

Date of Report: 07/14/2016

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

A. Fire Name: Crow Peak

B. Fire Number: SD-BKF-160370

C. State: SD

D. County: Lawrence

E. Region: R02

F. Forest: Black Hills

G. District: Northern Hills

H. Fire Incident Job Codes: P2KB27

I. Date Fire Started: 06-24-2016

J. Date Fire Contained: 07-04-2016

K. Suppression Cost: \$5,300,000 (as of 07-06-2016 - total not yet available at this time)

L. Fire Suppression Damages Repaired with Suppression Funds

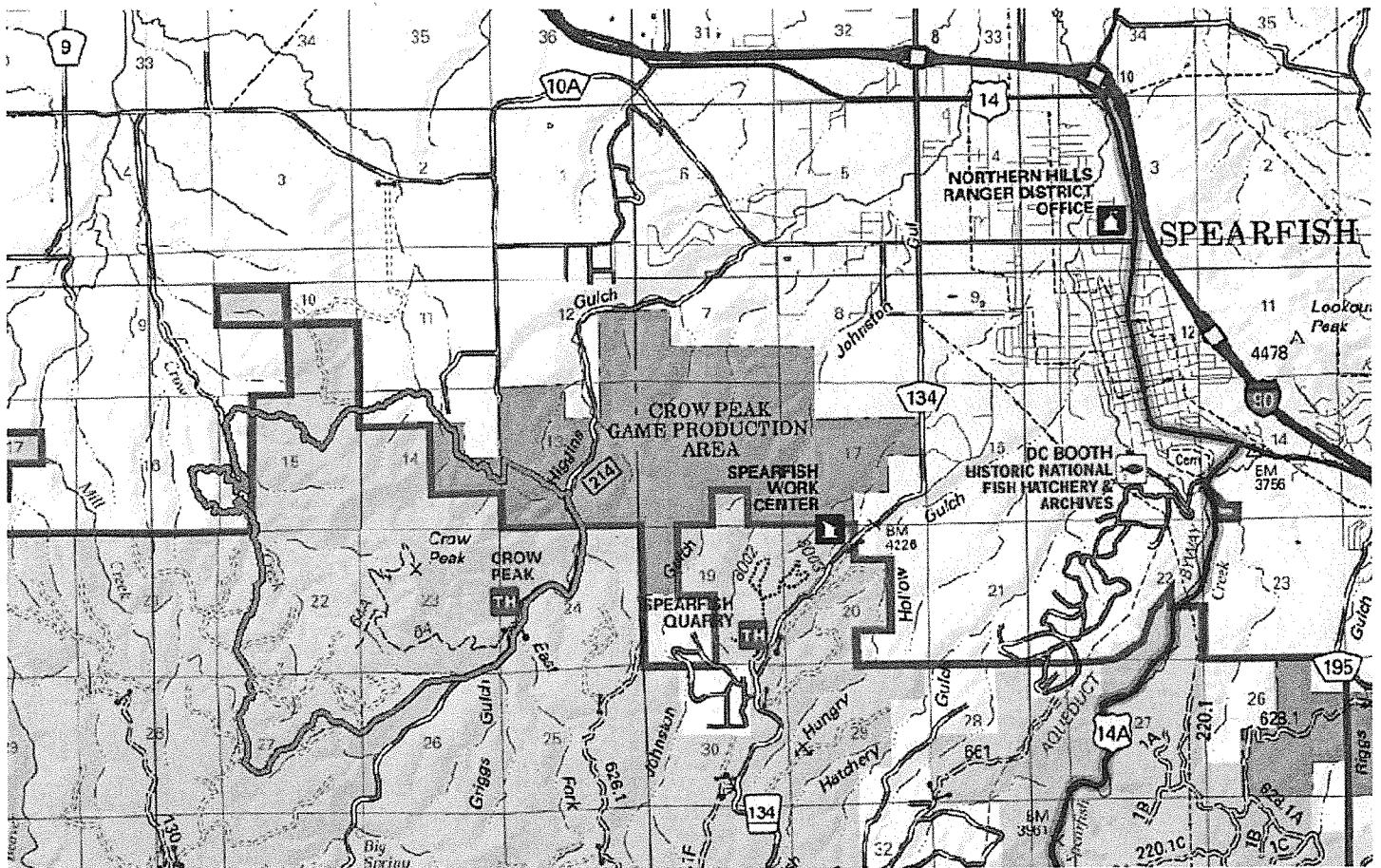
- 1. Fireline waterbarred (miles): Dozer – 8.9 miles; Handline – 1.2 miles
- 2. Fireline seeded (miles): 16.9 miles (will be seeded Fall 2016)
- 3. Other (identify): Road damage: 6.8 miles (NFSR), 6.5 (PVT)

M. Watershed Number:

HUC 12	Watershed Name	Watershed Acres	Acres Burned	Acres Unburned	Percent Burned	Percent Unburned
101202030105	Crow Creek – Redwater	26,141	1,599	24,542	6%	94%
101202030304	Lower Spearfish Creek	43,370	1,109	42,261	3%	97%

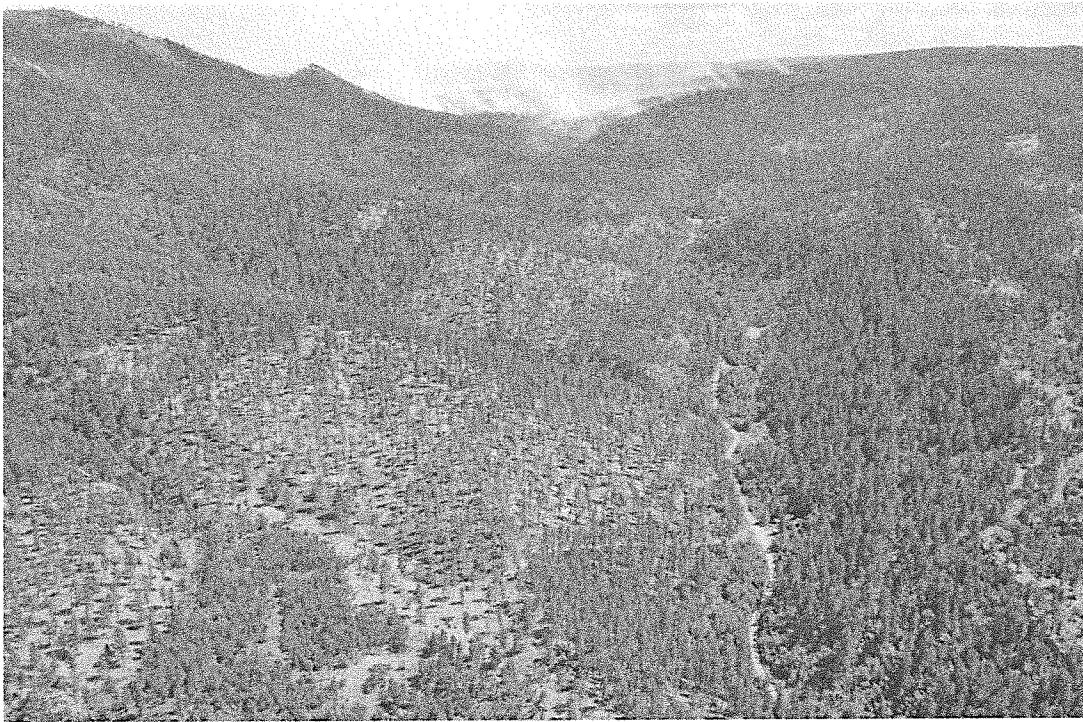
N. Total Acres Burned: 2,733

Acres: NFS (2,352.4) State (196.8) Private (177.3)



O. Vegetation Types: Ponderosa Pine Forest





P. Dominant Soils:

Map Unit Symbol	Soil Map Unit Name	Erosion Hazard	Acres	% of Area
Q0108E	Grizzly-Mineshaft Complex, 10 to 40 percent slopes	Moderate	91.1	3.3%
Q0108G	Grizzly-Mineshaft Complex, 40 to 80 percent slopes	Very Severe	327.9	12%
Q0509C	Citadel-Tollflat Complex, 2 to 12 percent slopes	Slight	14.1	0.5%
Q0510E	Citadel-Tollflat-Danjay Complex, 10 to 40 percent slopes	Moderate	347.7	12.7%
Q0514C	Citadel-Vanocker Complex, 2 to 12 percent slopes	Slight	3.5	0.1%
Q0551C	Rockerville Complex, 2 to 12 percent slopes	Slight	113.9	4.2%
Q0553E	Rockerville, moist-Rock Outcrop Complex, 6 to 40 percent slopes	Moderate	62.4	2.3%
Q0554F	Rockerville, moist-Vanocker-Rock Outcrop Complex, 10 to 60 percent slopes	Severe	8.3	0.3%
Q0560C	Rapidcreek Gravelly Loam, 2 to 10 percent slopes, rarely flooded	Slight	17.6	0.6%
Q0570F	Opechekahta-Citivar-Schaeferville Complex, 20 to 60 percent slopes	Severe	223.0	8.1%
Q0584E	Vanocker-Citadel Complex, 10 to 40 percent slopes	Moderate	227.1	8.3%
Q0585G	Vanocker-Danjay-Hopdraw, moist Complex, 40 to 80 percent slopes	Very Severe	680.5	24.9%
Q0589G	Vanocker-Sawdust, moist-Rock Outcrop Complex, 40 to 80 percent slopes	Severe	611.7	22.4%
Q0918C	Rockerville-Pesowy Complex, 3 to 12 percent slopes	Slight	3.6	0.1%

Q. Geologic Types: Crystalline Core, Limestone

R. Miles of Stream Channels by Order: Stream Order 1 – 6.8 miles; Order 2 – 0.6 miles Order 4 – 1.1 miles

S. Transportation System (miles): Level 1, 5.8 miles; Level 3, 2.0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): High: 354 (13%), Moderate: 725 (26.5%), Low: 1420 (52%), Unburned/Low: 234 (8.6%) (See BARC Map in electronic files)



B. Water-Repellent Soil acres: Estimated to be less than 5%.

C. Soil Erosion Hazard Rating (acres):

Based on inherent soil properties, the NRCS erosion hazard ratings for soils within the Crow Peak Fire are:

Erosion Hazard (Off-Road, Off-Trail)*	Acres
Slight	52.8
Moderate	728.3
Severe	843.0
Very Severe	1,008.4

*Erosion Hazard (Off-Road, Off-Trail) rating from NRCS Web Soil Survey was used. From Web Soil Survey: The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

D. Erosion Potential:

No modeling occurred for this fire based on limited size, critical values and hazards.

E. Sediment Potential: N/A cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

Because there were nominal values at risk, a minimal hydrologic analysis was completed. ERMIT was used to estimate the storm duration and magnitude using the Fort Meade Weather Station which is 25 miles east of the fire. The USGS regression equation was used to estimate flow before and after the fire.

- A. Estimated Vegetative Recovery Period (years): Approximately 2-3 years for grass/forb communities; ponderosa pine will take longer based on life form and in association with the previous fires.
- B. Design Chance of Success, (percent): 75%
- C. Equivalent Design Recurrence Interval, (years): 10
- D. Design Storm Duration, (hours): 3.81
- E. Design Storm Magnitude, (inches): 3.51
- F. Design Flow, (cubic feet / second/ square mile): 36
- G. Estimated Reduction in Infiltration, (percent): <10%
- H. Adjusted Design Flow, (cfs per square mile): 54

PART V - SUMMARY OF ANALYSIS

- A. Describe Critical Values/Resources and Threats:

The Crow Peak Fire was located approximately 4 miles west of Spearfish, SD. Forest Service, State of South Dakota, and private lands were all located within the fire perimeter. The fire occurred on gentle to the near vertical slopes of Crow Peak. A small portion of the fire area burned within the Crow Peak Fire of 2012 (Approximately 150 acres). Elevations in the fire range from approximately 4,000 (bottom of Higgins Gulch) to 5,760 feet (Crow Peak).

Human Life and Safety:

The BAER Team identified emergency conditions for life/safety of Forest users and immediate downstream locations due to increased runoff and erosion within or adjacent to the burned Forest Service lands. The Low Water Crossings on Higgins Gulch Road (NFSR 214) and the private portion of the Crow Creek Road were identified at Very High Risk. High Risks were identified for the Middle 2 Homes along Crow Creek Road (Private). An Intermediate Risk was identified on the Crow Peak and Beaver Ridge Trail (FS), Homes along Higgins Gulch in the Floodplain (Private) and the End 2 Homes along Crow Creek Road (Private). These risks or threats would likely come from increased flash flood risk during short duration/high intensity precipitation events. Structurally compromised burned trees presenting an immediate threat to life/safety were identified by the Fire Resource Advisor as a safety issue. Complete review of the entire burned area for hazardous trees was not completed by the BAER Team. The Crow Peak and Beaver Ridge Trail were treated for snags by the fire personnel to safely insert the BAER Team for reconnaissance.

Property:

The BAER Team has identified some post wildfire threats to various properties. In this narrative the threats identified will be divided into Forest Service and Private for ease of separation by the reader.

Forest Service Property

Very High Risk was identified on the Higgins Gulch Road Erosive Bank Adjacent to Road. No High Risks were identified for Forest Service Property. Intermediate Risks were identified on Higgins Gulch Culvert #2 Upper and Higgins Gulch Road Bridge near Hillsview Road.

Private Property

Very High Risks were identified on Crow Creek Road Culverts, Crumm Driveway Crossing and Nicholas Cabin. High Risks were identified on Private Road Crossings along Higgins Gulch, Oedekoven Cabin Driveway Crossing, Schultz Cabin and Slop Over Road Crossing. Intermediate Risks were identified to homes along Higgins Gulch Road that are in the Floodplain, Oedekoven Cabin and McNenny Fish Hatchery.

Threats may come from increased runoff and erosion within and adjacent to the burned lands.

Natural Resources:

Water-

No emergency conditions were identified for drinking water quality. No watersheds are known to be sources of surface drinking water in this area. Potential impacts to Crow Creek, Crow Creek Pond and Higgins Gulch were rated at a Low Risk.

Soil Productivity and Hydrologic Function-

No emergency conditions were identified for changed hydrologic function, erosion or increased runoff. Overall, these resources were rated as Low Risk.

Threatened/Endangered Species-

Northern long-eared bat is listed as a Threatened species and suitable summer foraging and roosting habitat likely occurs within and adjacent to the fire perimeter. There are no known hibernacula within or immediately adjacent to the fire area. The active season is May 16th-September 30th. Overall, these resources were rated as Low Risk. (Per conversation with District Wildlife Biologist)

Plant Communities-

Field reconnaissance of the fire area was conducted by the Resource Advisors and the Forest Noxious Weed Specialist on July 6, 2016 and prior to burnout operations to further identify and document areas of existing weed infestations and areas particularly susceptible to new infestations. During this site visit scattered, isolated occurrences of oxeye daisy, St. Johnswort, common tansy, Sulphur cinquefoil, houndstongue, common mullein, and Canada thistle were observed within the potential treatment area of the fire. No occurrences of knapweed, leafy spurge, and yellow toadflax were observed but are highly likely to be present. Recent logging operations and activities had created large slash piles that have been burned prior to the Crow Peak Fire, resulting in small, isolated areas of dense patches of Canada thistle. Because of the lack of adequate pre-fire survey data, other Forest priority species may be present but are unknown at this time. Also, noxious weeds observed on private and non-Forest Service lands are similar in species and densities.

This fire has created additional favorable seedbed conditions for the establishment of noxious weed populations. Past fire history on the district has shown that noxious weeds increase significantly after fire in Moderate and High burn severity areas, along with slight increases in Low severity areas. New or expanded infestations are expected in the following areas which include: 100% of the high severity burned areas, 50% of the moderate severity burned areas, and 10% of the low severity areas. Based on past experience, highly disturbed areas from fire suppression activities (which the Forest is not seeking funding) including, dozer lines, hand lines, roads, safety zones, and equipment staging areas can generally be expected to have 50-100% new infestations depending on the degree of disturbance.

Potential treatment areas were identified based upon burn severity, topography, accessibility, and areas of known or likely infestations. The potential for noxious weed infestations in the

treatment area is also greatest based upon past disturbances such as timber harvesting, off-road vehicle use, etc. The District has been treating noxious weeds within the fire area and on the periphery in the years prior to the fire.

An equipment washing station was located in Spearfish to mitigate the potential of new weed species coming from outside the Black Hills. Most of the Crow Peak Fire suppression equipment were from local sources.

Plant communities on Forest Service lands were rated as Very High Risk.

Cultural and Heritage-

No threats were identified to Forest Service eligible Archeology sites.

B. Emergency Treatment Objectives:

The objective of implementing Noxious Weed Detection Surveys and Treatments is to provide for recovery of native vegetation by preventing the establishment and spread of noxious weeds in the recently burned area.

The objective of adding riprap to Higgins Gulch Road is to protect the road. Also, it would prevent users from driving off the road if part of the road is eroded.

The objective of the installation of the Burned Area and Flash Flooding Signs is to protect human life by reminding road and trail users not to proceed through flooded low water crossings and watch for flash flooding when in the burn area.

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

Detection surveys will be ongoing beginning immediately. Weed treatments would likely not begin until the next growing season (or until after the plants have emerged). 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.

Application of riprap on the road/stream bank edge will be completed as soon as funds are available. The Forest Service Construction and Maintenance Crew is planned to be utilized to complete the work.

The signs will be ordered as soon as the funds are approved and installed upon receipt of the signs.

Land (weeds) N/A % Channel -- % Roads/Trails 90 % Protection/Safety 80 %

D. Probability of Treatment Success

		Years after Treatment		
		1	3	5
Land				
Weed Treatment		75%	-	-
Channel				
		-	-	-
Roads/Trails				
Road Riprap		95%	95%	95%
Protection/Safety				
Signs		95%	95%	95%

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 BAER Team considered all known major critical values and they are documented in a separate table located within the Crow Peak Fire BAER electronic files. The following table contains all Critical Values identified as High or Very High.

Critical Values	Threat	Juris-diction	Probability of Damage or Loss	Magnitude of Consequences	Risk
Human Life and Safety					
Crow Peak Trail and Beaver Ridge Trail	Flash Flooding with Debris Flows, Hazard Trees, Rolling Debris	FS	Unlikely	Major	Intermediate
Low-Water Crossing on Higgins Gulch Road	Flash Flooding with Debris Flows, Road Washout/Damage	FS	Very Likely	Major	Very High
Crow Creek Road	Flash Flooding with Debris Flows, Road Washout/Damage	Private	Very Likely	Major	Very High
Homes along Crow Creek Road (Middle 2 Cabins)	Flash Flooding with Debris Flows	Private	Possible	Major	High
Higgins Gulch Road: Erosive Bank Adjacent to Road	Flash Flooding with Debris Flows, Road Washout/Damage, Possible Failure of Road	FS	Very Likely	Moderate	Very High
Private Road crossings along Higgins Gulch Road in flood plain	Flash Flooding with Debris Flows, Road Washout/Damage, Possible Failure of Road	Private	Likely	Moderate	High
Crow Creek Road, Two Road Crossings with 18" Culverts	Flash Flooding with Debris Flows, Debris Blockage, Possible Failure of Crossing Structures, Road Washout/Damage	Private	Very Likely	Moderate	Very High
Crumm Driveway Crossing: Culvert 24"	Flash Flooding with Debris Flows, Debris Blockage, Possible Failure of Crossing Structure, Road Washout/Damage	Private	Very Likely	Moderate	Very High
Oedekoven Cabin Driveway Crossing: Culverts 48", 36" & Two 18"	Flash Flooding with Debris Flows, Debris Blockage, Possible Failure of Crossing Structure, Road Washout/Damage	Private	Likely	Moderate	High
Schultz? Cabin, Crow Creek Road	Flash Flooding with Debris Flows	Private	Likely	Moderate	High
Nicholas Cabin Driveway Crossing: Culvert 24"	Flash Flooding with Debris Flows, Debris Blockage, Possible Failure of Crossing Structure, Road Washout/Damage	Private	Very Likely	Moderate	Very High
Slop Over Road	Flash Flooding with Debris	Private	Likely	Moderate	High

Crossing: Culverts 48" & 24"	Flows				
Natural Resources: Plant Communities					
Grass and Forb Herbaceous Systems	Noxious Weeds and Invasive Species	FS/PV T/State	Very Likely	Moderate	Very High

G. Skills Represented on Burned-Area Survey Team:

- | | | | |
|-----------------|--------------|--------------------|---------------------------------|
| [X] Hydrology | [X] Soils | [] Geology | [X] Range (and Invasive Plants) |
| [] Forestry | [] Wildlife | [] Fire Mgmt. | [X] Engineering |
| [] Contracting | [] Ecology | [X] Botany | [X] Archaeology |
| [] Fisheries | [] Research | [] Landscape Arch | [X] GIS |
| | | | [] Other |

On 07/01/2016, the Northern Hills District Ranger determined that there was a need for a BAER Assessment and issued a designation letter to the BAER Team Leaders. The fire exceeded 500 acres which triggered Forest Service Manual direction to complete an assessment.

Co-Team Leaders: Les Gonyer & Matt Scott Email: mcscott@fs.fed.us Phone: 605-642-4622

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:

Noxious Weeds Detection and Treatment

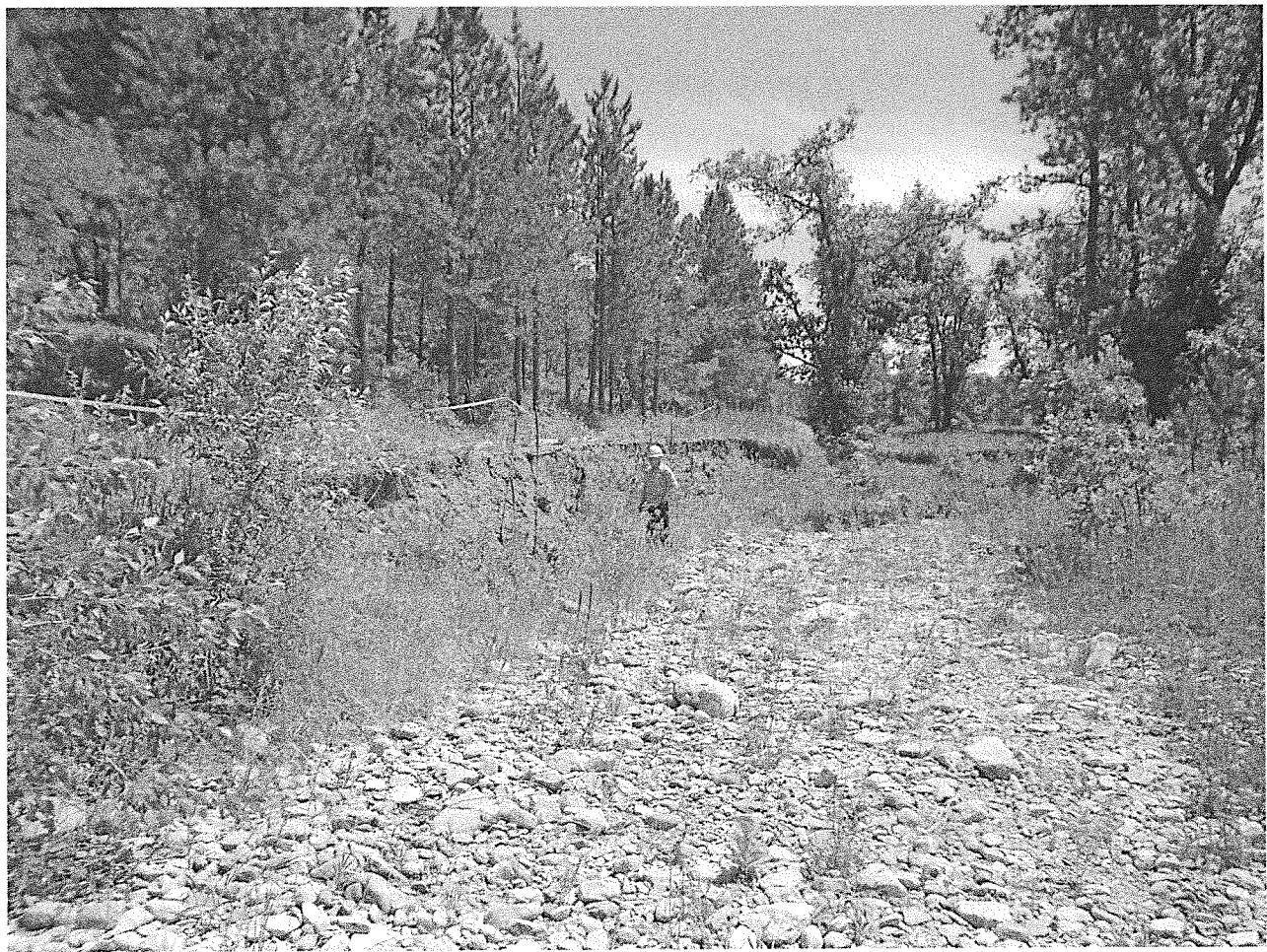
Detection surveys and treatment of known and new infestations within the Crow Peak Fire is recommended. It is expected that it would be necessary to detect and treat weeds within the burned area, perhaps more than once during the year. Treatment method is ground application by spraying. Most of the spraying would generally be completed within the existing Black Hills National Forest Noxious Weed IDIQ Contract Forest and where infestations are accessible.

Item	Acres	Cost/Acre	Cost
Noxious Weed Detection & Monitoring	683.25	\$10.00	\$6,830
Noxious Weed Treatment	233.6	\$150.00	\$35,040
Total			\$41,870

Road & Trails Treatments:

Riprap Higgins Gulch Road/Stream Bank

The Higgins Gulch Road needs riprap on a bank to prevent loss of the road prism during flood events. Temporay flagging was placed along the edge during the fire to prevent fire personnel from driving off the six foot bank. Flood flows will likely erode the bank and road prism.



Install Warning Signs

Eight signs were identified to prevent injury or death to human life. There are two low water crossings on Higgins Gulch Road. On each side of the crossings a sign stating "Do Not Enter When Flooded" needs to be installed to remind drivers not to cross when the stream is running high or flooding. Four of these signs will be needed. Four signs stating "Entering Burned Area, Flash Flood Area" needs to be placed. Two on Higgins Gulch Road, one on Crow Creek Road, and one on Crow Peak Trail. These signs are to remind users when they are entering the area that flash flooding and other hazards may occur.



Item	Units	Cost/Unit	Cost
Riprap Higgins Gulch Road/Stream Bank	50 C.Y.	\$100.00	\$5,000
Install Flash Flood Signs	8 Signs	\$500.00	\$4,000
Total			\$9,000

**Treatment costs developed using the Forest KV Cost Guide*

I. Monitoring Narrative:

Monitoring on the Crow Peak Fire would be:

- detection surveys for noxious weeds and effectiveness or treatment to determine any retreatment needs to occur within the twelve month period
- routine monitoring of signage for damage (no cost associated)

Part VI – Emergency Stabilization Treatments and Source of Funds

Line Items	Units	NFS Lands			Other	Other Lands			All
		Unit	# of	BAER \$		# of units	Fed \$	# of Units	
A. Land Treatments									
Noxious Weed Treatment	Acres	150	233.6	\$35,040	\$0		\$0		\$35,040
Noxious Weed Detection&Monitoring		10	683.3	\$6,833	\$0		\$0		\$6,833
				\$0	\$0		\$0		\$0
				\$0	\$0		\$0		\$0
<i>Subtotal Land Treatments</i>				\$41,873	\$0		\$0		\$41,873
B. Channel Treatments									
				\$0	\$0		\$0		\$0
				\$0	\$0		\$0		\$0
				\$0	\$0		\$0		\$0
				\$0	\$0		\$0		\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0
C. Road and Trails									
Riprap Higgins Gulch Road	C.Y.	100	50	\$5,000	\$0		\$0		\$5,000
Burned Area and Flash Flood Signs Installed	Each	8	500	\$4,000	\$0		\$0		\$4,000
<i>Subtotal Road & Trails</i>				\$9,000	\$0		\$0		\$9,000
D. Protection/Safety									
				\$0	\$0		\$0		\$0
				\$0	\$0		\$0		\$0
E. BAER Evaluation									
		---		\$15,000			\$0		\$15,000
		---		\$0			\$0		\$0
		---		\$15,000			\$0		\$15,000
<i>Subtotal Evaluation</i>									
F. Monitoring									
	Acres			\$0	\$0		\$0		\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0
G. Totals									
Previously approved				\$50,873	\$15,000		\$0		\$65,873
Total for this request				\$50,873					

PART VII - APPROVALS

1.
Deputy

Forest Supervisor (signature)


Date

2.

Regional Forester (signature)


Date