage	mi	500	3	$1,500	$0		$0		$0	$1,500
Railroad culverts	ea	300	1	$300	$0		$0		$0	$300
				$0	$0		$0		$0	$0
Subtotal Road & Trails				$5,925	$0		$0		$0	$5,925
D. Structures										
N/A				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
Survey Team	days	200	10	$2,000	$0		$0		$0	$2,000
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Evaluation				$2,000	$0		$0		$0	$2,000
F. Monitoring										
	days	200	4	$800	$0		$0		$0	$800
				$0	$0		$0		$0	$0
Subtotal Monitoring				$800	$0		$0		$0	$800
G. Totals				**$9,775**	**$0**		**$0**		**$0**	**$9,775**

PART VII - APPROVALS

1. */s/ Mary H. Peterson* — **7/28/2003**
   Forest Supervisor (signature) — Date

2. **/s/Greg Griffith (for)** — **7/31/2003**
   Rick D. Cables — Date
   Regional Forester (signature)