

Date of Report: 8/04/07

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:** Cathedral B. **Fire Number:** NV-HTF-077
C. **State:** NV D. **County:** White Pine
E. **Region:** 4 F. **Forest:** Humboldt-Toiyabe
G. **District:** Ely H. **Fire Incident Job Code:** P4DR2R
I. **Date Fire Started:** 07/18/2007 J. **Date Fire Contained:** 08/01/2007
K. **Suppression Cost:** \$1,125,000
L. **Fire Suppression Damages Repaired with Suppression Funds**
 1. Fireline waterbarred (miles) 2 miles
 2. Fireline seeded (miles): 0 miles
 3. Other (identify):
M. **Watershed Number:** 160600120901; 160600120903 (HUC 6 Watersheds)
N. **Total Acres Burned:**
 NFS Acres(**3707**) Other Federal (0) State (0) Private (140)
O. **Vegetation Types:** The Cathedral fire burned approximately 3000 acres pinyon/juniper (P/J) vegetative communities and 660 acres of mountain and black sagebrush vegetative communities, as well as about 200 acres of mountain brush, riparian and grassland communities.

Much of the pinyon-juniper that burned had little understory cover. Where the pinyon and juniper was dense the understory cover is an estimated 15% and is primarily composed of Sandberg's bluegrass, *Poa secunda*,

and Indian ricegrass and *Achnatherum hymenoides*. Cheatgrass, *Bromus tectorum*, occurs throughout the burn area. Where the P/J was less dense, the understory consisted of mountain big sagebrush, *Artemisia tridentata vaseyana*, black sagebrush, *Artemisia nova*, water jacket, *Lycium andersonii*, snowberry, *Symphoricarpos oreophyllus* and additional grasses such as squirreltail, *Elymus elymoides*, Thurber's needlegrass, *Achnatherum thurberianum* and needle and thread grass, *Hesperostipa comata*.

The dominant sagebrush type that burned was mountain big sagebrush, but some of the drainages also had basin big sagebrush, *Artemisia tridentata tridentata*, and silver sagebrush, *Artemisia cana*. The sagebrush sites were generally more productive than the pinyon-juniper communities. Grasses found in the sagebrush sites were Thurber's needlegrass, *Achnatherum thurberianum*, crested wheatgrass, *Agropyron cristatum*, Sandberg's bluegrass, *Poa secunda*, Indian ricegrass, *Achnatherum hymenoides*, squirreltail, *Elymus elymoides*, slender wheatgrass, *Elymus trachycaulus* and needle and thread grass, *Hesperostipa comata*. Forbs included silver lupine, *Lupinus argenteus*, tapertip hawksbeard, *Crepis acuminata* and firecracker penstemon, *Penstemon eatonii*. Rubber rabbit brush, *Ericameria nauseosa*, and green rabbit brush, *Chrysothamnus viscidiflorus*, along with bitterbrush, *Purshia tridentata*, curl-leaf mountain mahogany, *Cercocarpus ledifolius*, serviceberry, *Amelanchier utahensis*, chokecherry, *Prunus virginiana* and snowberry, *Symphoricarpos oreophilus*, made up the majority of the shrubs burned.

The riparian corridor contained coyote willow, *Salix exigua*, wiregrass, *Juncus balticus*, mountain brome, *Bromus marginatus*, slender wheatgrass, *Elymus trachycaulus*, Basin wildrye, *Leymus cinereus* and several sedges, *Carex spp.*

P. **Dominant Soils:** Gravelly, primarily calcareous clay loams, loams and sandy loams, most are shallow and rocky, well drained to somewhat well drained. (There is no published soil survey for National Forest lands in this area)

Q. **Geologic Types:** Quaternary and Paleozoic sedimentary rock, primarily limestone with some imbedded shales; alluvial deposits originating from sedimentary deposits

R. **Miles of Stream Channels by Order or Class:** First Order intermittent streams: 6.8 miles
Second Order Intermittent streams: 12 miles

S. Transportation System

Trails: 1.3 miles Roads: 7 miles

PART III - WATERSHED CONDITION

A. **Burn Severity (acres):** 907 (low) 1200 (moderate) 740 (high) (Estimate-No BARC Map)

B. **Water-Repellent Soil (acres):** 0 acres

C. **Soil Erosion Hazard Rating (acres):**
____ (low) ____ (moderate) ____ (high)

D. **Erosion Potential:** 12.29 tons/acre

E. **Sediment Potential:** 7,866 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. **Estimated Vegetative Recovery Period, (years):** 5

B. **Design Chance of Success, (percent):** 90

C. Equivalent Design Recurrence Interval, (years):	<u>25</u>
D. Design Storm Duration, (hours):	<u>6</u>
E. Design Storm Magnitude, (inches):	<u>1.8</u>
F. Design Flow, (cubic feet / second/ square mile):	<u>11.9</u>
G. Estimated Reduction in Infiltration, (percent):	<u>5</u>
H. Adjusted Design Flow, (cfs per square mile):	<u>12.5</u>

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Threats to Heritage Resources:

On July 19, 2007, the remaining timbers holding up the main wall of the historic Eberhardt Mill burned completely in the Cathedral Fire. The Fire also removed the vegetation that was stabilizing the rock walls that have been “slumping in” over the years. To avoid losing what is left of this structure the rock walls will need anchored where the timbers have burned out from the base of the structure and sections of the wall supported and protected from erosion of the surrounding soil.

The Eberhardt Mill was built in the 1870’s as part of the nation’s most intense and shortest lived mining boom. It is eligible for the National Register of Historic Places because of its importance in history (Criterion A), the outstanding example of mining engineering and masonry work (Criterion C), and its potential to provide important information in history (Criterion D). The Humboldt-Toiyabe has also named the Eberhardt Mill as a Priority Heritage Asset. It is likely the best example of a stamp mill of its era in eastern Nevada.

The Eberhardt Mill and Townsite are at risk from erosion from about 80 acres of hill slope, and two slope drainage systems that are located above the site. The average burn depth in the soil is 3 centimeters. There is about an equal mix of soil surface with loose material and that with a layer of pavement or rock protection.

There is also a threat from where this slope drains across a low point in the road which will direct run-off and debris from upslope through the site. With some minor contouring of the road the low point can be changed and the run-off from the road directed away from Eberhardt.

Another serious threat to the Mill is artifact collectors. During the fire, resource advisors noted five people in the area in one weekend with metal detectors, shovels, picks and firearms.

Threats to Human Life:

The fence around at least two abandoned mine shafts were burned in the fire leaving these sites open and people could possibly fall about 100 feet into an adit. With the surrounding vegetation burned, these adits are more visible, but are currently without proper public protection.

The wooden base of a cattleguard along Cathedral Canyon Road was burned in the fire requiring a temporary diversion of vehicle traffic. On July 27, the Forest road crew installed concrete abutments and replaced the cattleguard mitigating this threat.

Old cyanide containers were found within and adjacent to the burn area. Ken Maas, Forest On-Scene Coordinator, completed a site inspection and reported, “There is no indication that a concentrated release of cyanide occurred. Stressed vegetation was not observed directly adjacent to any of the tins. Mine tailings and waste rock are deposited throughout the area. As I see it, the biggest problem at the site may be related to soils surrounding concentrated areas of red brick where sulfide roasting may have occurred.”

Field reviews within and downstream of the burn confirmed that there are no situations where human occupancy of flood prone areas exists. The overall effects of the fire do not appear to have created any significant threats to human life.

Threats to Property:

Field reviews within and downstream of the burn confirmed that while there is private land within eight and twelve miles downstream from the burn area, it is unlikely that a flood event would generate enough force to impact the private property at this distance.

Threats to Drainages:

A side drainage near Applegarth Spring (about 120 acres) was severely burned leaving little live root mass, no surface soil structure and almost no visible signs of vegetation. The soil surface was still hot and smoldering three days after the fire burned through this area. The burn depth in the soil was averaged about 5 centimeters and soil surface has lost structure, is presently loose consistency and already showing wind erosion. At this site, several ephemeral channels converge and then drain through a narrow area constricted by large rock outcrops. Immediately adjacent to this area is the Cathedral Canyon Road. Potential for debris to enter onto the road and across to the main drainage exists. There are also two small heritage sites near the mouth of this drainage that could be impacted if a large run-off event were to occur.

Cathedral Canyon is very narrow and steep, and in several locations there isn't much space between the mouth of side canyons, the road and the main drainage. The Canyon is at risk of experiencing washouts that will impact the road.

Threats to Habitat:

There were minor impacts to sage grouse habitat resulting from the Cathedral Fire including burning and removal of sage brush communities along the northeastern edge of the fire that provided some winter and summer habitat needs. The closest leks are located five miles west of the fire in Newark Valley and 6.5 mile to the southeast near Tom Plain Spring. Neither lek was impacted by the fire.

The majority of the White Range is considered critical summer habitat by NDOW. The quality and quantity of the mid-elevation summer ranges within the White Pine Range (NDOW Management Area 13) are slowly being reduced by the encroachment of pinyon/juniper into the brush zones. This is believed to have a greater impact on the deer herd than affects to winter range. The Cathedral Fire should be of benefit to mule deer if some of those acres come back as mountain brush communities.

Potential habitat, but no known locations, for R4 Sensitive plant species Eastwood milkweed, Scorpion milkvetch, Waxflower, Mount Moriah beardtongue, Nachlinger catchfly, and Currant Summit Clover occur within the perimeter of the fire. There is a known location for the NNHP Watch species Rayless tansy aster outside of the fire to the north.

Threats to Long-Term Soil Productivity and Ecosystem Integrity:

Noxious and invasive weeds known to the area include Bull Thistle, *Cirsium vulgare*, Black Henbane, *Hyoscyamus niger*, Russian Knapweed, *Acroptilon repens*, Yellow Spine Thistle, *Cirsium ochrocentrum*, and cheatgrass, *Bromus tectorum*. In addition, a Type 2 IMT from Southern California managed this fire with various resources from across the country. A weed-wash station was ordered and used, but not until after the third burn period.

Long-term encroachment by pinyon pine and Utah juniper has resulted in a depleted understory of herbaceous and shrub vegetation. Cheatgrass and yellowspine thistle, which are invasive species that have increased significantly after previous fires in this area, are present within the burn area. An increase in these invasives will result in very poor range land condition, increased fire frequency, and associated loss of long-term soil productivity.

Approximately 800 acres of pinyon-juniper habitat in the south end of the Cathedral Fire burned hot enough to remove almost all the branches and many of the stems from the trees in this area. There was little understory

herbaceous or shrub cover in this area prior to the fire, and concerns exist that cheatgrass, which was present in small quantities prior to the burn, will expand throughout the south end of the fire.

B. Emergency Treatment Objectives:

The goals of the burned area emergency rehabilitation and treatments are to:

- Protect the Eberhardt Mill and Townsite from post-fire erosion and run-off.
- Maintain the integrity of the Eberhardt Mill rock wall to the extent possible.
- Protect the Heritage Resource from looting in and around the now exposed artifacts in the Eberhardt area.
- Minimize the risk to human health from abandoned mine shafts.
- Slow movement of run-off and debris to minimize the chance of washing out the road in Cathedral Canyon.
- Re-establish native plant communities in a timely fashion to reduce or eliminate long-term soil productivity and protect the ecological integrity of the burned area.

Treatment objectives to achieve the goals are:

- Stabilize the main wall of the Eberhardt Mill to the extent possible by protecting the adjacent soil from erosion and revegetating the site.
- Fence the Eberhardt Mill site to protect it from people walking on it and to protect people who might think it is safe to explore.
- Provide law enforcement patrols in the Eberhardt area on weekend through hunting season this year to deter looters.
- Stabilize the slope above Eberhardt and recontour the road surface to decrease hill slope erosion and move the run-off area about 60 feet away from the Eberhardt site.
- Rebuild fences around abandoned mine adits for public safety purposes.
- Control expected invasion by cheatgrass and yellow spine thistle through application of native seed mix and site monitoring to locate and assess new invasions.
- Control expected invasion of noxious weeds through herbicide application.
- Utilize erosion control structures, mulching and seeding to minimize the effect of run-off on the road and stream channels.

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

Land 75 % Channel 75 % Roads/Trails 75 % Protection/Safety 90 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	75	85	95
Channel	80	90	100
Roads/Trails	75	85	100
Protection/Safety	90	100	100

E. Cost of No-Action (Including Loss):

F. Cost of Selected Alternative (Including Loss):

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Cheri Howell

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H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

The following areas are recommended for seeding (approximately 1,000 acres):

- Hillside above and adjacent to Eberhardt Mill (estimated 80 acres) to stabilize soil to protect historic resources.
- Basin near Applegarth Spring (estimated 120 acres) to stabilize riparian corridor and rehabilitate this high intensity burn area.
- Hillsides in southern end of burn (estimated 800 acres) to stabilize soils in high intensity burn area and help protect this area from cheatgrass invasion.

Recommended Seed Mix:

Plant Species	Seeding Rate (lb. PLS*/acre)	Pure Live Seeds per Pound*	Estimated Cost of PLS/Lb.**	Pure Live Seed Per Foot²	Total Cost of PLS for 1,000 Acres
Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>)	5 lb.PLS/ac	125,680	\$6.00	14.43	\$30,000
Indian ricegrass (<i>Achnatherum hymenoides</i>)	4 lb.PLS/ac	161,920	\$5.00	14.87	\$20,000
Western wheatgrass (<i>Pascopyrum smithii</i>)	5 lb.PLS/ac	118,000	\$5.00	13.54	\$25,000
TOTAL	11 lb/ac			42.84	\$75,000

Recommended mitigation measures for the Applegarth Spring and Eberhardt Mill sites include aerial wood or straw mulching, and installing straw bail check dams in the channel. A silt fence near the bottom of the Applegarth drainage would be an effective and inexpensive mitigation measure to protect the channel and road.

An additional 200 acres of mulching would be needed to protect the soil surface on the steeper, more exposed slopes on the south end of the burn until vegetation can be established.

Channel Treatments:

The road in Eberhardt Canyon is at risk of experiencing washouts in several locations, because of the high burn severity in the Applegarth and lower Eberhardt areas. Suggested treatments to mitigate erosion include silt-fencing, mulching and seeding and constructing water bars.

Roads and Trail Treatments:

There is a need to re-contour and fill a 60 foot section of the road above Eberhardt to move location of the road drainage away from the Eberhardt Mill.

Protection/Safety Treatments:

Stabilization of the main wall at the Eberhardt Mill will require re-pointing the wall with an appropriate anchor and shore-up fire-derived holes in the wall. Soil stabilization around the mill site can be achieved by an application of hydro mulch, channeling run-off away from the site and protecting the area with a four-strand wire/T-post fence.

To prevent illegal collecting in the now exposed burn area, we need law enforcement patrols, to educate and prevent violations of the Archaeological Resources Protection Act. Based on recent observations, we believe that illegal activities are taking place on Fridays, Saturdays, and Sundays. While volunteer site stewards visit the site at least quarterly, but they do not have the ability to do more than report potential illegal activities.

Abandoned mine shafts that have the protective fencing burned beyond recovery will be re-fenced to help prevent people and animals from falling into these holes.

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.)

Noxious Weeds

The burned area will be monitored for the presence of noxious weeds. New weed locations will be documented with GPS positions and photographs. Local weed treatment crews will conduct the monitoring and treat with herbicide as necessary. Monitoring will occur at least once in early summer and once in fall to prevent weeds from maturing in the burned area. Monitoring levels may be increased if weeds are detected in the area. If additional monitoring of treatments is necessary beyond 1 year, an interim 2500-8 request will be submitted. A monitoring report following the first year monitoring results will be submitted before any interim requests are made.

Cheatgrass and Yellowspine Thistle

Monitor four (4) transects strategically placed within the burn perimeter. These transects will measure effectiveness of seeding treatment. Local or forest staff will conduct the monitoring. Each transect will be read once a year for up to three years beginning in 2007.

If the above monitoring indicates treatment has been ineffective or less than desirable, the monitoring team may decide to request additional funding to re-seed with the same or alternate seed mix. If monitoring of treatments beyond one year is needed, a justification and interim request will be submitted for year two. A monitoring report following year one results will be submitted before any requests are made for funding of monitoring in year two.

Heritage Monitoring

Monitor the effectiveness of erosion control on site integrity at Eberhardt for one year, with an additional year or two, if needed. If additional monitoring of treatments is necessary beyond 1 year, an interim 2500-8 request will be submitted. A monitoring report following the first year monitoring results will be submitted before any interim requests are made.

Erosion Control Monitoring

Roads and drainage dips – Visually monitor to make sure erosion isn't impacting roadbed or negatively impacting public safety.

Intermittent drainages - Visually monitor changes in drainage using proper functioning condition approach. Impacts from sediment and scour would be recorded.

Straw bale erosion structures - Visually monitor the function for 3 years, estimate amount of sediment trapped, and recommend necessary repairs/modifications.

Check dams – Visually monitor the function for 3 years, recommend necessary repairs/modifications.

Erosion - Install six soil erosion pins (3 in the high and 3 in the moderate burn intensity areas). Visually monitor for sheet erosion, rills, and gullies. Measure average depths of rills and gullies. Use data to verify erosion models and calculate how much sediment has eroded from the burn area.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

Part IV - Emergency Stabilization Treatments and Costs of NFS Lands											
			NFS Lands				Other Lands			All	
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$		units	\$	Units	\$	\$
A. Land Treatments											
Mulching	ac	300	400	\$120,000	\$0			\$0		\$0	\$120,000
Aerial seeding	ac	75	1000	\$75,000							\$75,000
Seed	ac	75	1000	\$75,000	\$0			\$0		\$0	\$75,000
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$270,000	\$0			\$0		\$0	\$270,000
B. Channel Treatments											
Check dams	ea	480	10	\$4,800	\$0			\$0		\$0	\$4,800
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$4,800	\$0			\$0		\$0	\$4,800
C. Road and Trails											
Water Bars	ea	150	30	\$4,500	\$0			\$0		\$0	\$4,500
Silt Fence	ea	200	3	\$600	\$0			\$0		\$0	\$600
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Road & Trails				\$5,100	\$0			\$0		\$0	\$5,100
D. Protection/Safety											
Fencing	mi	13,200	0.75	\$10,000	\$0			\$0		\$0	\$10,000
Law Enforcment	days	800	30	\$24,000							\$24,000
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Structures				\$34,000	\$0			\$0		\$0	\$34,000
E. BAER Evaluation											
Team of 7 specialists	total	11,550	1		\$11,150						\$11,150
Insert new items above this line!				---	\$0			\$0		\$0	\$0
Subtotal Evaluation				---	\$0			\$0		\$0	\$0
F. Monitoring											
Invasive Species	total	4,500	1	\$4,500							\$4,500
Seeding	total	1	3500	\$3,500							\$3,500
Erosion Control	total	3,500	1	\$3,500							\$3,500
Heritage	total	5,000	1	\$5,000				\$0		\$0	\$5,000
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Monitoring				\$16,500	\$0			\$0		\$0	\$16,500
G. Totals				\$330,400	\$0			\$0		\$0	\$341,550
Previously approved											
Total for this request				\$330,400							

PART VII - APPROVALS

1. Edward C. Monnig 8/13/07
Forest Supervisor (signature) Date

2. Regional Forester (signature) Date

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