

Date of Report: 07/31/2012

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 DESCRIPTION

** Most of the following information is from Inciweb reported data for the Myrtle Fire*

- A. Fire Names: Myrtle Fire B. Fire Numbers: SD-BKF-120655
C. State: SD D. County: Custer (SD)
E. Region: R02 F. Forest: Black Hills
G. District: Hell Canyon
H. Fire Incident Job Codes: P2G2UD
I. Date Fire Started: July 19, 2012
J. Date Fire Contained: July 24, 2012 (approx. 1800)
K. Suppression Cost: Costs as of July 28th at 2100 hours: \$4,621,317

*** Type 4 Incident Management Team still assigned to fire as this report was being completed.*

L. Fire Suppression Damages Repaired with Suppression Funds

*** Most of the rehabilitation of fire suppression line is currently finished. The fire was still in a “contained” status at the time of this assessment with some active internal burning.*

Fireline waterbarred (miles):

Dozer: 30 miles

Handline: 1 mile

Fireline seeded (miles): *Expected to be seeded this fall (~31 miles)*

Other (identify): Road Damage ~ 5 miles (has been repaired)

M. Watershed Number(s):

The northern half of the Myrtle Fire is located within the headwaters of the Lame Johnny Creek sub-basin, whereas the southern half of the fire is located within the headwaters of the Fall River sub-basin. Both of these sub-basins are tributary to the Cheyenne River, below Angostura Reservoir.

HUC 12	Watershed Name	Watershed Acres	Watershed Acres Burned	Watershed Acres Unburned	Percent Burned (Fire)	Percent Unburned
101201090101	Upper Cold Brook	27,320	2,001	25,319	15%	85%
101201090102	Lower Cold Brook	17,753	2,671	15,122	7%	93%
101201090201	Upper Beaver Creek	22,753	802	21,951	4%	96%
101201090202	Middle Beaver Creek	21,927	4,412	17,515	20%	80%

N. Total Acres Burned: 9,886 acres

NFS: 7,610 acres NPS: 106 acres Private: 2,170 acres

O. Vegetation Types:

Ponderosa pine/forest understory; grassland/forb meadows, Riparian (cottonwoods, green ash, willow shrublands)

P. Dominant Soils: *See Part III, Section C with Soil Map Units and Erosion Hazard Ratings*

Q. Geologic Types:

Undifferentiated metamorphics, metamorphosed sedimentary, metamorphosed graywacke, Deadwood Formation, Madison Limestone and Englewood Formation, Quaternary gravel deposits, and Quaternary alluvium.

R. Miles of Stream Channels by Order: **within the fire perimeter only; totals below do not include other stream channels downstream of contributing burned areas*

Perennial: 3.3 miles

Intermittent: 9.6 miles

Ephemeral: 19.4 miles

Total = 32.2 miles

****** Cold Brook Reservoir, located near Hot Springs, SD, is approximately 15 miles downstream of the fire area. The first storm event caused flash flooding that traveled approximately 6 miles downstream along Cold Brook Canyon and into Wind Cave National Park.

S. Roads and Trails:

State Highway: 3.1 miles Trails (motorized): 0 miles
National Forest System Roads: 24.2 miles Unauthorized Roads (non-system): 14.7 miles
Custer County Roads: 3.3 miles

Treatment Map – A treatment map for other treatments is filed on the O drive at:

<O:\NFS\BlackHills\Program\2520EmergencyBurnAreaRehabilitation\BAER\BKFB\BAERFireDocs\Myrtle2012>

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

** approximate acreages based on field reconnaissance and mapping; BARC product ordered and awaiting post-fire image capture.*

Low/Unburned: ~4,746 Moderate: ~1,300 Moderate/High: ~3,840 High: ---

B. Water-Repellent Soil acres: ~390 acres, scattered in Moderate/High soil burn severity polygons

A thin water repellent layer (2mm or less) was found at the soil-ash interface in moderate burn severity areas. Below this layer, water infiltrated into soils within 10 seconds or less.

Hydrologic Soil Group B dominates the fire area. Although Group B has a moderate infiltration rate when thoroughly wet, the amount of rocks present will increase potential runoff which has been seen across the fire area.

C. Soil Erosion Hazard Rating (acres):

****** Soil erosion hazard acreage is based on individual map units that comprised more than 1% (generally more than 90 acres) of the burned area. Erosion Hazard Ratings for this assessment were obtained from accessing <http://soildatamart.nrcs.usda.gov/> for Hazard of Erosion on Roads and Trails. An erosion hazard rating for burned conditions is not currently available on that web site. In recent past assessments in the southern Hills, the “Hazard of Off-Road or Off Trail Erosion was used, however, in observing erosion occurring before incidents are controlled or soon thereafter within the first year, (fire removing overstory canopy, shrubs and herbaceous material), seemed to better reflect a higher erosion hazard during precipitation events. Using the information rating provided under “Hazard of Erosion on Roads and Trails” for the first season following fire is likely more realistic on what we expect during that first year “emergency”. Then after the area begins to drop conifer needles, snags and has some vegetation regrowth, the landscape systems begin to exhibit more of a similarity to the ratings identified in the “Hazard of Off-Road or Off-Trail Erosion in years 2-4 following the fire.

MUSYM	Soil Map Unit Name	Sum of Acres	% of Fire Area	Erosion Hazard
Q0001E	Bullflat-Mocmont-Rock Outcrop, 10-40% slopes	1201	12%	Severe
Q0005G	Mocmont-Rock Outcrop complex, 40-80% slopes	443	4%	Severe
Q0006E	Shirttail channery loam, 10 - 40% slopes	1687	17%	Severe
Q0300C	Bullflat-Cordeston, dry silt loams,	136	1%	Moderate

	high mica, 2-9% slopes			
Q0304D	Buska-Virkula, high mica loams, dry, 2 - 15% slopes	74	1%	Severe
Q0306C	Cordeston loams, dry, high mica, 2 - 10% slopes, flooded	116	1%	Moderate
Q0307B	Cordeston, dry-Marshbrook loams, 0 -6%, flooded	120	1%	Moderate
Q0608B	Bullflat silt loam, 3-6%	54	1%	Slight
Q0609C	Bullflat- Cordeston, dry silt loams, 2-9%	189	2%	Moderate
Q0619C	Cordeston loam, dry, 2-10%	60	1%	Moderate
Q0620C	Cordeston-Rapidcreek, rarely flooded complex, dry 2-9%	73	1%	Moderate
Q0629B	Hilger cobbly loam, 0-6%	8	0%	Slight
Q0629E	Hilger cobbly loam, 6-40%	20	0%	Moderate
Q0645C	Rapidcreek cobbly loam, dry, 2-10%, rarely flooded	103	1%	Slight
Q0655G	Sawdust-Rock outcrop complex, 40-80%	749	8%	Severe
Q0658D	Rockerville- Gurney complex, 2-15%	291	3%	Moderate
Q0659E	Rockerville-Rock outcrop, complex, 6-30%	67	1%	Severe
Q0665E	Sawdust-Vanocker, dry-Rockerville complex, 10-40%	3022	31%	Severe
Q0678G	Vanocker, dry-Sawdust-Rock outcrop complex, 40-80%	1387	14%	Severe
Q0680D	Ziggy, cool-Colhill complex, 6-15%	77	1%	Severe
Q0704E	Udarents, abandoned gravel pits	9	0%	Moderate
		9,886	100%	

D. Erosion Potential:

Erosion potential for areas mapped as low/unburned within both fire areas is not expected to be much higher than the inherent erosion rate prior to the fire. However, areas mapped as having moderate to high soil burn severity occurred on the extremely steep slopes. These soils are inherently very susceptible to erosion and downslope movement. What little stabilization that was provided by vegetation, litter, and duff layers prior to the fire has now been removed. Significant runoff and erosion has already been observed on these hillslopes in response to a two thunderstorm events. Thus a relatively small change in the hydrologic characteristics of these hillslopes has resulted in a large change in watershed response. This will continue until ground cover can be established.

E. Sediment Potential: 4-9 tons/acre in Moderate Severity Areas 12-16 tons/acre in Moderate/High Severity Areas

***Based on ERMiT modeling and past observations by watershed personnel on the team.

PART IV - HYDROLOGIC DESIGN FACTORS

- A. Estimated Vegetative Recovery Period, (years): 1-3 years for the grassland areas; longer for the Ponderosa pine and areas mapped as moderate to moderate/high soil burn severity.
- B. Design Chance of Success, (percent): 75%
- C. Equivalent Design Recurrence Interval, (years): 2-10 year*
** high intensity, short duration thunderstorms*
- D. Design Storm Duration, (hours): 30 – 60 minutes
- E. Design Storm Magnitude, (inches): 1 inch or greater*
A storm event on 7/24/12 resulted in flash flooding in response to this “typical” storm across the northern half of the fire. Another storm event occurred on 7/25/12 resulting additional runoff and flash flooding in the overall fire area.
- F. Design Flow, (cubic feet / second/ square mile): 300 to 800 cfs flood flows have already occurred within the fire area (*based on post fire flood monitoring surveys/calculations performed by Jessica Gould in other Black Hills NF fire areas*).
- G. Estimated Reduction in Infiltration, (percent): < 30% *
**due to the absence of soil water repellency; however due to the significant amount of bedrock outcropping, cap rock, and colluvial deposits, and the nature of the short duration, high- intensity thunderstorms typical in the burned area, infiltration of rainfall is generally expected to be limited in moderate to high soil burn severity areas.*
- H. Adjusted Design Flow, (cfs per square mile): N/A

PART V - SUMMARY OF ANALYSIS*

** Assessment information will be shared with local cooperators including: NRCS for residents in Custer and Fall River County; Custer County and Fall River County Emergency Management Services Coordinators; South Dakota Department of Transportation; Custer County Roads Department; Wind Cave National Park; and the Bureau of Reclamation (Cold Brook Reservoir).*

- A. Describe Critical Values/Resources and Threats:

Human Life and Safety:

Emergency watershed conditions were identified within and downstream of the Myrtle Fire. Increased runoff (total volume and peak flows), decreased times of concentration, and entrainment of ash, sediment, rock, and other debris within floodwaters poses a threat to human life and safety to residents, forest users, Forest Service employees, and range permittees using the majority of the roads within or immediately downstream of the burned area. Hill slope runoff, ash wash, and flash flooding have already occurred causing blockage and damage to these roads and stream crossings. Because of this, there is a **VERY HIGH RISK** for threats to human life and safety where roads on Forest and private land cross stream channels and drainages that now have a substantially greater potential for flash floods during short duration/high intensity precipitation events.

In particular, the Song Dog Road (NFSR 682) runs through the middle of the fire area and has multiple sections located within or crossing drainages with large areas of intensely burned hill slopes. Many other road segments are located at the base of intensively burned hill slopes that have already or will in the future produce overland

runoff and ash wash across the roadway. Warning signs are necessary to advise road users of flash flooding hazards both during and following rain events. Culvert removal at the junction with Shirttail Canyon and Song Dog Road is also necessary to prevent crossing failure by allowing for un-impeded flood flows at a problem crossing site. This location has two culverts, one installed on each road, which must pass flow from one to the other. However, the upstream culvert is smaller than the downstream and is not correctly aligned.

Cold Brook Canyon Road (NFSR 682.2A) is located immediately adjacent to, crosses multiple times, and/or has long segments located within the Cold Brook Canyon stream channel. Significant flash flooding has already occurred that has resulted in major road blockages and damage. This will continue for the next 3-5 years due to the large amount of intensely burned hill slopes in the contributing watershed and the intense “cloud burst” nature of summer thunderstorms typical of the area. A road closure gate is necessary to close the road to the general public but still allow for administrative access needs. A road closure gate is also necessary for the NFSR 324.1D road that is currently open year-long and accessible from State Highway 385. This road also runs adjacent to, crosses several times, and/or has segments located within the un-named stream channel. Post-storm road clean-up would prove very costly over that time frame for both these lower maintenance level roads. Administrative area closure for other roads throughout the fire area is also necessary and recommended.

There are other Level 2 Roads (currently open) located within the fire that were observed to have localized slope wash, blockage and damage but not along the entire road length. These roads are NFSR 324.1F, 334.1H, 334.1J, 682.2 B, 682.2J and 334.1G. Based on a **HIGH RISK** for threats to human life and property, these roads are recommended for closure for at least one year. Then reassess for extension of a closure or maintenance needs if considering opening the roads for use.

There are Level 1 Roads (currently closed per the Forest travel management decision) located within the Myrtle burned area. These are National Forest System Roads 391.1M, 324, 324.1E, 682.1A (~90% level 1/~10% level 2), 373, 373.1A, 373.1C, 682.2D. While there is potential for localized damage to the roads and there could be risk of injury to humans which would result in these roads being assigned a high risk rating, they are closed to the general public per the travel management decision and therefore were assigned an **INTERMEDIATE RISK**. Because of the risk of damage and risk to humans if they were open, the recommendation for Hell Canyon District is to continue to keep these roads closed according to existing Forest travel management decision.

All residential structures within, immediately adjacent to, or downstream of the Myrtle Fire are located outside and/or above stream channels and floodplain areas and no structures are situated directly at the outlet of hill slope drainages. Field assessment findings for residential structures will be provided to the NRCS to work with residents in Custer County as well as Fall River County residents that live up to 12 miles downstream from the fire and have access roads in the Cold Brook Canyon valley bottom.

Property:

The loss of stabilizing vegetation will increase the likelihood of severe soil erosion and sedimentation associated with intense precipitation events (“typical” thunderstorm events that occur during late spring and summer). Damage to both Forest System roads and non-system roads as a result of previous storms in burned areas on the Black Hills includes the loss of road surface materials, resulting in movement into drainages and the downslope movement of road fills. Deep rutting, rilling, and partial to full washout of fill material on and around existing culverts also occurs. Once fill material on and around culverts is lost, there is an increased potential for the culvert to become part of debris flow following high intensity precipitation events, thus increasing the risk to human life and property downstream.

Due to the emergency watershed conditions present throughout the fire area, especially in Cold Brook Canyon, Cold Spring Creek, and their contributing watersheds; the distinctly identifiable flood source areas; high amount of rock content and steep slopes throughout the fire; the multiple road crossings; and poor road locations; many

roads throughout the fire are at **HIGH RISK** for flood damage, debris blockage, and/or debris flow deposition or slope failure. Recommendations included installation of a Powder River type closure gate for yearlong closure to the general public. After the system stabilizes, then the recommendation is to reassess for maintenance or repair needs for use.

Soil Productivity and Hydrologic Function

Numerous, large contiguous areas within the Myrtle fire have been identified as having moderate or moderate/high soil burn severity. They are located throughout the fire area and not concentrated in any one location or watershed. Thus the entire fire area will have large slope areas that will continue to quickly produce increased runoff in response to typical thunderstorm events.

These areas have a **VERY HIGH RISK** of producing increased post-fire runoff, gully erosion, and localized slope failures. In fact increased runoff and gully erosion and flooding has already been observed in response to two thunderstorms occurring on successive days while fire suppression activities were on-going. The first storm event occurred on Tuesday evening, July 24, 2012 just prior to containment of the Myrtle Fire. The second storm occurred on Wednesday evening, July 25, 2012. Each storm varied in precipitation amount received over the fire area but ranged from approximately 0.25 to 0.5 inches according to nearby weather stations. Although the total storm depth was relatively low, the peak 10-minute rainfall intensities were extremely intense, forcing motorists on Highways 385 and 87 to pull over due to low visibility and unsafe driving conditions. These events have resulted in significant water runoff within the burned area as described previously. The amount of runoff and erosion will continue to increase with each successive storm event. Entire hill slope lengths are already contributing runoff as a result of the first storm event, indicated by the slope wash and rilling observed starting at ridge tops shown in Figure 1.

B. Emergency Treatment Objectives:

- To warn the public and cooperators of impending flash flooding and slope wash throughout the burned area.
- To protect USFS employees, Forest users, and the public working and traveling along roads currently open to the public yearlong.
- To reduce runoff and erosion damages to critical cultural resources eligible for the Historic Register.
- To prevent expansion of existing noxious weeds and establishment of introduced species in the burned area.

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

** Two damaging storm events have already occurred. The event probabilities displayed below reflects that an event has already occurred (i.e. road/trail damage has already occurred from flooding thus treatments have a low probability of being completed prior to a damaging event). The probability of implementing treatments prior to the next damaging storm for all treatments is approximately 30% due to the natural variability associated with the Black Hills convective thunderstorm processes. A damaging storm event does not apply to noxious weeds as it does to other treatments designed to minimize erosion and runoff from burned areas.*

Land (weeds) N/A* Land (hill slopes) N/A % Channel N/A %
 Roads/Trails 5 - 10 % Protection/Safety 90 % Archeology 60 %

D. Probability of Treatment Success

Treatment Type	Years after Treatment		
	1	3	5
Land/hill slope	N/A	N/A	N/A
Weed Treatment	60 - 70%	-	-

Channel	N/A	N/A	N/A
Roads/Trails	90%	95%	95%
Protection/Safety/signs	95%	-	-
Archeology	>85%	100%	-

E. Cost of No-Action (Including Loss): While a monetary cost of a No-Action alternative is unknown, it is known that there would be an immeasurable cost amount associated with the potential loss of human life or injury.

F. Cost of Selected Alternative (Including Loss): The proposed treatments have been designed to have the best possible chances of success to protect human life, property, and critical natural and cultural resources. Complete loss, despite implementation of proposed treatments, is possible, but not expected to occur for the 2-10 year design storms. Refer to the cost summary table for the cost of the proposed treatments associated with the selected alternative.



Figure 1. Typical hill slope runoff, rilling, and erosion starting at ridge tops observed throughout the fire area in moderate/high soil burn severity areas.

The resulting post-fire watershed condition is one in which the drainage network has been extended exponentially, resulting in increased flood magnitudes, decreased time of concentration and thus decreased time to peak, drastically increasing the “flashy” nature of runoff in the burned area. This can be expected to continue for the next 3-5 years based on post-fire watershed response research in the 2000 Jasper Fire by Jessica Gould (2003) in similar geologies to the middle and southern portion of the Myrtle Fire. Flooding resulting from the first storm event has already traveled 6 miles downstream of the burned area in Cold Brook Canyon. Each storm event will extend that distance and it is reasonable to expect that flood flows will extend to the Cold Brook Reservoir 15 miles downstream. On a smaller hill slope scale, each successive storm will also cause slope wash/ash wash until vegetation has started to recover and establish new litter and duff layers to provide effective soil cover.

Threatened/Endangered Species

No Threatened or Endangered wildlife or botanical species are known to occur within the burned area. There is suitable habitat for *Botrychium campestre* and *Botrychium lineare* (Region 2 Sensitive) within the burned area. No suitable habitat or occurrences of Forest Species of Local Concern (SOLC) plant species are currently known to occur within the burned area. There is **NO RISK** associated with T&E status species for the fire area.

Plant Communities - Noxious Weeds

The post-fire threat of increased spread and/or establishment of noxious weeds is a major concern for fire burned areas in the Black Hills NF. The current noxious weed population within the proximity of the fire area is at moderate levels. Approximately 57 acres of various species of noxious weeds have been treated recently. Other occurrences have not been treated. Wind Cave National Park has had an increasing expansion of white horehound, with occurrences expanding on adjacent Black Hills NF land. It is currently listed in Custer County as an emergency declared noxious weed. Based on monitoring of recent and nearby fire areas, a 30% increase in noxious weed spread is generally expected each year following the fire if not treated. Private lands within and adjacent to the burned area may also contain established populations of noxious weeds.

There is also a potential risk for establishment of introduced noxious weed species from other regions due to fire suppression equipment from other areas in the U.S. A weed wash station was set up at the incident command post in Custer, SD but was not initially available during the first few days of suppression efforts. The potential noxious weed increase on Forest administered lands were rated as **VERY HIGH RISK**.

Cultural and Heritage:

The Myrtle Fire area has 21 known cultural sites, a number of which are eligible or already listed on the Historic Register. Only one of these listed sites was identified as threatened by post-fire hillslope runoff and erosion. This site was rated with a **VERY HIGH RISK** of major damage or loss. For the remaining sites, no post-fire threats were identified, resulting in a **VERY LOW RISK**.

BAER Risk Assessment (based on probability and magnitude of consequences)

The BAER Team considered many potential values at risk (VAR). These are documented in a separate table filed on the O drive at:

<O:\NFS\BlackHills\Program\2520EmergencyBurnAreaRehabilitation\BAER\BKFB\BAERFireDocs\Myrtle2012>

The table below lists only those critical values identified as warranting BAER stabilization:

Critical Values-At-Risk	Probability of Damage/Loss	Magnitude of Consequences	Risk
Human Life and Safety:			
Cold Brook Canyon Road (NFSR 682.2A), Threat: Flash flooding with debris	Very Likely	Major	Very High
Cold Brook Canyon, Song Dog Road (NFSR 682), Culvert crossing, Threat: Flash flooding with debris; partial or complete failure	Likely	Major	Very High
Song Dog Road (NFSR 682) – open yearlong to the public, Threat: Flash flooding, debris on road, ash wash, partial road washout/ damage	Very Likely	Major	Very High
NFSR 324.1D (open yearlong, access from Hwy 385), Threat: Flash flooding with debris	Very Likely	Major	Very High
NFSR 682.2E, Threat: Flash flooding with debris	Very Likely	Major	Very High
NFSR 682 Song Dog/Shirt Tail Canyon road crossings (open yearlong; provides access to private inholdings/residences; two successive culverts misaligned with each other). Threat: Flooding, debris blockage, partial to complete failure	Likely	Major	Very High
Rifle Pit and Beaver Creek Roads (off Hwy 385, accessing private inholdings and subdivision; multiple stream crossing structures of various sizes), Threat: Flash flooding with debris; blockage of culverts; partial or complete failure	Possible	Major	High

NFSR 334.1G, Threat: Flooding, slope wash, at least 4 hill side gullies that will cause debris flow across road, washout at these locations	Very Likely	Major	Very High
Property:			
Properties were recognized but no treatments were identified. They were referrals to the NRCS.			
Natural Resources:			
<i>Water Quality</i>			
Water quality issues were identified but were outside the scope of BAER. These issues were referred to Bureau of Reclamation (Cold Brook Reservoir) and Wind Cave National Park (Cold Brook Canyon Watershed and Park Water Supply)			
Natural Resources:			
<i>Soil Productivity and Hydrologic Function</i>			
Moderate and Moderate/High burn severity areas, Threat: Altered physical, biological and/or hydrologic function; erosion; increased runoff, gully/channel debris flows. Potential erosion from livestock utilization of recovering vegetation	Very Likely	Moderate to Major depending on downslope values at risk.	Very High
Natural Resources:			
<i>Plant Communities</i>			
Grasslands/Forb Plant Community	Very Likely	Moderate	Very High
Riparian Plant Community	Very Likely	Moderate	Very High
Ponderosa Pine/Herbaceous Understory Plant Community	Very Likely	Moderate	Very High
Cultural and Heritage Resources:			
Williams Rock Shelter (eligible site), Threat: Slope erosion; ponding of runoff and scour of rock shelter floor/artifacts; erosion of apron/slope	Very Likely	Major	Very High

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input checked="" 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 checked="" type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS

On 07/24/2012, the Hell Canyon District Ranger determined there was a need for a BAER Assessment. The BAER Team Leader was appointed on 07/24/12 and a Formal BAER Team was assembled on 07/25/12. 100% containment was announced on 07/24/12 at 1800 hours. This BAER Assessment was utilized by several Black Hills National Forest employees as a training for BAER.

Team Leaders: Deanna Reyher, Matt Scott

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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:

Soils/Hill Slope Treatments – None (Mitigated Through Road/Watershed Treatments)

Archeological -

- Application of straw wattles and rolled fiber mulch to deflect water and erosion away from the rock shelter.

Roads/Watershed -

- Flash flood warning signs: Based on the post-fire flooding that has already occurred and the change in flood characteristics compared to un-burned conditions, the BAER team recommends post-fire flash flood warnings signs be placed along roads (Cold Brook Canyon Road, Song Dog Road, Rifle Pit Road/ Beaver Creek Road). These warning signs would warn road users and residents of the specific hazard related to post-fire flooding.
- Culvert removal on Song Dog Road and placement of a low water rock crossing.
- Placement of road closure gates on: Cold Brook Canyon Road, 324.1D and 682.2E.

Noxious Weeds Detection and Treatment --

- Noxious weed treatment is planned for approximately 989 acres. Additional detection surveys and treatment of new infestations that are accessible within the fire boundary is recommended. Detection and treatment of weeds in the burned area may occur multiple times within the next year. Treatment will be accomplished using integrated pest management and may be completed by Forest employees or through other options such as contracting.

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.

Monitoring for treatment effectiveness will be performed after major storm events for the next three years. A major storm event is considered 1 inch of rain or greater. Depending on annual variability of weather patterns, it is estimate that 5-7 visits per year following storms will be necessary to monitor treatments. At a minimum monitoring will be necessary after each significant rain/storm event from May through the end of August.

Roads and Flood Warning Signs

Monitoring is needed to check the condition of warning signs and replace as necessary. Monitoring is also needed after each rain event to ensure stability of soil, road drainage crossings and effectiveness of treatments applied to crossings on the Shirttail Canyon and Song Dog Roads. Monitoring of closures on system roads will determine closure effectiveness, soil stability and vegetation recovery. Five monitoring site visits per year for the first year.

Archeology Resources – Monitoring of treatments will occur after major storm events of 1” or more of rainfall to determine effectiveness of treatments.

Noxious Weeds

Monitoring of known population will be performed in addition to the detection surveys for additional noxious weed species or areas. Treatment effectiveness monitoring will also be done to determine any retreatment needs to occur within the twelve month period.

Part VI – Emergency Stabilization Treatments and Source of Funds

A. Land Treatments					
Noxious Weed Treatment	Acres	\$ 202	989	\$199,778	\$0
Straw wattles (9"x20')	Each	\$ 28.0	12	\$336	\$0
Stakes for Straw Wattles	Bundle	\$ 10.0	4	\$40	\$0
Excelsior Erosion Mats	Roll	\$ 50.0	4	\$200	\$0
Staples	Box	\$ 40.0	1	\$40	\$0
Installation Cost (Labor)	Each	\$ 850	1	\$850	\$0
<i>Subtotal Land Treatments</i>				\$201,244	\$0
B. Channel Treatments				\$0	\$0
** NONE **				\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0
C. Road and Trails					
Warning Signs	Lump Sum	\$ 4,800	1	\$4,800	\$0
Mobilization of Equipment	Lump Sum	\$ 2,200	1	\$2,200	\$0
Culvert Removal/disposal (32")	Each	\$ 900	1	\$900	\$0
Road Closure Device (Powder River Gate)	Each	\$ 1,700	6	\$10,200	\$0
Seed	Acre	\$ 650	1	\$650	\$0
Rock Crossing	Each	\$ 2,000	1	\$2,000	\$0
Contract Administration	Days	\$ 400	5	\$2,000	\$0
<i>Subtotal Road & Trails</i>				\$22,750	\$0
D. Structures					
** NONE **				\$0	\$0
<i>Subtotal Structures</i>				\$0	\$0
E. BAER Evaluation					
BAER Team Asses.	Each	\$ 24,000	1	\$24,000	\$0
<i>Subtotal Evaluation</i>				\$24,000	\$0
F. Monitoring					
Noxious Weed Detection Surveys	Acres	\$ 10	478	\$4,780	\$0
Roads/Signs	Day	\$ 400	5	\$2,000	\$0
Hydrologic Monitoring	Day	\$ 400	1	\$400	\$0
Archeology Site/Treatments	Day	\$ 515	4	\$2,060	\$0
<i>Subtotal Monitoring</i>				\$9,240	\$0
G. Totals				\$257,234	\$0
Previously approved					
Total for this request				\$257,234	

PART VII - APPROVALS

1. _____/s/*Dennis Jaeger (Acting)*
Forest Supervisor (signature) _____07/31/2012_____
Date
2. Brian Ferebee (for)
Regional Forester (signature) _____8/3/12_____
Date