

Date of Report: 06/10/2012

**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**

- A. Fire Name:** Sunrise Mine Fire      **B. Fire Number:** CO-UPD-000073  
**C. State:** Colorado      **D. County:** Montrose County  
**E. Region:** 4      **F. Forest:** Manti – La Sal National Forest  
**G. District:** Moab - Monticello      **H. Fire Incident Job Code:** PDGVX3 (1502)  
**I. Date Fire Started:** May 25, 2012      **J. Date Fire Contained:** June 3, 2010  
**K. Suppression Cost:** \$4,109,762 as of June 3, 2012; fire is still not controlled.  
**L. Fire Suppression Damages Repaired with Suppression Funds**  
    1. **Fireline waterbarred (miles):** Fire lines have not been rehabilitated.  
    2. **Fireline seeded (miles):** Fire lines have not been rehabilitated.  
    3. **Other (identify):**  
**M. Watershed Number:** 140300040203 Roc Creek Outlet (HUC6) for Taylor & Geyser Creeks (HUC6s) 140300040405 Salt Creek (HUC6)  
**N. Total Acres Burned:** 5,725  
    **[ 5,410 ] NFS Acres [ 314 BLM ] Other Federal [ 1 ] Private**  
**O. Vegetation Types:** Ponderosa pine, Pinon-juniper, mountain brush, mixed conifer-aspen

**P. Dominant Soils:** Beje fine sandy loam (21%), Burnac-Delson sandy loams (32%), Wrayha stony clay loam (10%), Rock outcrop (24%), seven other soils (13%)

**Q. Geologic Types** Sandstone (Dakota, Glen Canyon, Chinle, Hemosa formations) and Quaternary Eolian deposits.

**R. Miles of Stream Channels by Order or Class:** 1<sup>st</sup> order: 4.5 miles, 2<sup>nd</sup> order: 0.5 miles, and 3<sup>rd</sup> order: 6 miles

**S. Transportation System**

Trails: 5.7 miles      Roads: 19.3 miles

**PART III - WATERSHED CONDITION**

**A. Burn Severity (acres):** 1,096 (very Low/ unburned ) 2,135 (low) 2,085 (moderate)  
1,471 (high)

**B. Water-Repellent Soil (acres):** 1,970 (34%)

**C. Soil Erosion Hazard Rating (acres):** 2,908 (low) 201 (moderate) 1,280 (high)  
1,336 Rock Outcrop

**D. Erosion Potential:** 13 tons/acre

**E. Sediment Potential:** 800 cubic yards / square mile

**PART IV - HYDROLOGIC DESIGN FACTORS**

**A. Estimated Vegetative Recovery Period, (years):** 3

**B. Design Chance of Success, (percent):** 75

**C. Equivalent Design Recurrence Interval, (years):** 25

**D. Design Storm Duration, (hours):** 1

**E. Design Storm Magnitude, (inches):** 1.2

**F. Design Flow, (cubic feet / second/ square mile):** 40

**G. Estimated Reduction in Infiltration, (percent):** 34

**H. Adjusted Design Flow, (cfs per square mile):** 52

**PART V - SUMMARY OF ANALYSIS****A. Describe Critical Values/Resources and Threats:****SUNRISE MINE WILDFIRE****BAER / CRITICAL VALUES-AT-RISK SUMMARY TABLE**

Much of the burned-area is currently prone to extreme flooding hazards; specifically in the Roc Creek drainage. The values at risk shown below were assessed based upon the post fire conditions and likelihood of post fire events. The critical values are soil productivity, hydrologic function, human safety, road and trail infrastructure, and native / naturalized communities where invasive species and noxious weeds are absent. These values are threatened by the post-fire response to short duration, high intensity precipitation events. The magnitude of consequences is moderate especially to road infrastructure, soil productivity, natural resources, and human safety. Overall, the assessed risk is high for natural resources and human safety.

**HUMAN LIFE AND SAFETY****Human Life and Safety.**

**Users of FS Transportation System (Roads)** – There are likely flooding hazards to Upper Roc Creek Roads. These roads are used by the public. – **Likely Probability of Damage or Loss/ Moderate Consequences... HIGH RISK**

**Users on or in Private Property** – Flooding to private and county transportation surfaces (i.e. Sinbad Valley and lower Roc Creek), occupied structures, and overall safety of the general public along the Roc Creek drainage – **Possible Probability of Damage or Loss/ Moderate Consequences... INTERMEDIATE RISK**

**Public Access to Mine Adits** – Burned out barriers allowing public entry – **Likely Probability of Damage or Loss / Major Consequences ... VERY HIGH RISK**

Several abandoned mine adits located within Roc Creek are now visible to the public because of the fire; the vegetation blocking the view to adits was consumed by the burn. A campground within 1 mile of the fire area is expected to have many visitors that may recreate near the mine adits.

**Public trails and use areas-** There are several public access areas that have many burned hazard trees. They are located at trailhead, recreation sites, trail and roads – **Possible Probability of Damage or Loss/ Major Consequences... HIGH RISK**

**PROPERTY**

**Buildings, water systems, utility systems, road and trail prisms, residences, ponds, dams, wells or other significant investments.**

**Forest Roads – Very Likely Probability of Damage or Loss / Moderate Consequences... VERY HIGH RISK**

There are over 17 miles of transportation surfaces (roads & trails) occurring on NFS Lands located inside the perimeter of the fire. Most of the existing roads and trails are considered to be at-risk from flooding hazards, and mudslides due to the size and severity of the recent wildfire event. In particular the transportation systems in the Roc Creek drainages are at risk. These surfaces will be subject to accelerated rates of soil erosion for the next 2 to 4 years during inclement weather conditions. Most of the roads and drainage structures require normal maintenance, cleaning or repairs to function properly and accommodate anticipated additional runoff.

**Forest Trails – Likely Probability of Damage or Loss / Moderate Consequences ... HIGH RISK**

See description above for Forest Roads.

**Downstream Diversions – Likely Probability of Damage or Loss / Minor Consequences ... LOW RISK****Sinbad Valley Pond on Private Land – Possible Probability of Damage or Loss / Moderate Consequences ... INTERMEDIATE RISK**

The pond may be at risk to flooding initiated in the burned headwaters

## NATURAL RESOURCES

**Soil productivity on burned NFS lands.**

Potential loss of soil due to post fire runoff events. **Very Likely Probability of Damage or Loss/ Major Consequences... VERY HIGH RISK**

Following the wildfire, erosive conditions exist due to the burning of ground cover, coarse woody debris and soil subsurface organic material. Loss of topsoil negatively affects ecological function for:

- native seed bank and native species recovery
- root growth and soil stability

Our most recent BARC 256 Image indicates about 62 % of this incident was subjected to Moderate and High Severity Burns. Approximately 1,471 acres were mapped as high burn severity. The steep mountainsides and ridge tops areas located within this burn will be prone to flooding hazards and mudslides during spring / summer / fall thunderstorm events. Much of this fire-damaged terrain is located along Roc Creek and Sinbad Ridge. These locations will be subject to flooding hazards. The sandy soils located on the fire have a high potential for mudslides and loss of soil resources.

**Hydrologic function on burned NFS lands    Very Likely Probability of Damage or Loss/ Major Consequences ... VERY HIGH RISK**

An adverse change to hydrologic function is expected due to the large contiguous areas burned at moderate and high severity. These areas are very steep and contain large percentages of hydrophobic soils. Many of the hillslopes contain accumulated channel sediments that have a high probability of being mobilized in high intensity, short duration rainfall events. This will result in the following changes:

- Increased flow and sedimentation

- Loss of riparian areas and access to flood plains
- Degradation of aquatic and terrestrial wildlife habitat ( i.e. CRCT )

Channel down-cutting and lateral migration that may result in a loss of riparian areas and access to floodplains.

**Native or naturalized communities on NFS land where invasive species or noxious weeds are absent or present in only minor amounts. Likely Probability of Damage or Loss / Moderate Consequences ... High Risk**

There are both noxious weeds and cheatgrass within the immediate vicinity of the burn. During the review only very minor amounts of cheatgrass and noxious weed were observed within the burn perimeter. However, noxious weeds and cheatgrass were observed outside of the burn perimeter in greater abundance. A nearby fire in the upper portion of this drainage has had noxious weed populations expand within the burn perimeter following a recent burn. The forest would like to prevent the same incident from occurring within the Sunrise Fire to maintain the native communities on NFS lands. The Forest would like to promote the maintenance of native or naturalized communities by seeding areas that are most susceptible to loss of native communities. Treating of weeds within the burn would also limit the loss of native communities by limiting or preventing expansion of noxious weed populations.

## CULTURAL AND HERITAGE RESOURCES

**Cultural resources on NFS lands which are listed on or potentially eligible for the National Register of Historic Places.**

**Unlikely Probability of Damage or Loss / Minor Consequences... VERY LOW**

### Non BAER Values At Risk

#### 1. Colorado Cutthroat Trout Habitat

Colorado River Cutthroat Trout are considered a USDA – Forest Service / Intermountain Region sensitive species and a State of Colorado species of special concern. They have been petitioned for listing as a threatened species several times. To help prevent the need for that listing, a Conservation Agreement and Strategy was developed to guide their management, including protection of populations and habitat from threats, habitat improvements and the active restoration of new populations. The USDA – Forest Service / Intermountain Region is a signatory to this document. The population is confined to one main drainage. There is one natural fish barrier in the lower section of stream. There are numerous diversions in the headwaters which reduce or eliminate habitat connectivity. Heavy ash and mudflows would eliminate fish from 76% of the stream. Heavy laden sediment flows would affect 12 miles of stream habitat down to the Delores River. There are only 1.7 miles of suitable habitat above the fire in the main stem of Roc Creek.

#### 2. Big Game Winter Range.

The lower Sinbad Ridge / Hog Trough area is important elk and deer winter range. Due to heavy weed presence of heavy weed infestations in the area there is a risk of weed population expansion. Range values, and also the naturalness of the roadless area are threatened by cheatgrass, knapweed and musk thistle invasion. Prevention of weed introduction and establishment is a high priority. Weed monitoring and spot control will also be important post-fire.

### **B. Emergency Treatment Objectives:**

- Reduce threats to personal injury and/or human life of Forest visitors in and immediately adjacent to the fire by installing warning signs and performing storm patrols.
- Warn users of Forest roads, trailheads, and trails of hazards present in the burned area.
- Protect the public by closing mine adits with closure structures in cooperation with the Regional Office.
- Mitigate potential post fire soil losses through increasing post-fire ground cover with mulch and with vegetation treatments.
- Reduce the likelihood of invasive and noxious species colonizing the burn area through revegetation and early detection rapid response treatments.
- Reduce potential for runoff through broadcast seeding. This treatment will be used to stabilize existing ground conditions on severely and adjacent moderately burned terrain. Seeding is to maintaining soil productivity, uphold the ecological integrity of our sites, and limit the amount of sediment available for transport into water bodies.
- Control expected invasion of noxious weeds within the area, especially along and adjacent to Forest roads, dozer lines, helispots, and private land boundaries used by fire equipment and in existing populations within the fire boundary (Use of P Code will be used as appropriate).
- Minimize threats from additional post fire runoff to system roads and trails within the fire boundary by cleaning existing drainage structures.
- Identify appropriate monitoring activities that estimate the effectiveness of emergency stabilization treatments and identify necessary maintenance and continuation of other approved BAER activities.

**C. Probability of Completing Emergency Stabilization Treatments Prior to a Storm Damaging Event:**

<b>Land</b>	<b>65 %</b>	<b>Channel</b>	<b>NA</b>	<b>Roads / Trails</b>	<b>85 %</b>	<b>Protection / Safety</b>	<b>90 %</b>
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**D. Probability of Treatment Success: ( on NFS lands )**

<b>Treatment Types:</b>	<b>← Years After Treatment →</b>		
	<b>1</b>	<b>3</b>	<b>5</b>
<b>Land Treatments ( seeding )</b>	<b>60 %</b>	<b>70 %</b>	<b>75 %</b>
<b>Land Treatments ( mulching )</b>	<b>70 %</b>	<b>80 %</b>	<b>80 %</b>
<b>Channel Treatments ( None )</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Road / Trail Treatments ( drainage and culverts )</b>	<b>85 %</b>	<b>85 %</b>	<b>85 %</b>
<b>Protection / Safety Treatments ( signs )</b>	<b>90 %</b>	<b>90 %</b>	<b>90 %</b>

**E. The Cost of Taking No - Action: \$2,840,000**

The values at risk directly lost through No-Action includes: damage to water quality, loss of soil productivity, structures, roads, trails, utilities, and human life due to change in hydrologic and hillslope conditions.

<b>Values-At-Risk</b>	<b>Estimated Costs</b>
Potential impairment to water quality and loss of irrigation	\$500,000
Potential Damage or Loss of Soil Productivity and Ecosystem Integrity (native or naturalized communities) from an increase in invasive and noxious species and erosion.	\$2,200,000
Potential Damage or Loss of Forest Roads	\$100,000
Potential Damage or Loss of Trail System	\$40,000
<b>Total</b>	<b>\$ 2,840,000</b>

**F. The Cost of the Selected Alternative: \$1,711,000 ( including loss )**

<b>Values-At-Risk</b>	<b>Estimated Costs</b>
Potential Impairment to Water Quality The mulching and seeding treatments are estimated to be 65% effective in reducing the frequency of runoff and slowing erosional processes for 1-2 year storm events. 35% failure rate of 500,000	\$175,000
Potential Damage or Loss of Soil Productivity and Ecosystem Integrity (native or naturalized communities) from an increase in invasive and noxious species and erosion. The mulching and seeding treatments are estimated to be 65% effective in reducing the frequency of runoff and slowing erosional processes for 1-2 year storm events. 35% failure rate of \$2,200,000 plus \$713,00 of the cost of the aerial mulching, seeding, and first year of weed treatments .	\$1,483,000
Potnetial Damage or Loss of Forest Roads <ul style="list-style-type: none"> <li>The road treatments are estimate d to be 80% effective in protecting the forest roads.</li> <li>20% failure rate of \$100,000 plus \$5,000 of the cost of the road treatments.</li> </ul>	\$25,000
Potnetial Damage or Loss of Trail System <ul style="list-style-type: none"> <li>The drianage treatments are estimated to be 80% effective in protecting the forest trails.</li> <li>20% failure rate of \$40,000 plus \$20,000 of the cost of the trail and sign treatments.</li> </ul>	\$28,000
<b>Total</b>	<b>\$1,711,000</b>

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**G. Skills Represented on Burned-Area Survey Team:**

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input type="checkbox"/> Range
<input checked="" type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input 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
<input checked="" type="checkbox"/> Recreation	<input checked="" type="checkbox"/> Roadless		

**Team Leader:** Adam Solt**Email:** asolt@fs.fed.us**Phone:** 435-896-1831**FAX:** 435-896-9347

**H. Treatment Narratives:** 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****AERIAL MULCHING**

The mulching treatments were determined to be the minimum necessary to protect critical values, as defined in FSM 2523.1. The probability of damage or loss to the following critical values is very likely without treatment.

Soil Productivity  
 Hydrologic Function  
 Property/Infrastructure Trails

Purpose of Treatment: Reduce risk to loss of soil and hydrologic function. Apply agricultural straw mulch to the ground surface to achieve a continuous cover of uniform thickness, as specified below, to replace ground cover consumed by the fire. Ground cover is needed to maintain soil moisture, accelerate recovery of native vegetation, to protect any seed remaining onsite, and to improve success of stabilization seeding treatments. In addition, the organic mulch will protect soil from solar heating and drying, thereby improving the ability of seeds to germinate.

Location of Suitable Sites for Treatment: The treatment unit's total 475 acres. Refer to BAER Treatment Map for the exact locations.

**Design Specifications:**

- Treat areas in designated units with "High" and "Moderate" soil burn severity. Do not treat areas that have needles in trees, exposed rock outcrops, or slopes greater than ~70%.



- Straw application rate: Apply mulch to achieve a continuous cover of uniform thickness over 70 % of treatment area at a depth of less than 2.0 inches. Application rate will be approximately 1 ton / acre (2,000 pounds). This is about 0.25 inches or 3 straw shafts deep. Aerial application may not achieve desired ground cover, therefore ground crews will likely be needed to spread straw clumps by hand in select locations in each treatment unit. Discussion with Pete Robichaud on October 14, 2010 regarding a rate of 0.5 tons/acre identified that patching or stripping has not proved to be successful in the past. It was determined that the energy created between patches or strips of treated area overwhelms the next treated area and/or undercuts with rilling.
- Straw must conform to State Department of Agriculture (SDA), Certified Noxious Weed Free Standards for Noxious Weed Free Forage and Straw (NWFFS). All straw provided must have been planted and harvested during the 2011(2012 maybe preferred) growing season. Straw shaft length will not exceed 12 inches. Suitable straw includes barley, rice, and wheat grasses.
- The straw must be applied dry (less than 12 percent internal moisture content) to ensure proper dispersal during aerial applications. The Forest Service may randomly test bales using a moisture probe.

This treatment is intended to achieve three sequential objectives:

- Improve conditions to protect soil productivity by replacing ground cover burned in the fire. Replacing ground cover will: a) decrease erosion by interrupting raindrop impact and surface soil detachment; and b) increase hillslope obstructions to decrease slope lengths which mitigate accelerated overland flow, thereby decreasing sediment delivery. Mulching also helps to protect the native seedbed and retain moisture on the burned slopes to facilitate vegetative recovery of the treatment areas.
- Decrease overland flow and erosion from high soil burn severity areas upslope of trails, roads, or Roc Creek which can intercept surface runoff and result in damage and/or loss of infrastructure.
- Decrease sedimentation from burned-areas and trails upslope of streams.

The mulching treatments are predicted to lower the estimated soil erosion and subsequent sediment delivery to the streams by up to about half of the areas treated. Mulching will also reduce downstream peak flows by absorbing and slowly releasing overland runoff which is likely to be increased due to reduced soil cover and hydrophobic soil conditions. Mulching treatments in the headwaters of the streams can protect a much larger downstream area from cumulative runoff and sedimentation.

The purpose of the mulching treatment is to reduce the delivery of sediment from severely burned hillslopes to avoid sediment bulking of flows entering stream channels, and road or trail infrastructure.

#### Implementation Monitoring

Visually inspect randomly selected mulch treatment units for proper application rate and uniform thickness during / immediately after treatment. In each unit, measure percent ground cover using a 100 foot pace transects method once after treatment, and again in the spring of 2013.

### BROADCAST SEEDING

Purpose of Treatment: To revegetate the high and moderate severity burn areas with native grasses to aid in preventing soil productivity loss, erosion, and debris flows that severely impact soil productivity and hydrologic function. At the elevation of this burn (14 - 22 inch precipitation) another primary purpose of this seed treatment is to minimize the spread of and reduce the potential domination of the lower Sinbad Ridge area by cheatgrass and noxious weeds.

General Description: Aerially seed with grasses. The seeding applications are most effective beyond the first growing season. However, the seed mix contains native species that will germinate in the fall or early in the spring growing season to hasten the revegetation response.

Location (Suitable) Sites: Moderate to high severity burn areas of the fire. See Sunrise Mine Treatments Map. Seeding treatment is proposed on 1400 acres. The treatment polygons are mostly in pinyon/juniper and sagebrush vegetation types with a high threat of cheatgrass invasion. One small unit is located in the bottom of Roc Creek Canyon where the fire burned approximately 1 mile of the toe slopes and riparian area. This area will also be mulched.

Design Specifications: The following seed mixes were developed specifically for **EMERGENCY STABILIZATION TREATMENTS**. The proposed seed mix contains species known to be effective for erosion control, adapted to the target area, and compatible with future management objectives. The seed mixes are also the best known to restore ecosystem function and protect against the rapid increase of cheatgrass. The mix contains only species native to the western United States.

The seed purchased will be certified to the variety claimed. Also, the mixes will be state of CO Noxious weed free certified. Price estimates were obtained from native seed purchases for recent projects. Actual costs may vary depending on availability at time of purchase from the successful bidder. The following table shows the pounds / acre of bulk seed that would be used in each mix. Cost for aerial application is estimated at \$40 per acre.

Native or Introduced	Species to be Seeded	Seed Mixlbs per acre	Average % PLS
	Thickspike wheatgrass "Bannock"	3	85.41
N	Indian ricegrass "Paloma"	2.5	81.38
N	Western wheatgrass	2	91.32
N	Sandberg bluegrass	1.5	83.57

N	Bottlebrush squirreltail	1	88.15
N	Blue grama	1	86.09
N	Needle-and-thread	0.5	87.02
N	Basin wildrye	0.5	86.91
N	Sixweeks fescue	0.5	66.06
N	Sand dropseed	0.25	70.00

Total pounds/acre 13.25 lbs /acre or 11.33 lbs PLS/acre

Recommended rates for broadcast seeding mixes are about 50 – 100 seeds per square foot. This mix is calculated to have 102 viable seeds per square foot, reasonable for a highly disturbed site with a depleted seedbank.

The seed mix includes the recommendations of District and Forest Specialists. We referred to seed mixes previously used on the Forest, the Intermountain Planting Guide, from Utah State University Cooperative Extension Service, and the GBRC seed mix spreadsheet while designing these seed mixes to achieve the FSM objectives listed above. The native grass species in the mix each have the ability to dominate a stand depending on the location. The value of multiple species in the seed mix provides the flexibility for different species in the seed mix to thrive in a microsite that is best suited for that certain species.

A range of adapted grass species is used in this proposal to maximize germination and establishment on a range of microsites (e.g. slope, aspect, and surface types) within the proposed treatment area, and also to provide rapid establishment for soil stabilization (one native annual species, sixweeks fescue, and an early season perennial, Sandberg bluegrass) and competition with cheatgrass (previous species plus bottlebrush squirreltail). The perennial bunchgrasses will aid in soil stabilization and water infiltration and the rhizomatous thickspike and western wheatgrasses have strong soil holding ability. The native seed mix species are drought-tolerant and known to be valuable for revegetation of disturbed sites. A primary purpose of this treatment is to provide competition for invasive cheatgrass and knapweed species.

There may be opportunities to add other species to the seed mix. We suggest that District personnel contact the Colorado Division of Wildlife Resources prior to actual purchase of the seed. Depending on seed availability and time of seeding, the Division may have seed for forb and browse species that could be added to the seed mix that would enhance both wildlife habitat and diversity in the area.

We constrained the total number of acres to be seeded by several guiding factors:

Only seed in disturbed areas located on NFS lands.

Seed suitable areas located within some moderate and high / burn severity zones.

Seed areas where pre-burn juniper stands lacked adequate grass seed bank.

The Planting Guide for nearby Utah gives the following information in the “Wildfire Seedings” section. “Steep slopes and rough areas that are not accessible to conventional ground equipment can be aerial seeded, if it is not possible to cover seed, plant late in the fall and increase the

seeding rate, burned sites, including forest and desert ranges are often seeded within a few days or weeks following the fire, in the mistaken belief that the ash will cover the seed, even if an ash residue or a loose seedbed is present, seed only during the appropriate seasons. Do not plant on a loose dry seedbed, but plant in the late fall when seedbeds are firm.”

### **MINE ADIT CLOSURES**

Purpose of Treatment: As the fire burned the vegetation, mine adits became more visible on the landscape. The purpose of the closures is to provide public safety and secure the closure of the mine adit. The treatments will be conducted with direction and possible cost sharing with the State of UT and other FS program funds. BAER funding requested will be the minimum necessary to protect the public from access to the exposed adits. Additionally it would be important to close the access to the mine.

General Description: Install culvert/rebar grate barriers at 4 mine adit locations to prevent public entry in to these dangerous hazards. Close access to the mine on two small routes at the beginning of the routes.

Location: The following mines need immediate attention for public safety.

- Redbird Mine

### **NOXIOUS WEED EXPANSION MONITORING and SPOT TREATMENT**

The Moab - Monticello RD weed crew will implement this strategy in 2012 / 2013 to detect and treat any new infestations of noxious weeds in the burned area. Aggressive noxious weeds need immediate attention; Musk thistle and knapweed species threaten the area. This treatment includes a search for any new individuals of noxious weeds on forest-administered lands along specific stretches of the fire perimeter, along most of the forest routes in the burned area. The fire suppression lines, drop points, and helispots, etc. will be monitored. Individual noxious weed plants generally will be sprayed with herbicide at the same time they are discovered. The search will occur three times during the growing season preferably in May, late-June and early August; estimated coverage of EDRR 250 acres.

### **STORM PATROLS**

Following large storm events or as reports are received about concerns within the burn area. District Staff will monitor the storm effects and report any damages, and base any future actions based on public safety and natural resource issues. Coordination with SO staff and reporting effects and damages to evaluate any future actions and needs relating to BAER funding and requests may need to take place.

### **ROAD AND TRAIL TREATMENTS** **(ROAD STABILIZATION)**

#### **CULVERTS**

Purpose of Treatment: Cleaning culvert pipes and replacing the missing and damaged lids over the drop inlets will enable the drainage system to convey design flows and will reduce the chance of plugging. This will avoid the expensive possibility of long lengths of road washouts and keep the roads safe to drive by keeping water off the road. In some locations where traffic counts are

higher and the road is of a higher standard, hardened drainage crossings are not feasible or the best solution. If the culverts are not cleaned, replaced or existing culverts upsized, probability of road failure is high and the magnitude of losses could be substantial, since flows often find the edge of road and wash out long portions of the road itself. No culverts are recommended for replacement or upsizing. Cleaning and repair of existing inlets and outlets are recommended.

General Description: Cleaning includes the cleanout of catch basin culvert inlets, outlets, and the drop inlets. Also, cleaning of ditches and ditch lead out to allow for increased post fire flow on the road system.

Location ( Suitable ) Sites: Culvert cleaning and ditch cleaning will occur within all drainages of the fire along associated roads.

### **TRAIL STABILIZATION**

Purpose of Treatment: Grade dips, and waterbars will divert water off of the trail preventing erosion and debris flows from degrading the trail. These methods will keep the trail from becoming a stream channel and prevent the loss of the trail.

General Description: Install drainage structures to prevent erosion, mass wasting and mud flows that are predicted to occur following the burn. These measures would also address the risk to human safety, risk of loss of trail infrastructure.

Location (Suitable) Sites: Locate drainage structures along 6 miles trails within the fire perimeter.

### **PROTECTION AND SAFETY MEASURES**

#### **ROAD AND TRAIL / BURNED-AREA WARNING SIGNS**

Purpose of Treatment: The purpose of the BURNED-AREA signs is to warn the public of potential hazards resulting from the effects of the fire, such as rolling rocks, falling trees, road washouts, and flash floods.

General Description: This treatment is for the installation of burned-area warning signs. Burned-area signs consist of a warning to the public identifying of the possible dangers associated with a burned-area. It shall contain language listing items to be aware of when entering a burn area such as falling trees and limbs, rolling rocks, and flash floods.

Location ( Suitable ) Sites: These signs shall be installed at all entries into the fire perimeter. The location of these signs shall be along roads. All signs will be placed facing the direction of travel entering the burn area. Other signs may also be placed within the burn perimeter at key locations.

#### **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 Plan / Sunrise Mine Wildfire

**1) Introduction: Why Monitor?** Monitoring is the periodic assessment of BAER treatments in order to evaluate their success and / or failure and report on these findings to management. Forest Service Manual 2523.03 directs that the implementation and effectiveness of all 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 the rapid recovery of the burned-areas, nearby lands and resources affected by the burn. Direction in this Monitoring Plan complies with the Manti- La Sal National Forest Land and Resource Management Plan. Any adjustments or additional treatments observed as needed during monitoring will be recommended to management.

The Forest Service Handbook 2509.13, Section 61.1 requires that, as a minimum, the following conditions should be monitored:

1. The effectiveness and proper functioning of emergency stabilization measures - especially road drainage facilities and channel structures seeding and mulch treatments.
2. Need for re-treatment.
3. Quality and quantity of water leaving the burned-area and the location and causes of any problems.
4. Rates of recovery for vegetation.
5. Effects of resource utilization and restoration activities and emergency response measures on each other.

Members of the Forest / Ecosystem or District Staffs will conduct the implementation and the effectiveness monitoring ( FSH 2509.13 Section 61.04 ). All evaluations will be documented in a brief, written report.

## 2) Types of Monitoring

### Implementation Monitoring:

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

- **Aerial straw application:** Was work performed safely and without injury? Did ground cover meet location and extent? Was application timely? Did the estimated costs approximate budgeted allocations?
- **Broadcast Seeding:** Are the seed mixtures applied to the intended sites with the proper rates of application?
- **Explanatory Signs:** Are the signs installed at the designated locations with the intended messages? Are the signs clear and legible? Was the installation timely? Did costs approximate budgeted allocations?
- **Mine Adits:** Are the closures to specifications
- **Road and Trail:** Are drainage structures installed correctly, were culverts cleaned,

**Effectiveness Monitoring:** This monitoring is specifically designed to answer the question: DOES THE BAER TREATMENTS PROVIDE THE PLANNED EMERGENCY PROTECTION AND STABILIZATION OF THE BURNED-AREA?

Are the emergency treatments successful in: protecting long-term soil productivity, preventing the deterioration of water quality, preventing loss of water control, protecting long-term ecological structure and function, and reducing the threats to human life and property?

Specific objectives of the treatments are described below:

**Aerial Straw Application:** reduce raindrop splash and surface sealing of the soil, and helps hold soil in place on hillslopes?

**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 raindrop splash that seals the soil surface.

**Explanatory Signs:** Place signs as described in the treatment map to provide for public safety and promote fire recovery by communicating the potential flooding hazards and the need to adhere to motorized access restrictions so that: signs are clearly understandable, signs are placed with optimum visibility in concert with visual objectives, signs use language to encourage the public to make informed and safe decisions.

**Trail (drainage) and Road Stabilization (culverts):** Treatments implemented and did they preserve the trail and roads where actions were taken.

**Mine Adit Closures:** Adits closed and have they been effective at keeping the public out of the adits.

**Noxious Weed Expansion Monitoring and Spot Treatments:** Early Detection and Rapid Response (EDRR) Treatments effective at treating new populations of weeds. Were the areas treated two times?

### ***General Data Collection Procedures***

The information to be recorded and documented will include the dates and type of emergency treatments implemented. The total number of structures erected, the total number acres treated and the actual costs associated with these rehabilitation projects will also be recorded. Any monitoring item having a specific location will be mapped using GPS and loaded into the corporate GIS database. 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 and name of person, organization, or contractor performing work with a lead contact name if possible, types of equipment used, time for project completion, GPS location as well as a detailed map and narrative of directions to the site if possible, 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, evaluation of whether treatments supported the “ minimum necessary ” goal.

### **3) Interim Evaluations**

The Implementation Team Leader will conduct periodic evaluations 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 years 2 and 3 provided that the Fishlake National Forest submits interim reports to request addition funding and provided that the Forest documents and shares their findings.

### **4) Monitoring Reports**

The overall results will be presented in a detailed summary report during 2013. This report will be submitted to the Forest Supervisor, District Rangers, the Regional Office and all cooperating agencies and other interested parties.

### **5) Annual Financial Requirements**

Report cost of monitoring by year.



**Part VI – Emergency Stabilization Treatments and Source of Funds****Interim #**

Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	\$	\$
<b>A. Land Treatments</b>										
Aerial Mulch-acre	475	1,027	475	\$487,825	\$0		\$0		\$0	\$487,825
Broadcast Seeding-ac	1,407	153.5	1,407	\$215,975	\$0		\$0		\$0	\$215,975
Weed Treatment-ac	250	52	250	\$13,000	\$0		\$0		\$0	\$13,000
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$716,800	\$0		\$0		\$0	\$716,800
<b>B. Channel Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
Trail Drainage	Mile	1666.7	6	\$10,000	\$0		\$0		\$0	\$10,000
Road Drainage Cleanin	Mile	625	8	\$5,000	\$0		\$0		\$0	\$5,000
Warning Signs	ea	937.5	10	\$9,375	\$0		\$0		\$0	\$9,375
Warning Signs	ea	937.5	6	\$5,625			\$0		\$0	\$5,625
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Road & Trails				\$30,000	\$0		\$0		\$0	\$30,000
<b>D. Protection/Safety</b>										
Adit and Access	Ea	3750	4	\$15,000	\$0		\$0		\$0	\$15,000
Storm Patrol	Job	5000	1	\$5,000	\$0		\$0		\$0	\$5,000
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Structures				\$20,000	\$0		\$0		\$0	\$20,000
<b>E. BAER Evaluation</b>										
Assess. & Report	Ea	16,000	1	\$16,000			\$0		\$0	\$0
Insert new items above this line!				---	\$0		\$0		\$0	\$0
Subtotal Evaluation				---	\$0		\$0		\$0	\$0
<b>F. Monitoring</b>										
monitoring plan	Job	13,000	1	\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
<b>G. Totals</b>				\$766,800	\$0		\$0		\$0	\$766,800
Previously approved				\$497,200						
Total for this request				\$269,600						

**PART VII - APPROVALS**/s/ Allen Rowley

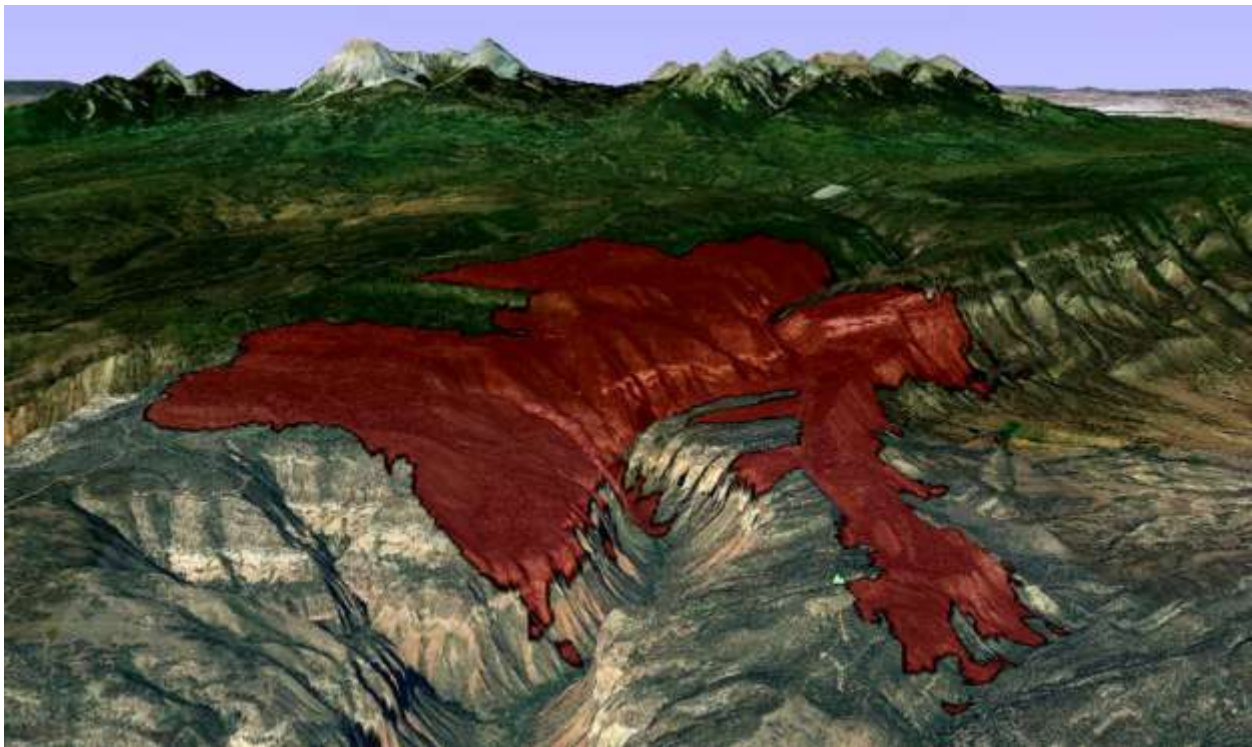
Forest Supervisor (signature)

6/15/2012

Date

/s/ Marlene Finley for  
HARV FORSGRENRegional Forester (signature)6/19/2012

Date



Sunrise Mine Fire Display's Produced by Great Basin IMT (Final Narratives Report) in Google Earth.