

**P. Geologic Types: 90% Minnelusa Formation and 10% Spearfish Formation**

Q. Miles of Drainage (Stream) Channels by Order or Class:

Order 1: **2.6**      Order 2: **1.5**      Order 3: **0.7**      Order 4: **1.7**  
Order 5: **1.8**      **Note: All streams are ephemeral.**

R. Transportation System

Trails: **0 miles**      Roads: **12.5 miles system roads, 3.8 miles non-system roads, 2.4 miles county Road**

### **PART III - WATERSHED CONDITION**

- A. Burn Severity (acres):    **826** (low)      **2,187** (moderate)      **0** (high)  
Forest Service                **482** (low)      **1,597** (moderate)      **0** (high)  
Private                        **344** (low)      **590** (moderate)      **0** (high)
- B. Water-Repellent Soil (acres):      **0**  
Forest Service                              0  
Private                                        0
- C. Soil Erosion Hazard Rating (acres):  
   **772** (low)      **0** (moderate)      **2,241** (high)
- D. Erosion Potential: **60 tons/acre**
- E. Sediment Potential: 1550 cubic yards/square mile

### **PART IV - HYDROLOGIC DESIGN FACTORS**

- A. Estimated Vegetative Recovery Period, (years): 3-5
- B. Design Chance of Success, (percent): 75
- C. Equivalent Design Recurrence Interval, (years): 10
- D. Design Storm Duration, (hours): 1
- E. Design Storm Magnitude, (inches): 1.86
- F. Design Flow, (cubic feet / second/ square mile): 119
- G. Estimated Reduction in Infiltration, (percent): 33
- H. Adjusted Design Flow, (cfs per square mile): 380

### **PART V - SUMMARY OF ANALYSIS**

A. Describe Watershed Emergency:

#### **Threats to Life and Property**

**Field reviews within the burned area and downstream of the burned area confirm that threats to life are unlikely except in the occurrence of an unusual flood-producing storm and someone driving the roads and being in the wrong spot at the wrong time. Threats to property (homes) are not likely as the nearest house is 18 miles downstream. There are four Forest Service roads at risk. Three inches of rain fell on the fire causing problems with the roads. Culverts were not able to handle the runoff and ditches were plugged. All of this resulted in water running down and over the road removing the gravel surface and**

depositing ash and mud on the road. Fortunately none of the roads washed out during this event.

Threats to Long-term Soil Productivity and Ecosystem Integrity

Field reviews indicate potential threats to long-term soil productivity and ecosystem integrity. Observations from this and other fires suggest that there will likely be an increase in noxious weed infestations. Two weeds of major concern are leafy spurge and yellow toadflax. Other weeds of concern include hound's tongue, musk thistle, common mullein, Canada thistle, scotch thistle and common St. John wart. All burned areas invaded by noxious weeds will cause a decline in soil quality and productivity.

Degradation of soil quality generally leads to increased erosion rates and sediment yield, causing further impacts to soil productivity. Maintaining soil quality is necessary for long-term soil productivity and ecosystem integrity. Key soil quality factors include infiltration, absorptivity, water holding capacity, ion exchange capacity, carbon and nitrogen cycling and soil food web status.

Threats to Water Quality

Water quality is not of concern in this area. All of the streams in the immediate area and downstream are ephemeral. The nearest perennial stream is 17 miles downstream.

B. Emergency Treatment Objectives:

1. To protect the transportation system investment within the fire area from increased flows from the burned area.
2. To prevent expansion of noxious weeds in the burned area.

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

Land --%                      Channel --%              Roads **0%**                      Other --%

D. Probability of Treatment Success

Years after Treatment			
	1	3	5
Land	--	--	--
Channel	--	--	--
Roads	<b>90</b>	<b>100</b>	<b>100</b>
Other	--	--	--

E. Cost of No-Action (Including Loss): \$258,000

F. Cost of Selected Alternative (Including Loss): \$94,800

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: **Leslie Gonyer**

Email: **lgonyer@fs.fed.us**

Phone: **605-574-2534**

FAX: **605-574-2064**

- 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: **None**

Channel Treatments: **None**

Roads and Trail Treatments: **Culvert Replacement and Installation**

**Objective: The objective of this treatment is to keep the water, ash and mud off of the road and keep the water, ash and mud from flowing down and across the road. If the water is allowed to continue flow on or across the road it will continue to remove the gravel and erode the road prism making the road impassible and damaging the capital investment.**

**Method: Install 16 culverts on four roads. Nine will be new culverts for cross drainage to drain the ditch that now intercepts water from the hillside above. Two culverts will drain the turnpike section of road. Four culverts will replace smaller culverts that did not handle the flow. One culvert will replace a culvert on Williams Gulch that is too small and did not handle the increased runoff.**

Rolling Dips

**Objective: The objective of this treatment is to the drain water from level 2 roads instead of using culverts to prevent damage to the road from increased runoff.**

**Method: Build or improve 10 rolling dips on two level 2 system roads. Additional rolling dips will be placed where side drainages intersect the road. One rolling dip will replace a culvert. Some of the rolling dip outlets need to be armored with rip rap where there is a fill.**

Ditch Reconditioning

**Objective: The objective of this treatment is to recondition the ditch so it can carry water to the next cross drain culvert or rolling dip without having the water flow on the road.**

**Method: Ditches will be cleaned to increase the capacity and accommodate the increased flows from the hillsides above the road and ditch. Material from the ditch will be moved across the road.**

Special Ditch

**Objective: The objective of this treatment is to increase the ditch capacity to accommodate the increased flows. The increased flows are coming from side drainages across alluvial fans so the water is spread out over a large area. The current ditch did not handle the flow and water flowed down and across the road removing gravel and will eventually affect the road template.**

**Method: Construct at 4 locations a large ditch 3' wide and 3' deep to prevent water from flowing onto the road and to capture flow across alluvial fans.**

Road Turnpike

**Objective: The objective of this treatment is to raise the roadbed so the flow captured by the road from an alluvial fan will stay off of the road and stay adjacent to the road in the 'ditch'.**

**Method: A section of road needs to be built up to keep the water, ash and mud off of the road. Water will run along the road and will cross through two culverts that are included**

**above. The purpose of this will be to intercept flow for a long distance along the road and then direct the water through the culverts.**

Structures: None

- 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.)

Noxious Weed Monitoring: **The purpose of this monitoring is to monitor areas near existing weed infestations to determine if the spread of noxious weeds is occurring. Current infestations were observed in patches within the fire area and on adjacent NFS and private land. Monitor areas for up to three years for presence and persistence of noxious weed species. Monitoring will be conducted from August through mid-October in 2005 and mid-May through mid- October of 2006 and 2007.**

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

Line Items	Units	Unit Cost	# of Units	WFSU SULT \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	Total \$
<b>A. Land Treatments</b>										
None				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Land Treatments</b>				\$0	\$0		\$0		\$0	\$0
<b>B. Channel Treatments</b>										
None				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Channel Treat.</b>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
Culvert Rplcmnt & Inst	each	2500	16	\$40,000	\$0		\$0		\$0	\$40,000
Rolling Dips	each	300	10	\$3,000	\$0		\$0		\$0	\$3,000
Ditch Reconditioning	miles	1000	6.4	\$6,400	\$0		\$0		\$0	\$6,400
Special Ditch	each	2000	4	\$8,000	\$0		\$0		\$0	\$8,000
Road Turnpike	each	10,000	1	\$10,000	\$0		\$0		\$0	\$10,000
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Road &amp; Trails</b>				\$67,400	\$0		\$0		\$0	\$67,400
<b>D. Structures</b>										
None				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Structures</b>				\$0	\$0		\$0		\$0	\$0
<b>E. BAER Evaluation</b>										
<b>Baer Team</b>	each			\$0	\$7,000		\$0		\$0	\$7,000
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Evaluation</b>				\$0	\$7,000		\$0		\$0	\$7,000
<b>F. Monitoring</b>										
<b>Weeds</b>	acres	8	200	\$1,600	\$0		\$0		\$0	\$1,600
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Monitoring</b>				\$1,600	\$0		\$0		\$0	\$1,600
<b>G. Totals</b>				<b>\$69,000</b>	<b>\$7,000</b>		<b>\$0</b>		<b>\$0</b>	<b>\$76,000</b>

## PART VII - APPROVALS

1. /s/ Brad Exton (for)  
CRAIG BOBZIEN, Forest Supervisor

August 2, 2005  
Date

2. /s/ Glenda L. Wilson for  
RICK D. CABLES, Regional Forester

August 10, 2005  
Date