Edited Jeff Bruggink November 4th 2002 Date of Report: October 17th, 2002

USDA - FOREST SERVICE / BURNED - AREA REPORT

(Reference FSH 2509.13)

PART 1 … TYPE of REQUEST

A. Type of Report

(X) 1. Funding request for estimated WFSU - SULT funds

( ) 2. Accomplishment Report

( ) 3. No Treatment Recommendation

B. Type of Action

( ) 1. Initial Request
(Best estimate of funds needed to complete eligible rehabilitation measures)

(X) 2. Interim Report … # 1

(X) Updating the initial funding request based on more accurate site data and design analysis

( ) Status of accomplishments to date

( ) 3. Final Report - following completion of the emergency work

PART 2 … BURNED - AREA DESCRIPTION and FIRE LOCATION

A. Fire Name: Nebo Creek

B. Fire Number: P48074 / UT - UIF - 18044

C. State: Utah

D. County: Utah … # 049

E. Region: R4 / Intermountain

F. Forest: Uinta … # 0418

G. District: D3 / Spanish Fork

H. Date Fire Started: 07-02-2001 @ 1609

I. Date Fire Contained: 07-07-2001

J. Time Fire Contained: 1800

K. Suppression Costs: $ 746,541 … as of 7-17-2001 according to Randy Miles, Budget & Finance

L. Fire Suppression Damages Repaired with EFFS - PF12 Funds:

- Fireline Waterbarred (miles) — 6¼ (dozer lines) and 12¼ (hand lines) … total = 18½ miles
- Fireline Re-seeded (miles) — Same total 18½ miles … seed will be purchased on 07-16-2001
- Other Damages … (identify) — Re-contour and re-seed the Salt Hollow Road … 2.6 miles; repair 300 ' of pipeline to a water trough improvement S of Oak Spring

M. Watershed Number: 16020202 … Nebo Creek

N. NFS Acres Burned: 1,925 **Total Acres Burned:** 4,378

Land Ownerships … list as follows:

(X) Private (1,746) (X) State of Utah (707) ( ) USDI – BLM ( ) Other

O. Vegetation Types:	Much of the terrain located within upper Salt Hollow and lower Gods Rock Hollow consisted of Gambel oak with scattered perennial grasses on broad ridgetop areas (45 %); both stable and seral pinyon – juniper stands existed on the upland foothills located directly adjacent to the Nebo Creek drainage and within the Spencer Canyon area (27 %); the ridgetops and mountainsides observed SW of Nebo Creek had previously supported mountain big sagebrush with perennial grasses (15 %); a few distinct transitional areas consisted of oakbrush with maple on north aspects at elevations above 6,500 feet or oakbrush with PJ on south aspects at elevations below 6,400 feet -- in the 18 to 20 " / year precipitation band (11 %) and the remaining few small areas have been managed as timber dominated riparian zones or irrigated croplands (2 %).
P. Dominant Soils:	The riparian zones within the burned-area have soil resources classified as Cumulic Haploxerolls occurring under timber dominated sites with cottonwood trees; the alluvial fan terraces along the eastern perimeter of the fire incident have Aridic Argixerolls and Aridic Calcic Argixerolls under mountain big sagebrush; the upland foothill sites adjacent to Nebo Creek and within Spencer Canyon consist of Aridic Petrocalcic Palexerolls, Typic Palexerolls and Lithic Argixerolls under pinyon - juniper; the broad ridgetop areas were mapped as Calcic Argixerolls, Typic Argixerolls and Typic Calcixerolls within the Gambel oak – perennial grass sites and the remaining landscapes were observed as Pachic Haploxerolls, Pachic Calcixerolls and Typic Haploborolls intermixed throughout the unit with Pachic Cryoborolls at elevations above 7,200 feet on north aspects. *(Soil Survey of Sanpete Valley Area, USDA – SCS, 1981)* *(Soil Survey of Fairfield - Nephi Area, USDA – SCS, 1984)*
Q. Geologic Types:	Both the upland foothills and mountain sideslopes have soil resources formed in colluvium and residuum derived from mixed sedimentary rocks such as fluvial siltstones, argillaceous shales, calcareous sandstones and conglomerates. The broad ridgetop landscapes have wildland soils formed in quartzite … a metamorphic rock. While the fan terraces and riparian zones consist of mixed sediments – which have been influenced by igneous deposits too. *(Geologic Map of Utah, UGMS, 1980)*

R. Miles of Stream Channels by Order: (Strahler 1952 method, within the fire perimeter)

1st: 9.7 2nd: 0.1 3rd: 0.9 4th: 2.1

S. Transportation Systems: (occurring within the fire perimeter)

Trails … -0- miles

Roads … 0.91 miles (FS / Maintained)
Roads … -0- miles (FS / 4WD Roads)

Roads … 2.60 miles (Salt Hollow – will be re-contoured ASAP)
Roads … 2.86 miles (Private - Nebo Creek / Spencer Canyon)

PART 3 … WATERSHED CONDITION / NFS PROBLEM INVENTORY

A1. Mapping of the Burn Severity Zones: (4,378 total acres occurring within the perimeter of the Nebo Creek Fire Incident)

723 High (17 %) 2,727 Moderate (62 %) 928 Low / Unburned (21 %)

A2. Mapping of the Burn Severity Zones: (NFS lands … 1,925 acres)

260 High (14 %) 1,249 Moderate (65 %) 416 Low / Unburned (21 %)

B. Estimation of Water-Repellent soils occurring within the different Burn Severity Zones:
(NFS lands … acres)

182 High (70 %) 250 Moderate (20 %) 21 Low / Unburned (5 %)

Overall Total = 453 acres

C. Rating Soils for Erosion Hazards within the different Burn Severity Zones: (NFS lands … 1,925 acres)

Very High	High	Moderate	Low
154 (8 %)	250 (13 %)	597 (31 %)	924 (48 %)

D. Potential for Accelerated Erosion Losses without applying emergency rehabilitation treatments:

1st Year	2nd Year	3rd Year	4th Year
8 tons/acre/year	3 tons/acre/year	0.7 tons/acre/year	0.2 tons/acre/year

Overall Total = 52,002 tons

(additional erosion over a 48-month period)

(Source) – Disturbed WEPP model … http://forest.moscowfsl.wsu.edu/fswepp/

E1. Average Sediment Potential: 1,310 tons / mile ^{2} … Nebo Creek

E2. Average Sediment Potential: 696 tons / mile ^{2} … Gardner Hollow

(Note) – both sediment entries assume a 15 % delivery efficiency for a period of 4 years

PART 4 … HYDROLOGIC DESIGN FACTORS with CALCULATED RISK and CLIMATE EVALUATIONS

Nebo Creek

A. Estimated Vegetative Recovery Period: 5 – 10 years
B. Design Chance of Success: 80 percent
C. Equivalent Design Recurrence Interval: 25 year
D. Design Storm Duration: 1 hour
E. Design Storm Magnitude: 1.48 inches
F. Design Flow: 17.1 ft^3 / sec / mi^2
G. Estimated Reduction in Infiltration: 10 percent
H. Adjusted Design Flow: 18.8 ft^3 / sec / mi^2

Gardner Hollow

A. Estimated Vegetative Recovery Period: 5 – 10 years
B. Design Chance of Success: 80 percent
C. Equivalent Design Recurrence Interval: 25 year
D. Design Storm Duration: 1 hour
E. Design Storm Magnitude: 1.48 inches
F. Design Flow: 24.4 ft^3 / sec / mi^2
G. Estimated Reduction in Infiltration: 15 percent
H. Adjusted Design Flow: 28.0 ft^3 / sec / mi^2

PART 5 … SUMMARY OF SURVEY & ANALYSIS

A. Describe the Watershed Emergency:

- **SOIL PRODUCTIVITY** … Recovery from the Nebo Creek Fire has been good; there is no longer a watershed emergency. During aerial reconnaissance and on-the-ground assessments, BAER team members have observed vigorous Gambel oak growth as well as grass and forb production visually estimated to be as much as 1500 lbs / acre. This type of plant growth helps to stabilize the soil and reduce erosion. No additional land treatments are recommended to protect long-term soil productivity.

- **INVASION OF EXOTIC SPECIES AND NOXIOUS WEEDS** … A reconnaissance flight of the Nebo Creek fire showed that a good portion of the burned area has vegetative ground cover. On-the-ground surveys

in the lower elevations of the burn showed a large amount of invasive plant species (primarily cheatgrass). It is recommended that work be done to prevent the spread of noxious weeds and invasive species within the fire perimeter. The areas of emphasis are the south facing slopes along the FS road on the south end of the fire.

B. Emergency Treatment Objectives:

The primary objective of the proposed emergency rehabilitation is to take prompt actions deemed reasonable and necessary to effectively protect, reduce, or minimize significant threats to human health and safety; and prevent unacceptable resource degradation. The emergency treatments being recommended by the BAER Team are specifically designed to achieve the following results:

1) prevent the spread of existing noxious weed populations,

2) and maintain the condition of the Nebo Creek Road in the Salt Hollow area

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

Land … 85 % Channel … 85 % Roads … 75 % Other … 0 %

D. Probability of Accomplishing Treatment Success:

< ---------- Years after Treatment ---------- >

	1	3	5
♦ **Land**	**70 %**	**80 %**	**90 %**
♦ **Channel**	**85 %**	**80 %**	**75 %**
♦ **Roads**	**75 %**	**70 %**	**65 %**
♦ **Other**	**N/A**	**N/A**	**N/A**

E. Cost of Taking No-Action: (including loss) $ 1,855,765 (discussed with the Spanish Fork District Staff … 07-16-2001)

F. Cost of Selected Alternative: (including loss) $ 35,000 (assumes all treatments are implemented)

G1. Skills Represented on <u>Initial</u> / Burned-Area Survey Team:

(X) Soils	**( ) Geology**	**( ) Timber**	**(X) TES … Plants**
(X) Hydrology (3)	**(X) Range**	**(X) Wildlife**	**(X) Fire Dispatch**
(X) Fire Ecology	**(X) Provo Helitacks**	**( ) Research**	**(X) Archeology**
(X) GIS Staff	**( ) USDI - BLM**	**(X) District Staff**	**(X) Engineering**
(X) Fisheries	**(X) USDA - NRCS**	**(X) Utah – DWR**	**(X) BAER Assistant**

G2. Skills Represented on Interim / Burned-Area Survey Team:

(X) Soils	( ) Geology	( ) Timber	(X) TES … Plants
(X) Hydrology	( ) Range	( ) Wildlife	(X) Fire Dispatch
(X) Plant Ecology	(X) Provo Helitacks	(X) Noxious Weeds	( ) Archeology
(X) GIS Staff	( ) USDI - BLM	(X) District Staff	(X) Engineering
( ) Fisheries	( ) USDA - NRCS	( ) Utah – DWR	(X) BAER Assistant

Team Leader: Michael D. Smith (Soil Scientist / Fishlake National Forest)

Phone: (435) – 896 – 9233 / ext. # 1071 **E-Mail:** mdsmith01@fs.fed.us

RECOMMENDED TREATMENTS

National Forest System Lands

- **Land Treatments** … N / A

- **Channel Treatments** … remove straw bale retention dams, including metal fence posts and 4' fencing material from original channel treatments in Gardner Hollow ($ 5,000). **Total = $ 5,000**

- **Roads and Trail Treatments** … clean inlets and outlets of two culverts along the Nebo Creek road on FS administered land ($ 850). **Total = $ 850**

- **Structure or Ecosystem Management** … work to inventory and eradicate noxious weeds within the fire perimeter on 95 acres adjacent to the road ($ 3,000). **Total = $ 3,000**

SUGGESTED TREATMENTS

Private Lands

- **Land Treatments** … N / A

- **Channel Treatments** … N / A

- **Roads and Trail Treatments** … make improvements to the private portions of the Forest access road as suggested in the original BAER report.

(the location of these emergency treatments have been identified on a GIS interpretive plot contained in this report)

PART 6 … EMERGENCY REHABILITATION TREATMENTS & SOURCE OF FUNDS BY LAND OWNERSHIP(s)

A1. Primary Land Treatments

| < ---------- Recommended Treatments ---------- > | < -- Suggested Treatments -- > |

NFS Lands **Other Lands**

Line Items	Units	Unit Cost $	Number Of Units	WFSU–SULT $	Other $	Number of Units	UDWR $	EWP – Private $	Total $
N / A	---	---	---	---					---

A2. Supplemental Land Treatments

N / A	---	---	---	---					---

B. Channel Treatments

Remove Straw Bale Retention Dams (Gardner Hollow) (includes using a Type III helicopter with cargo nets)	Job	$ 5,000	1	$ 5,000					$ 5,000
Subtotal for Section B	---	---	---	$ 5,000					$ 5,000

C. Roads, Trails and Other Treatments

Clean Culverts (along the Nebo Creek Road in the Salt Hollow area)	Job	$ 850	1	$ 850					$ 850
Subtotal for Section C	---	---	---	$ 850					$ 850

D. Structures or Ecosystem Management

Inventory and Treat Noxious Weeds and Invasive Plant Species (along the Nebo Creek Road in the Salt Hollow area on south aspects)	Job	$ 3,000	1	$ 3,000					$ 3,000

Line Items	Units	Unit Cost $	Number Of Units	WFSU–SULT $	Other $	Number of Units	UDWR $	EWP – Private $	Total $
Subtotal for Section D	---	---	---	$ 3,000					$ 3,000

E1. Interim BAER Evaluation / Administrative Support Services

BAER Team (New Survey and Interim Report)	Job	$ 3,150	1	$ 3,150					$ 3,150
BAER Team (Travel - 4 people)	Job	$ 700	1	$ 700					$ 700
BAER Team Helicopter / Daily Availability Fee (Type III … A-Star)	Day	$ 2,224	1	$ 2,224					$ 2,224
BAER Team Low Level Helicopter Flights (Type III … A-Star) (includes salaries for the Helitack Crew)	Hour	$ 542	3.1	$ 1,680					$ 1,680
BAER Team Supplies	Misc.	$ 125	1	$ 125					$ 125
Subtotal for Section E1	---	---	---	$ 7,879					$ 7,879

E2. Implementation and Effectiveness Monitoring Activities

(Forest Service … Implementation and Effectiveness Monitoring – Year 2 of 3) **<u>NOTE</u> … if necessary, additional monitoring dollars can be acquired by the FS during Year 3 using a Interim type BAER Report to request and secure the appropriate funding; the individual to contact at the Intermountain Regional Office is Jeff Bruggink – R4 / Soil Scientist and BAER Coordinator at (801) - 625 - 5357**									
1) Soil & Water	Year 2	$ 3,905	1	$ 3,905					$ 3,905
2) Fisheries	Year 2	$ 900	1	$ 900					$ 900
3) Erosion Control Seeding	Year 2	$ 2,700	1	$ 2,700					$ 2,700

Line Items	Units	Unit Cost $	Number Of Units	WFSU–SULT $	Other $	Number of Units	UDWR $	EWP – Private $	Total $
4) Noxious Weeds	Year 2	$ 420	1	$ 420					$ 420
5) Range Management	Year 2	$ 350	1	$ 350					$ 350
Subtotal for Section E2	---	---	---	$ 8,275					$ 8,275

E3. Fiscal Adjustment to the original BAER Authorization of $ 143,302 provided to the Uinta NF during July of 2001

RF not approved 11/04/02, need separate interim request identifying accomplishments and costs **As of 09-30-2002 … the Uinta NF had spent or obligated a total of $ 187,762 on the Nebo Creek Fire** (additional channel treatments in the form of straw wattles and straw-bale retention dams were constructed in Gardner Hollow; additional per diem costs were allowed for the work crews and helicopter availability fees were paid on days of inclement weather)	Job	$ 44,460	1	$ 44,460					$ 44,460
Subtotal for Section E3	---	---	---	$ 44,460					$ 44,460
F. TOTALS	-	-	-	**$ 69,464 RF approved $25,004**	-	-	-	-	**$ 69,464**

Fund Code for Implementing Authorized BAER Treatments … H48074

PART 7 … APPROVALS

1. **(acting) Forest Supervisor: /s/ Reese Pope** **Date: October 17th, 2002**

2. **Regional Forester: _____ Date: _____**

NARRATIVES – SPECIALIST REPORTS

Hydrologic Assessment – Nebo Creek Fire

This report summarizes aerial and field observations made from October 11 to October 15, 2002. The previous initial and interim BAER assessments are incorporated into this report by reference. The purpose of this assessment is to evaluate the emergency treatments that were implemented and evaluate post-fire responses to storm events to determine if additional emergency actions are warranted. A monitoring report by Wes Christensen 2002, provides an excellent summary of the treatment implementation and effectiveness for this fire.

Summary: The Nebo Creek fire burned early in July of 2001. Overall the vegetation and slope conditions are responding very favorably to the burn and subsequent seeding treatments. There has been no extensive or substantial fire related rill or gully development to date, even where vegetation is still sparse. A 25-year storm occurred on July 24, 2002 when 0.55 inches of rain fell in 30 minutes. The Nebo Creek rain gauge recorded about 0.21 inches of rainfall in a 4-hour period on September 12th. Total rainfall accumulation from September 6th to the 12th was about 1.28 inches. An additional 0.69 inches of rain fell on the 16th of September. The straw wattles and straw bale check dams in Gardner Hollow were not needed and most have not appreciably filled with sediment because of the good vegetative response to the fire, and because of the short contributing slope lengths and over-redundancy (i.e. wattles on top of wattles on top of wattles… on top of straw bale check dams). The road obliteration that was accomplished with suppression funds was successfully implemented although the re-contoured slope is currently supporting minimal vegetation.

Recommendations: Rest from grazing by livestock should be continued at least one more year to assure that the positive vegetative recovery continues. In addition, the Forest Service should coordinate with the County to have them implement the recommended repairs to the Nebo Creek road on private land. It is important that this work be done to protect not only the road, but also the habitat for the genetically pure Bonneville cutthroat trout in Nebo Creek. The Forest Service and the State of Utah list Bonneville cutthroat as a Sensitive Species. Nebo Creek is identified in the "Range-Wide Conservation Agreement and Strategy for Bonneville Cutthroat Trout" recovery plan as a Conservation Watershed, affording it the highest level of protection in that plan. So far, the road on private lands has only sustained minor damages, but the continued deterioration of the road and lack of maintenance makes future failures and subsequent sediment delivery likely. The hillslopes have responded so well to the fire and subsequent BAER treatments that no additional slope or channel rehabilitation is necessary to protect the values-at-risk. The metal posts and fencing used for the straw bale check dams should now be removed. If viable, the straw bales could be dumped on the obliterated road prism in Salt Hollow to promote vegetative recovery.

(Dale Deiter, Hydrologist)

MONITORING PLAN

♦ Introduction: Why Monitor?

Monitoring is the periodic assessment of BAER treatments to evaluate their success and/or failure, recommend adjustments to treatments and report on these findings to management. Forest Service Manual 2523.03 directs that the implementation and effectiveness of treatments, as well as the consequences of decisions not to treat certain areas, will be monitored. This plan will assess BAER measures taken to assist in rapid recovery of the burned sites and nearby lands and resources affected by the burned sites. Direction in this monitoring plan complies with the Uinta National Forest Land and Resource Management Plan. The Forest Service Handbook 2509.13, Section 61.1 requires that, as a minimum, the following conditions be monitored:

1. The effectiveness and proper functioning of rehabilitation measures, especially road drainage facilities and channel structures.
2. Need for re-treatment, maintenance and removal of temporary structures.
3. Quality and quantity of water leaving the burned area and the location and causes of problems.
4. Rate of recovery of vegetation.
5. Effects of resource utilization, restoration activities and emergency rehabilitation measures on each other.

District and Supervisors office personnel (with any requested assistance) will be assigned by the Leadership Team to conduct the implementation and the effectiveness monitoring (FSH 2509.13 Section 61.04).

♦ Types of Monitoring Planned

Implementation Monitoring: Did the job get done correctly on-the-ground?

Determine if the following proposed treatments were implemented as outlined in the BAER report:

Interim BAER Report Recommendations

- Noxious Weed Abatement: Were weeds sprayed in the correct locations at the appropriate time of year?

- Check Dam Removal: Were straw bale check-dams removed from Gardner Hollow where they were no longer needed?

Effectiveness Monitoring: Did the expected response occur?

This monitoring is specifically designed to answer the question: Did the BAER treatments provide the planned protection and rehabilitation of the burned area? Said another way, have the objectives of the treatments been met and if not, why?

Are the emergency treatments successful in: ….. protecting long-term soil productivity,

….. preventing the deterioration of water quality,

….. reducing the threats to human life and property and allowing for the management of ecosystems in their properly functioning condition?

Specific objectives of the treatments are described below:

Broadcast Seeding: Establish vegetative cover on the site quickly to:

- ✓ stabilize severely burned soils to maintain long-term productivity and meet Regional and Forest Plan standards,
- ✓ prevent production and delivery of off-site erosion to the stream channel network,
- ✓ reduce overland flow caused by rain-drop splash that seals the soil surface,
- ✓ and prevent the spread of existing noxious weed populations.

Year Two Effectiveness Monitoring:

- ♦ Has vegetation become established from broadcast seeding efforts?
- ♦ Are seeded native species able to compete with non-natives?
- ♦ Does the seeding appear to be helpful in providing ground cover and preventing erosion?

Straw Wattles: Provide physical obstructions in severely burned riparian areas to:

- ✓ trap upland sediment before reaching Nebo Creek, which supports native, genetically pure Bonneville cutthroat trout. (Note) – Spencer Canyon, the other treatment area, is a major tributary to Nebo Creek.

Year Two Effectiveness Monitoring:

- ♦ Are the straw wattles still in place?
- ♦ Have the straw wattles trapped sediment?
- ♦ Were any of the wattles installed improperly or have any failed?

Tree Planting: Increase the root mass in unstable streambanks to:

- ✓ provide extra bank shear strength against the additional shear stress that will result from fire related increases in thunderstorm generated peak flows.

Year Two Effectiveness Monitoring:

- ♦ Have the trees established roots in the stream banks?
- ♦ Are the trees helping to stabilize the stream banks?

Road Re-conditioning: Upgrade road drainage frequency and crossing capacity to:

- ✓ prevent the Nebo Creek road from concentrating and rerouting overland runoff (caused by intense thunderstorms occurring on the bare and hydrophobic soils upslope); and generating and delivering sediment via the road ditch and prism,

- ✓ disconnect the ditchline from the channel network,

- ✓ reduce the probability of sediment delivery from stream crossing failures.

Year Two Effectiveness Monitoring:

- ♦ Has the reconditioned road experienced increased flows? If so, did the reconditioning appear to have improved the situation (did the road concentrate flows)?
- ♦ Have there been stream crossing failures on any parts of the reconditioned roads?
- ♦ Has the ditchline been disconnected from the channel network?

Explanatory Signs: Place signs at public land entry points to:

- ✓ provide for public safety and promote fire recovery by communicating the potential flooding hazards and the need to adhere to motorized access restrictions.

Year Two Effectiveness Monitoring:

- ♦ Are the signs still in place?
- ♦ Are the signs still clear and legible?
- ♦ Have any of the signs been vandalized?
- ♦ Do any of the signs require repair or replacement?

Temporary Fence: Fence the administrative boundary where damaged by the fire to:

- ✓ promote natural and seeded vegetative recovery on the slopes and in the riparian areas (by resting the allotments affected by the fire for at least 2 years).

Year Two Effectiveness Monitoring:

- ♦ Is the fence still standing and is it in good condition?
- ♦ Is there any maintenance or repair that needs to take place?

Weed Abatement: Spray weeds growing within the fire perimeter to:

- ✓ Control the spread of weeds to uninfected areas.

Check Dam Removal: Remove straw bale check dams because they are no longer needed as a channel treatment:

General Data Collection Procedures

The information to be recorded and documented will include the dates and type of emergency treatments implemented along with the total number of structures, acres and actual costs associated with these rehabilitation projects.

Photos will be taken before and after these treatments and locations will be plotted using GPS. These photo points will be established above, within and below the various treatments. All photos will be collected using a digital camera in order to easily enter the images into interim and final monitoring reports.

Any monitoring item having a specific location will be mapped using GPS and loaded into the corporate GIS database (e.g., weed infestations).

The Implementation Team leader will ensure that all data being collected meets the established standards. Data collected for inclusion into the Forest GIS database will meet corporate standards.

For all monitoring projects, as a minimum, record:

- The dates of installation or accomplishment
- Name(s) of person(s) collecting data
- Types of equipment used
- Time for project completion (length of treatment)
- GPS location as well as a detailed map and narrative of directions to the site
- Short narrative explaining how the job was completed, any problems encountered and how they were solved
- Recommendations for continued use of the treatment on other fire rehabilitation projects considering both implementation and effectiveness concerns.

Specific Data To Be Collected

Soils and Hydrology:

- Monitoring time frames are before, during and immediately following large precipitation events
- Document evidence of mass wasting
- Describe and map the types of damage such as overland flow and the types of lands or resources damaged, such as rangelands, pastures, or riparian zones
- Describe the effectiveness of the road treatments. Note if additional treatments or maintenance are needed.

- Install sediment fences and a tipping rain gage with a recorder, above and below 2 to 4 treatment areas so that effectiveness of 1) aerial seeding and 2) straw wattles can be assessed. Include measurements of sediment captured and the timing and severity of storm events.

Fisheries:

- Describe tree planting survival and to what degree bank stability and riparian recovery objectives are being met.
- (Note) -- independent of BAER monitoring fisheries, will be continuing ongoing temperature and habitat monitoring in Nebo Creek. The district has existing temperature monitoring sites upstream of and within the fire perimeter.

Erosion Control Seeding:

- Was prescribed protection achieved after the fire until full vegetation establishment (2 full years minimum)?
- Can or should livestock grazing be resumed at the end of the 2-year rest period, or is additional rest warranted?
- Is there between 50 and 80% soil cover to protect the soil three years post seeding?
- Which species did well?
- Which species did poorly?
- What is the location and species of any noxious or invasive weed present?
- Are there any more effective ways of doing business (e.g., erosion blankets) compared with the treatment recommendations presented with the Initial Request for EFFS - FW22 funds.
- Ten vegetation transects (each 100' long) be installed to evaluate the amount of bare ground, seeding effectiveness and the spread of noxious weeds (see also discussion below under - Invasive Plants). Burn severities will be sampled along the transect to help control for variation in microsites. The following table describes the sites that will be monitored:

Locations	Burn Severity	Treatments	Vegetation Types
Gardner Hollow	High	Aerial seeding	Oak brush (flat)
Gardner Hollow	High	Aerial seeding	Oak brush (steep)
Gardner Hollow	High	Unseeded	Oak brush
Gardner Hollow	Moderate	Unseeded	Oak brush
Gardner Hollow	Low	Unseeded	Oak brush
Gardner Hollow	Unburned	Unseeded	Oak brush
Salt Hollow	High	Seeded	Pinyon-Juniper
Salt Hollow	High	Seeded	Oak brush
Salt Hollow	Unburned	Unseeded	Oak brush

Locations	Burn Severity	Treatments	Vegetation Types
Nebo Creek	Moderate	Unseeded	PJ-Oak

(Note) - Even though this monitoring will take place on National Forest System Lands, seeding effectiveness should also be qualitatively compared with the seeding on private and State lands given that their mixes will include non-natives known to be effective for erosion control.

Noxious Weeds and Invasive Species

As awareness of the problems associated with the introduction of invasive plant species increases [see Executive Order 13112 in appendix], it becomes important to immediately evaluate the magnitude of any invasion as quickly as possible and then take aggressive control action. Fire suppression activities in 2001 may have caused the introduction of some invasive species.

The suppression actions for this fire resulted in the construction of about 6.25 miles of dozer line. If weed seed were spread throughout the length of these lines, it would form an irregular network of "invasion corridors." At a minimum, these dozer lines should be monitored in the spring for at least 5 years. The BAER implementation team will complete surveys in 2002 thru 2004. The District will incorporate further monitoring and treatment of any populations found into the annual noxious weed program.

The District Ranger is directed (FSM 2523.04d) to *" monitor burned areas to ensure rehabilitation treatments and other measures are functioning as planned and are effective. Monitor for the post-fire presence of invasive species. Maintain treatments to keep them functioning as designed. Use monitoring results to plan follow-up actions, including the control of invasive species. "* The treatment of noxious weeds will prevent permanent impairment of ecosystem structure and function in compliance with FSM 2523.02.

Evaluate accepted treatment methods (mechanical and chemical) to determine the most appropriate course of action. Any action must be in full compliance with NEPA. Herbicide application will require applicable risk assessments, compliance with the label recommendations on the container and Agency policy and direction. Only personnel who are adequately trained in the proper use of herbicides shall implement pesticide-use projects (FHS 2109.14, Section 34). In addition, Forest Service personnel using, or supervising the use of, restricted-use pesticides must be certified and licensed (FSM 2154.2).

Invasive Plants:

- Existing GIS map of all dozer lines constructed to contain the Nebo Creek Fire
- GPS inventory of <u>new</u> infestations annually from 2001 through 2005
- Assessment of the magnitude of the infestations annually to include:

  - ✓ Perimeter of infestations
  - ✓ Ocular estimates of plants per square foot
  - ✓ Appropriate pesticide-use approvals
  - ✓ Dates of treatment
  - ✓ Treatment methods and chemicals used
  - ✓ Include all treatment information in the annual pesticide-use report
  - ✓ Evaluation of treatment success

Wildlife:

- No monitoring is planned. However, some of the erosion control seeding monitoring will occur within the high value big game habitats that were burned.

Archeology:

- Surveys will be conducted for any ground disturbing activities for areas that are not adequately inventoried.

Interim Evaluations

The Implementation Team Leader will conduct periodic evaluations (annually as a minimum) with the District and Forest implementation team to assess implementation progress, effectiveness monitoring and to determine if parameters measured and sampling frequency meet the planned objectives. **The BAER team understands that monitoring funds could be available for effectiveness monitoring in year 3 provided that the Uinta National Forest submits interim reports to request addition funding and provided that the Forest documents and shares their findings.**

Reports

- An INTERIM REPORT will be prepared.

- The overall results will be presented in a detailed report during 2004. This report will be submitted to the Forest Supervisor, other unit District Rangers, the Regional Office and all cooperating agencies and other interested parties.

Annual Financial Requirements

The annual cost of monitoring is itemized in the following table. The total cost is $ 8,275 for Year 2; and $ 8,275 for Year 3.

(see attached financial worksheet on the following page)

Financial Worksheet	Year 2	Year 3
Soil and Hydrology		
PHOTO POINTS -- 1 day to gather/download data in Years 2 and 3	$ 375	$ 375
MONITORING--2 storms per year -- gather data 2 days; write-up 1 day, 3 days in Years 2 and 3 (includes evaluation and documentation of road treatment effectiveness)	$ 750	$ 750
MONITORING -- 1 person, 2 days to view road reconstruction, straw wattles, check dam removal (for year 2 only). check culverts and explanatory signs. 1 person, 1 day for summary and write-up.	$ 900	$ 900
MONITORING -- Helicopter reconnaissance of the Nebo Creek Fire; 3 hours of helicopter time for years 2 and 3.	$ 1,800	$ 1,800
SUPPLIES	$ 80	$ 80
Soil and Hydrology Subtotals	$ 3,905	$ 3,905
Fisheries		
PHOTO POINTS -- Establish, ½ day (yr. 1); gather/download data 1 day (yr. 1-3)	$ 375	$ 375
MONITORING -- Tree planting success and effectiveness -- 1 day observation; write-up 1 day	$ 500	$ 500
SUPPLIES	$ 25	$ 25
Fisheries Subtotals	$ 900	$ 900
Erosion Control Seeding		
MONITORING--Vegetation transects -- 4 days and two people to measure in Years 2 and 3; 2 days and one person to summarize and write report each year -- (total of 10 person days for Years 2 and 3)	$ 2,000	$ 2,000
MONITORING -- Inventory dozer dines -- 2 days observation; write-up 1 day	$ 600	$ 600
SUPPLIES	$ 100	$ 100
Erosion Control Seeding Subtotals	$ 2,700	$ 2,700

Financial Worksheet	Year 2	Year 3
Noxious Weeds MONITORING -- Noxious weed and shrub assessment -- 1 field day for 2 people and 1 write-up day for 1 person. (total of 3 people days for 3 years)	$420	$420
Noxious Weed Subtotals	$420	$420
Range MONITORING -- Inspect temporary fence construction and condition and assure that the rest period within the fire from grazing is being implemented -- 3 days in Year 1, 1 day in Years 2 and 3, observation; write-up 1/2 day each year	$ 325	$ 325
SUPPLIES	$ 25	$ 25
Range Subtotals	$ 350	$ 350
TOTALS	$ 8,275	$ 8,275

(Michael D. Smith, Soil Scientist; Chad Hermandorfer and Dale Deiter, Hydrologists; David Tait, Botanist; Dave Fogle, Fisheries; Tamara Heaton, Botany and Noxious Weeds; Renae Bragonje, Range Management Specialist and Karen Hartman, Wildlife Biologist)