

USDA-FOREST SERVICE

FS-2500-8 (7/00)

Date of Report: 8/6/02**BURNED-AREA REPORT**

(Reference FSH 2509.13)

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

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

**B. Type of Action**

- ☒ 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:** Big Elk**B. Fire Number:** CO-ARF-238**C. State:** Colorado**D. County:** Larimer**E. Region:** R2**F. Forest:** Arapaho-Roosevelt**G. District:** Canyon Lakes RD**H. Date Fire Started:** 7/17/2002**I. Date Fire Contained:** 7/26/2002**J. Suppression Cost:** \$4,270,000 (as of 8/04/02)**K. Fire Suppression Damages Repaired with Suppression Funds**

1. Fireline waterbarred (miles): 13.5
2. Fireline seeded (miles): 2.5 miles (cat lines only)
3. Other (identify): Road drainage reestablishment, road repair of damage caused by dozer.

**L. Watershed Number:** 5th code 1019000610, 6<sup>th</sup> codes 02 and 04, Little Thompson and West Fork Little Thompson. Subwatersheds include Deer Creek, Lion Gulch, and drainages directly tributary to the Little Thomson and West Fork.

**M. Total Acres Burned:** 4348

NFS Acres( 3995)    Other Federal ( 0 )    State ( 0 )    Private ( 353 )

Note: There is some variability of area estimates within the report (e.g. burn severity, soil erosion hazard) because different maps showed slightly different perimeters. However, differences in acreage are less than 1%.

**N. Vegetation Types:** On the northern portion of the fire and on north and east facing slopes, the dominant vegetation communities are lodgepole pine and douglas fir (mixed conifer) with common juniper as the dominant understory plant. Ponderosa pine communities dominate the west and southwest portions of the fire with mountain-mahogany and Arizona fescue or bitterbrush and mountain mahogany in the understory. There are lesser amounts of meadows and open grass and shrublands scattered throughout as well as riparian areas dominated by willows, sedges, and grasses. Mountain muhley, Idaho fescue, and bearberry were the most common ground cover species. These ground cover species may respond to light fires, but do not respond well to more intense burns, according to the Fire Effects Information database.

**O. Dominant Soils:** Dominant soils include Bullwark, Ratake, and Vanet families, & Haploborolls with lesser amounts of meadow soils such as Gateview, Pachic Argiborolls, and Cryaquolls. Generally the map units consist of about 50% moderately deep and deep soils, with the remainder being shallow soils or rock outcrop. Mapping indicates that rock outcrop generally makes up 15 to 30 % of these areas, however field observations indicate that rock outcrop makes up to 70% of some of the steeper units, especially on the southern portion of the fire area. Soils tend to be coarse textured at the surface, with some subsoil development and about half of them have argillic horizons. Approximately 50% of the soils have high erosion hazard. Hydrologic groups are dominantly B and D.

**P. Geologic Types/Landforms:** The local bedrock is primarily metamorphosed igneous intrusive rocks: biotite gneisses and schists. There are more recent alluvial deposits in some of the upper montane valley floors and meadows. The dominant landform feature in the area is Kinney Mountain, which forms a north-south trending ridge, with fairly gentle shoulder slopes that then drop off very sharply in steep rocky canyons and drainages on all sides. There are more gently sloped benches on the northern flanks of Kinney Mountain. Elevation ranges from 9290 feet at the top of Kinney Mt to about 7000 feet on the eastern side near the fire's origin.

**Q. Miles of Stream Channels by Order or Class:**

Order:	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
Miles:	17.5	3.7	1.5	0.4	1.8

Contour crenulations were counted as 1<sup>st</sup> order channels. There are only two streams (2.4 miles), Deer Creek and West Fork Little Thompson, within the perimeter that are classed as perennial streams, and Deer Creek was not flowing during this drought year.

**R. Transportation System**

Trails: 0 miles      Roads: 9.5 miles: 1.2 miles County roads, 4.9 miles Forest roads, 3.4 miles non-system roads

**PART III - WATERSHED CONDITION**

**A. Burn Severity (acres):** 1322 (30%) (low/unburned)    2006 (46%) (moderate)    1035 (24%) (high)

Burn intensity maps were prepared by fire personnel, using oblique aerial photographs and focusing primarily on canopy consumption and ash color. These preliminary maps were then field verified by soil and hydrology staff through aerial and ground survey and changes were made as necessary. With additional ground condition observations, the following burn severity classes were defined:

**Severe/High:** Eighty percent or more of the canopy and shrub/forb crowns were consumed. Approximately 50% or more of the 1000 hour fuels were consumed and no fuels under ½-¾" remained. At least 50% or more of the duff and litter was completely consumed and turned to ash. Ashes were approximately ½-2" deep and were primarily black in color, but with some areas of white ash, where fire intensity and duration times were higher. Soils appeared to have high class of water repellency, although hydrophobicity seemed to be more uniform and stronger in areas under lodgepole or douglas fir/mixed conifer vegetation types. Soil crusting was not observed and while root crowns were mostly consumed, many of the forb and shrub roots showed minimal damage below the mineral soil surface. Areas mapped as high were 80% or more in the condition described above. Runoff and erosion are expected to be much higher as a result of post burn ground conditions including significantly reduced ground cover and increased hydrophobicity.

**Mosaic/Medium:** 40-80% of the canopy was consumed. Variable amounts of scorch were present and unconsumed needle cast will provide future ground cover. Most or all of the ¼" fuels were consumed, but up to 50% of the ½-¾" branches or shrub stubs remain. The crowns of grasses and shrubs were generally burned, but not completely consumed, roots were mostly intact below the mineral soil surface. Generally less than 50% of the duff and litter was completely consumed and what remained was mostly charred needles and

duff. Ashes were mostly black, ranged from ½-2" deep or were less than ½" over charred duff. Water repellency was often strong at the surface but slight to none below 1", and was patchier in the ponderosa pine areas. Areas mapped as medium intensity may contain up to 40% high intensity indicators in small isolated patches (<20 acres), but generally were less than 10% of the polygon. Some low or unburned patches occurred, but generally not more than 20% of the polygon. Runoff and erosion are likely to increase due to decreased effective ground cover and slightly increased hydrophobic conditions.

**Underburned/Low:** In general, most of the canopy was intact, although up to 40% may have some degree of scorch or consumption. Litter was generally ½-2" thick and was singed but less than 10% was fully consumed. Shrub and grass crowns were scorched or consumed, but some ¼" fuels were still remaining. Hydrophobicity did not appear to be increased above natural conditions, where patchy medium to high hydrophobicity was common under the mixed conifer, douglas fir, and lodgepole canopies and patchy medium to low hydrophobicity was commonly associated with ponderosa pine types. Areas mapped as low intensity had low severity indicators for 50% or more of the map unit and no more than 5-10% high severity indicators, and no more than 40% moderate severity indicators. Runoff and erosion are expected to be increase slightly over the unburned conditions.

**B. Water-Repellent Soil (acres):** 2680 acres of high or medium hydrophobic class

(Refer to soil report for further information regarding items B, C, D, and E)

**C. Soil Erosion Hazard Rating (acres):**

231 (5%) (low) 1981 (45%) (moderate) 2135 (50%) (high)

**D. Erosion Potential:** 5.2 tons/acre (this is a weighted average, it ranges from .56t/a for unburned to 12t/a for high severity areas)

**E. Sediment Potential:** 998 cubic yards / square mile (assumes a delivery coefficient of .3)

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

<b>A. Estimated Vegetative Recovery Period, (years):</b>	<u>2-5 (grasses/shrubs), 20-80 trees</u>
<b>B. Design Chance of Success, (percent):</b>	<u>60-80%</u>
<b>C. Equivalent Design Recurrence Interval, (years):</b>	<u>10</u>
<b>D. Design Storm Duration, (hours):</b>	<u>6</u>
<b>E. Design Storm Magnitude, (inches):</b>	<u>1.9</u>
<b>F. Design Flow, (cubic feet / second/ square mile):</b>	<u>32.4 csm</u>
<b>G. Estimated Reduction in Infiltration, (percent):</b>	<u>51%</u>
<b>H. Adjusted Design Flow, (cfs per square mile):</b>	<u>63.3 csm</u>

Note: Short duration, high intensity thunderstorms are the storm event of greatest concern. However, no recording gauge coverage is available locally and no precipitation-frequency maps for thunderstorms are available. Experience from other prescribed and natural fires indicates that while storm magnitudes of less than two inches will produce erosion and elevated stormflow, magnitudes of two inches or greater are likely to produce damaging events. Therefore, we used NOAA maps with the lowest duration (6 hour) storm as the closest estimate of thunderstorms, and found the recurrence interval that predicted approximately a two-inch rainfall event.

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

**A. Describe Watershed Emergency:**

The Big Elk Fire is the second largest fire ever recorded in the Forest. The fire was unusual for this Forest because it was not wind driven. Consequently, the fire burned in a mosaic driven by fuel, and only 24% burned at high intensity. The fire burned in mixed stands of ponderosa pine, lodgepole pine, and douglas fir. Portions of the Little Thompson and West Fork Little Thompson sixth-code watersheds were burned.

The Big Elk Meadows subdivision is adjacent to the fire along the southwestern edge. Parts of the lands within the subdivision were burned. There are two other blocks of private land within the burn perimeter. Lion Gulch

and the Homestead Meadows National Historic District lie to the north of the burn and are popular hiking and recreation areas. One cabin within the historic district was burned. Forest management activity and infrastructure are minimal within the fire perimeter. Roads 120 and 322 are used for administrative access and by the owner of a private parcel within the burn.

A watershed emergency exists because of the potential for noxious weed invasion and reductions in soil productivity, threats to homes and infrastructure in Big Elk Meadows, and to Forest roads. Health and human safety are also threatened because of increased flooding potential, particularly along Deer Creek and Lion Gulch.

**Threats to ecosystem integrity and long-term soil productivity:** Based on experience from recent prescribed and natural fires on the Forest, noxious weeds are expected to establish and expand into the burned area. Field reconnaissance indicates that Canada thistle and musk thistle are prevalent in and adjacent to the burned area. Several other weed species, including cheat grass are present as well. In addition, fire suppression equipment may have imported weed seed into the burn area, although prevention measures were taken and most equipment was washed prior to entry.

Monitoring of the nearby 2000 Bobcat fire indicates that weed invasion is a significant concern. Weeds were present before the burn but had been suppressed to some degree by native vegetation. After the fire, weeds were able to flourish. Assessment of the Big Elk fire indicates that weed infestation is highly probable, particularly along travel ways and riparian areas and in areas of high or moderate intensity burn.

**Threats to infrastructure and property:** Forest Roads 120 and 322 access the interior of the fire. The roads are values at risk as well as sources of sediment and concentrated water flow. Runoff and sedimentation are expected to increase following the fire and these roads will exacerbate the effects by concentrating surface flow and sediment. Delivery of flow and sediment to road drainage may promote channel downcutting and extension as well as threaten the road surface and fill slopes.

Three culverts at road crossings along Deer Creek within Big Elk Meadows and the dam at Little Deer Lake reservoir are threatened. Stormflow sediment, and debris in Deer Creek are expected to increase significantly as a result of the burn. The hillslope along the eastern side of Big Elk meadows was subject to burnout operations to create a containment line. While most of the burnout burned as a low intensity underburn, several small ephemeral drainages acted as chimneys and burned at high intensity in 5-10 acre patches. Three homes and one garage sit at the bottom of these drainages and are threatened by an increased risk of floods and sedimentation.

County Road 47 parallels the West Fork Little Thompson along the southern fire perimeter. While the culverts at three stream crossings appear to be adequately sized to accommodate increased flow, there is at least one location where the road is threatened by potential undercutting of the fill slope by the stream.

Lion Gulch is at increased risk of flood and sediment. An unnamed tributary to Lion Gulch was burned at some of the highest intensity seen on the fire. Three trail bridges cross the stream along the Lion Gulch Trail. These bridges could become sites of debris jams or could become part of the debris load at flood flows.

**Threats to public health and safety:** As described above, the Lion Gulch trail parallels Lion Gulch. Several areas along the floodplain are used as camping spots. Campers will be subject to significantly increased risk of flooding along Lion Gulch.

If road failure results from flooding along County Road 47 or if culverts fail along roads in Big Elk Meadows there will be a small increase in threats to public safety. Snag trees killed by the fire increase threats along FSR 120 and 322.

Public water supply for Big Elk Meadows is provided from Mirror Lake, a reservoir on the West Fork, located just above the confluence with Deer Creek. Since none of the West Fork watershed above the reservoir burned, there should be no threat to the Big Elk Meadows water supply. The water supply for the Pinewood Springs subdivision withdraws water from the Little Thompson River below the burned area. However,

withdrawals occur from an infiltration gallery that is located in a gravel filled excavation 12 feet below the riverbed. This infiltration gallery should provide considerable protection from sediment laden flood flow. In addition, the infiltration gallery is fitted with a back-blower, whereby compressed air can be forced up through the gallery's gravel to remove fine sediments that inhibit infiltration of water. It might be necessary to increase the frequency of use of the back-blower following the fire. At the present time, effects to Pinewood Spring's water supply are moot, because the river is dry and the water district is hauling treated water from Longmont.

## B. Emergency Treatment Objectives:

- Reduce risk on noxious weed invasion and promote reestablishment of native vegetation
- Augment and stabilize road drainage on roads within the fire perimeter
- Cooperate with NRCS to reduce or mitigate risks to the Little Deer Lake Dam, Deer Creek culverts and homes affected by burnout operations
- Work with County and State agencies to identify threats to county roads and state highways
- Reduce risk to public safety along Lion Gulch and along FSR 120 and 322
- Provide for bridge stability on Lion Gulch trail
- Provide early flood warning to affected residents

Proposed emergency treatments to minimize the threats identified in section A and address treatment objectives are discussed in detail in section H:

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

Land 90 % Channel 70 % Roads 80 % Other 60 %

Note: The only land treatments proposed are weed monitoring and treatment and snag. Other land treatments were considered but dropped. See section H for discussion. "Other" treatments include measures funded by the NRCS through EWP funds and the flood warning system. These treatments will require cooperation with groups other than the NRCS and the FS. It has been our experience that it often takes longer to implement measures cooperatively than unilaterally so there is a slightly smaller probability that treatments will be installed before the first storm.

The Big Elk fire area is subject to localized but potentially intense thunderstorms. According to Nolan Doeskin, Colorado Climate Center, the probability of intense thunderstorms is greatest from July 15 - Aug 15. More widespread, but lower intensity events are more common over the area in September and October. On this draught year, intense thunderstorms have been uncommon. If we can avoid thunderstorms over the next two weeks, the probability of completing treatments will be greater than 90%.

## D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80%	90%	90%
Channel	75%	75%	90%
Roads	75%	80%	90%
Other	80%	85%	90%

E. Cost of No-Action (Including Loss): \$156,465

F. Cost of Selected Alternative (Including Loss): \$119,616

Note: The costs for E. and F. listed above do not include evaluation costs.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Carl Chambers, Forest Hydrologist

Email: [cchambers@fs.fed.us](mailto:cchambers@fs.fed.us)

Phone: (970) 498-1093 FAX: ((970) 498-1212

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:**

**Weed treatment:** If monitoring indicates that weed populations are establishing or expanding, weeds will be treated using an integrated weed management strategy that could include mechanical, biological, or chemical treatment. It is expected that weeds will have the highest probability of establishment or expansion along roads and trails, along riparian corridors and in areas where high intensity fire intersects roads, trails or riparian areas. We anticipate that treatment may occur in this year and in the two following years. The number of acres that will need to be treated is unknown at this time. We estimated 100 acres for the purposes of estimating funding.

**Heritage Survey:** Heritage resources may be affected by post-fire events because of increased soil erosion and potential increased visibility and accessibility for vandals and artifact looting. We propose to sample survey approximately 50 acres within the burn perimeter that have been subject to moderate or intense burn, are within ¼ mile of water, and are on slopes of less than 15%. In the cost table that follows this section, this cost is labeled as "Heritage Surveys". Tribal representatives should also be consulted to determine if any sacred sites require emergency stabilization.

**Other land treatments considered but not selected:** The BAER team explored an alternative that would have included land treatment of severely burned areas within the Deer Creek watershed to reduce flood risk and erosion. Severely burned areas in other watersheds were not considered because the values at risk did not warrant treatment. Monitoring from the Bobcat fire indicated that mulching with straw was considerably more effective than log erosion barriers or straw wattles at reducing runoff and erosion, so we selected straw mulch as the proposed treatment. Because of poor access, straw would have to be staged aerially and then scattered by hand. We identified 133 acres of severely burned lands within the Deer Creek watershed that could be treated. Cost of treatment was estimated at \$1000-\$1500 per acre. We then modeled the effectiveness of the treatment at reducing flood risk and erosion. We estimated that treatment would reduce flood peaks by 10% and would reduce erosion by 0.4 tons/acre.

We reviewed the alternatives with the District Ranger and the Forest Supervisor. They decided that the small reduction in flood risk and erosion was not warranted by the cost of the treatment and the increased safety risk to the implementation crews.

**Channel Treatments:**

**Trash Rack:** Construct a trash rack of native materials (logs) on Deer Creek above Little Deer Reservoir to reduce the risk that large debris could accumulate at the dam outlet and put the dam at risk. The trash rack would be funded by either FS BAER funding or by NRCS EWP funding, depending on whether the most suitable location is on Forest or private land above the reservoir. For the purposes of estimating costs, we have assumed that the structure will be located on Forest land.

**Little Deer Lake dam safety, outlet and sediment:** Armor an emergency dam spillway, increase the size of the culvert outlet, and provide a drop inlet and trash rack on the culverted road crossing above the reservoir to serve as a sediment settling basin. **This measure would be funded by NRCS EWP funds.**

**Deer Creek culverts:** Increase culvert size on two culverts that cross Deer Creek through the Big Elk Meadows subdivision and provide for alternate flow paths in case of debris plugging. **This measure would be funded by NRCS EWP funds.**

**Roads and Trail Treatments:**

**FSR 120 and 322:** Provide an additional 10 road drainage dips per mile along FSR 120 and 322 within the burn perimeter to account for additional anticipated runoff. Stabilize existing and additional drainage features with rock outlets to prevent erosion and fill slope failure. Total road length is approximately 2.3 miles. Drainage will be installed mechanically and rockwork will be done by hand with on-site materials. A heritage survey will be required for this work. In the cost table that follows this section, this survey is listed as "Trtmt. Survey"

Remove hazard trees along FSR 120 and 322. The fire burned intensely through heavy timber along portions of these roads. The number of hazard trees could exceed 100/mile.

**FSR 322.1a:** Install waterbars by hand at 100-200 foot intervals to minimize concentration of water and subsequent gully erosion when water exits the road prism. Although this road is closed, the road template still exists. We propose to install drainage by hand to prevent further ground disturbance by creating machine access. Total road length is 2 miles. A heritage assessment will be required for this work. In the cost table that follows this section, this survey is listed as "Trtmt. Survey"

**Lion Gulch trail:** Secure three bridges with cable and deadmen at one end. If bridges are inundated with flood flow, this will allow the bridges to swing downstream but remain in place, and not contribute to debris jam potential downstream.

Clean existing debris from under three bridges to reduce debris jam potential.

Close the Lion Gulch trail to camping for 1-3 years. Most camping spots along the trail are located in the Lion Gulch floodplain. Closing the area temporarily to camping will reduce the risk that campers could be caught in a flood.

**Communication with State and County road and bridge officials:** Share information to identify risks along State Highway 36 and County Road 47 that may be of concern because of increased flood risk

**Structures:**

**Flood and sediment flow mitigation:** Several houses in the Big Elk Meadows community are constructed across ephemeral drainages that drain small watersheds that were burned at high intensity during burnout operations. Construct alternate flow routes for these drainages that would direct water around the houses and prevent damage to the structures. Alternate drainage ways would be constructed by earth moving, sandbags, etc. **This measure would be funded by NRCS EWP funds.**

The team considered treating these watersheds to reduce the flood risk. However, the burned areas are very steep, which would limit the treatment effectiveness and would increase the safety risk to implementation crews. Given these limitations, we decided that it would be more effective to mitigate the concern at the houses.

**Early Flood Warning System:** Install two early flood warning rain gauges in the Deer Creek watershed. This system was used for the Bobcat fire with great success. In addition to potentially affected residents, it can also provide notification to water suppliers and diverters to expect heavy sediment loads. Based

on our experience at the Bobcat fire, we anticipate that the system would be deactivated two years following the fire (2004).

#### **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.)

**Weed monitoring:** Monitor for noxious weeds within and adjacent to the burned area. It is expected that weeds will have the highest probability of establishment or expansion along roads and trails, along riparian corridors and in areas where high intensity fire intersects roads, trails or riparian areas, so our monitoring efforts will be focused in those areas. We anticipate the need to monitor this year and in each of the two following years.

**Road monitoring:** Following the first significant storm event, monitor FSR 120 and 322 to determine whether sufficient drainage has been provided and whether drainage features are stable. Because open rolling dips will be used for drainage, we do not anticipate that drainage plugging will be a significant concern, so storm patrol during events will not be required.



**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										
Weed Treatment /a	acres	25	100	\$2,500			\$0		\$0	\$2,500
Heritage Survey	days			\$0						\$0
Tribal consult				\$2,500			\$0		\$0	\$2,500
Subtotal Land Treatments				\$5,000			\$0		\$0	\$5,000
B. Channel Treatments										
Trash Rack	rack	2500	1	\$2,500			\$0		\$0	\$2,500
Trash rack maint	year	1000	2	\$2,000			\$0		\$0	\$2,000
Little Deer spillway/b	spillway			\$0			\$0	1	\$0	\$0
Little Deer drop inlet/b	inlet			\$0			\$0	1	\$0	\$0
Deer Creek culverts/b	culvert			\$0			\$0	2	\$0	\$0
Subtotal Channel Treat.				\$4,500			\$0		\$0	\$4,500
C. Road and Trails										
Drainage dips - mech.	dip	200	23	\$4,600			\$0		\$0	\$4,600
Rock outlets	dip	100	46	\$4,600			\$0		\$0	\$4,600
Hazard tree removal	mile	2175	2.3	\$5,003			\$0		\$0	\$5,003
waterbar - hand	w-bar	25	100	\$2,500			\$0		\$0	\$2,500
Trtmt. Survey	days	240	4	\$960			\$0		\$0	\$960
bridge securing	bridge	600	3	\$1,800			\$0		\$0	\$1,800
Closure signs	sign	750	6	\$4,500			\$0		\$0	\$4,500
bridge debris clearing	bridge	300	3	\$900			\$0		\$0	\$900
Subtotal Road & Trails				\$24,863			\$0		\$0	\$24,863
D. Structures										
Flood/sed. Mitigation/b	structure			\$0			\$0		\$0	\$0
EFWS install	gage	3000	2	\$6,000			\$0		\$0	\$6,000
EFWS maint.	year	1800	2	\$3,600			\$0		\$0	\$3,600
Subtotal Structures				\$9,600			\$0		\$0	\$9,600
E. BAER Evaluation										
Team Salary				\$15,000			\$0		\$0	\$15,000
F. Monitoring										
Weed Monitoring	year	2500	1	\$2,500						
Road monitoring	trip	500	4	\$2,000						
Subtotal monitoring				\$4,500			\$0		\$0	\$4,500
G. Totals				\$63,463			\$0		\$0	\$63,463

Notes: a – Assumes 100 acres of treatment per year for three years

b – NRCS has not provided detailed cost figures. An interim report will be filed when we receive those figures.

**PART VII - APPROVALS**

1. /s/ James L. Fischer (for)  
James S. Bedwell, Forest Supervisor (signature)

8/06/02  
Date

2. /s/ Karen L. Simpson for  
Rick D. Cables, Regional Forester (signature)

8/8/02  
Date