USDA-FOREST SERVICE

FS-2500-8 (6/06)
Date of Report June 6, 2014
Date of Interim Report #1: June 10, 2014
Date of Interim Report #2: June 17, 2014
Date of Interim Report #3: June 23, 2014
Date of Interim Report #4: Sept. 5, 2014

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 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)

[X] 2. Interim Report **#4** (in purple)
[X] 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: Slide

B. Fire Number: AZ-COF-000320

C. State: Arizona

D. County: Coconino

E. Region: 3

F. Forest: Coconino NF

G. District: Red Rock and Peaks Ranger Districts

H. Fire Incident Job Code: p3h4st14

I. Date Fire Started: May 20th, 2014

J. Date Fire Contained: June 4, 2014

K. Suppression Cost: ~$10,100,000

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (fire line): 3.5 miles of line covered with slash.

M. Watershed Number: Oak Creek Watershed 5th code HUC number 1506020205

N. Total Acres Burned: 21,227
NFS Acres(X) Other Federal ( ) State (X) Private (X)

O. Vegetation Types: Vegetation types range from ponderosa pine, gambel oak to chaparral types dominated by turbinella oak and manzanita and other shrub and perennial grass species. Chaparral is found on steeper slopes (generally greater than about 40 percent) on lower elevations and range from about 5000 feet to 6400

feet. Ponderosa pine gambel oak types are generally found on slopes less than 40 percent and at higher elevations and range from about 6400 to 7300. Mixed conifer and ponderosa pine vegetation types is found in assocation at high elevations (about 5500 to 7200 feet in the Red Rock Secret Mountain Wilderness Area with ponderosa pine on southern aspects and mixed conifer (Douglas Fir) on north aspects. Riparian areas are minor in extent within the fire perimeter and found along Oak Creek and West Fork of Oak Creek with Mixed Broadleaf, Montane Willow and Gallery Coniferous Riparian Forest Potential Natural Vegetation type.

P. Dominant Soils:

Throughout the fire perimeter, there is a relatively even mix of soils found on flat slopes (0 to 40 percent) and on steep slopes greater than about 40 percent. Soils found on slopes ranging from 0 to 40 percent at higher elevations on ponderosa pine vegetation types are fine textured soils derived from limestone classified as Typic and Glossic Eutroboralfs with fine sandy loam surfaces and fine or clayey-skeletal textured Mollic, Typic or Lithic Eutroboralfs and Typic Argiborolls with loam surfaces with soil depth ranging from 10 to 40 inches when derived from basalt.

Soils found on slopes ranging from 40 to 120 percent in chaparral vegetation types are dominated by Typic Ustochrepts, loamy-skeletal, moderately deep, very stony fine sandy loams and Typic Ustorthents, sandy-skeletal, mixed, mesic, moderately deep, extremely bouldery loamy fine sands with Rock Outcrop.

Soils found on slopes ranging from 40 to 120 percent in ponderosa pine and mixed conifer vegetation types include Typic Argiustolls, Mollic Eutroboralfs, and Typic Dystrochrepts, moderately deep, very stony to extremely boulder fine sandy loams.

Q. Geologic Types: Paleozoic sedimentary rocks (Coconino sandstone, Kaibab limestone, Coconino sandstone, Schnebly Hill formation), dominate and occupy about 73% within the fire perimeter while volcanics Quaternary basalt cap) occupy about 27 percent.

R. Miles of Stream Channels by Order or Class:

Class	Miles
Ephemeral	69.4
Intermittent	18.2
Perennial	0.7

S. Transportation System

Trails: 4.8 miles Roads: 80.3 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 10,415 (48%) (low) 7067 (32%) (moderate) 3115 (14%) (high)
1293 (6%) (unburned)

B. Water-Repellent Soil (acres): about 10,200 acres

C. Soil Erosion Hazard Rating (acres):
6926 (slight) 3015 (moderate) 6493 (severe)

D. Erosion Potential: 6.5 to 100 tons/acre with a burned area average of **30 tons/acre** (Hillslope Erosion model)

E. Sediment Potential: 20,900 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5 (3 for chaparral and 5 for pine vegetation types)

B. Design Chance of Success, (percent): 70

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

D. Design Storm Duration, (hours): 1

E. Design Storm Magnitude, (inches): ~2

F. Design Flow, (cubic feet / second/ square mile): ~190 - 250

G. Estimated Reduction in Infiltration, (percent): 46

H. Adjusted Design Flow, (cfs per square mile): ~ 370 - 1000

PART V - SUMMARY OF ANALYSIS

The Slide Fire burned approximately 22,000 acres on the Flagstaff and Red Rock Districts of the Coconino National Forest in north central Arizona roughly along and west of State Route 89a and Oak Creek Canyon from Sterling Springs hatchery to Slide Rock State Park .The Slide Fire was human caused and burned across moderate to very steep chaparral and ponderosa pine and mixed conifer covered slopes and slopes less than about 40 percent in ponderosa pine dominated vegetation types within the Oak Creek 5th HUC (Hydrologic Unit Code) watershed. The steeper slopes are especially subject to debris flows, rockslides, overland flow and accelerate erosion that could become concentrated flow and in defined drainages potentially producing large floods that could damage and pose risk to forest values (life, property, natural and cultural resources identifed below) and off-Forest private property and county infrastructure.

Approximately 3,115 acres (14 percent) burned at high soil burn severity, 7,067 acres (32 percent) burned at moderate severity, and 10,415 acres (48 percent) burned at low severity and 1,293 acres (6 percent) remain unburned or burned at very low severity. Collectively, about 46% of the fire burned in the moderate or high soil burn severity class. Repeated onsite tests indicate both moderate and high soil burn severity classes have hydrophobic soil tendencies that could have high hydrologic response. Average annual sheet and rill soil erosion for the burned area averages about 30 tons/acre.

The 6th HUC (Hydrologic Unit Code) watersheds of concern are Upper Oak Creek and West Fork of Oak Creek that include Sterling Spring and the perennial streams West Fork of Oak Creek and Oak Creek. These watersheds and hillslopes drain directly toward forest campgrounds, day use areas, the Sterling Spring Fish Hatchery, cultural sites, an Outstanding Arizona Water (Oak Creek, West Fork of Oak Creek), Side Rock State Park, non-Forest lands including approximately 75 or more homes, public, private and forest roads. Post-fire floods from the 25-year,1 hour rainstorm could be 2 to 8 times greater than pre-fire flows. In smaller tributaries, the time to peak can be less than 30 minutes, allowing very minimal time to react to a high intensity precipitation event occurs.

A total of 19 eligible or unevaluated archaeological sites are within or immediately adjacent to the Slide Fire. Twelve sites were documented for their post-fire condition. All of the sites above the Mogollon Rim were determined to be at low risk of post-fire storm effects. Six sites within Oak Creek Canyon are being recommended for emergency treatments to mitigate potential adverse effects to significant cultural resources

from post fire storm events. Oak Creek Canyon TCP (Traditional Cultural Properties) – The Hopi tribe, Yavapai-Apache Nation, and Yavapai Prescott Indian Tribe have all expressed that Oak Creek Canyon has traditional cultural significance to them. This property has not been formally evaluated, but it has been informally recognized as a TCP by the Forest for management purposes.

Twelve wildlife species and their habitat (including 12 Protected Activity Centers (PACs)) were evaluated for the Slide Fire BAER assessment. Mexican spotted owls are federally threatened and eleven are on the Region 3 Forest Service Sensitive Species list. The narrow-headed gartersnake (Forest Service Sensitive) is proposed for listing as a threatened species and has proposed critical habitat.

There are fifteen Region 3 sensitive species - Arizona bugbane, alcove bog orchid, Ertter's rose, cliff fleabane, Flagstaff pennyroyal, northern goshawk, peregrine falcon, bald eagle, desert sucker, Sonora sucker, a mayfly, a caddisfly, Allen's lappet-browed bat, Western red bat, and narrow-headed gartersnake (also a proposed threatened species with critical habitat). The gartersnake population and habitat is located within the fire perimeter in West Fork of Oak Creek and in Oak Creek.

There are numerous noxious or invasive weed locations within the burn, detected during surveys conducted prior to the fire. The most troublesome weed species of concern are Dalmatian toadflax (*Linaria dalmatica*) and cheat grass (*Bromus tectorum*).

A. Describe Critical Values/Resources and Threats:

See Appendix A (in the attached appendices document) for a complete tabular display of all values, resources and their associated risk and threats.

See Appendix B (in the attached appendices document)for executive summary resource reports of current condition, values at risk and associated threats. Critical values and resources and threats are listed below.

<u>Critical Values/Resources on Forest system lands identifed as high or very high in risk evaluation</u>.

Sterling Springs junction box and associated infrastructure - a water delivery system to the fish hatchery, Pine Flat campground, and downstream water users.

Sterling Springs Fish Hatchery, trout ponds, buildings, and access road with culverts (non-forest buildings on forest lands under a Special Use Permit).

Public health and safety. Swimming and day use along 9.43 miles below burn including Grasshopper Point.Forest users – rockfall, debris flows and sediment laden rapiding peaking runoff events from summer monsoonal events pose a threat to users within and immediately downstream of the burned area. Primarily along a 9.43 miles stretch of State Route 89A on forest system lands. Human life and safety of recreationalists and land owners along West Fork of Oak Creek and Oak Creek from threat of post fire storm events including direct rockfall, debris flow and flooding.

AB Young (including recreation and cultural values) and West Fork of Oak Creek designated trails footprint. Post-fire storm events threaten trail footprint damage and complete loss.

Forest roads within areas of moderate or high burn severity are at risk of loss of road footprint infrastucture. Forest level 2 road footprints designated open in TMR and a portion of FR 231 near East Pocket Lookout risk damage and loss from post fire storm events.

The following cultural sites are at high or very high risk of loss or damage: AB Young Trail, Lomalai lodge, Ranger Thomas cabin.

Forest facilities – Campgrounds, including Cave Springs Campground Loop E, and visiter center/picnic area, Manzanita vault toilet, Banjo Bill vault toilet. Post fire runoff events impacting these vault toilets may result in contamination of Oak Creek

Soil productivity - post fire storm events in areas of moderate and high burn severity especially in soils outside chaparral vegetation types are expected to pose risk to soil productivity from accelerated erosion above soil loss thresholds. Some deeper more productive soils are located within the wilderness area outside of chaparral vegetation types also. Soil productivity is critical for forest vegetation structure, wildlfie habitat including PAC's, and maintaining the ability to infiltrate water and filter sediments to protect water quality downstream.

Region 3 sensitive species - Arizona bugbane, alcove bog orchid, Ertter's rose, cliff fleabane, Flagstaff pennyroyal and non-sensitive Bebbs Willow. Threats include loss of habitat components from flooding and landslides.

Soil loss and soil productivity in habitat for Mexican spotted owls (Federally threatened), and six Forest Service sensitive species: narrow-headed gartersnakes, northern goshawks, peregrine falcons, bald eagles, Allen's lappet-browed bats, and western red bats. Loss of soil and soil productivity is a primary driver of habitat recovery.

Riparian function and water quality degradation in habitat effected by post fire storm events and ash for narrow-headed gartersnake (proposed threatened with proposed critical habitat), and six Forest Service sensitive species: desert sucker, Sonoran sucker, a mayfly, a caddisfly, and western red bat. The gartersnake population and habitat is located within the fire perimeter in West Fork of Oak Creek and in Oak Creek. Fish and macroinvertebrates (prey) would likely decline in the presence of ash laden flows.

Water quality – Oak Creek and West Fork of Oak Creek– are State designated "Outstanding Arizona Waters" signifying critical high value. Oak Creek is also on the State ADEQ and EPA impaired waters 303d list for exceedences in pathogens (E. coli). Runoff containing ash and fine to coase grained sediments will be transported into Oak Creek before recovery occurs.

Critical Values/Resources on Non-Forest system lands:

Human Life and Safety of private residences along State Route 89a Oak Creek Canyon including but not limited to Junipine, Manresa resort, Garland Resort, Pine Flats subdivision, and Forest homes.

Human Life and Safety along Oak Creek.

State Route 89A, - primary road through Oak Creek Canyon connecting Sedona and Flagstaff. Debris laden increased flows capable of blocking and/or washing out culverts under the highway.

Approximately 75 residences and businesses between burned areas and Oak Creek Canyon. Some residences and business are located west of State Route 89A and immediately adjacent to the eastern perimeter of the fire. These areas will be prone to increased risk from rockfall, debris flows, and sediment laden runoff.

County Emergency Response (fire station) – the above area includes a County fire station

Please see Appendix A (in the attached appendices document) for the evaluation of values and their assocated risks from post fire storm related events . The values at risk matrix was used.

B. Emergency Treatment Objectives: (Described in Section H, Treatment Narrative)

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

Land **70** % Channel **90** % Roads/Trails **90** % Protection/Safety **80** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	50	80	N/A
Channel	30	50	N/A
Roads/Trails	90	70	N/A
Protection/Safety	90	90	N/A

E. Cost of No-Action (Including Loss): $59,975,000

F. Cost of Selected Alternative (Including Loss): $29,440,000

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology	[X] Soils	[X] Geology	[ ] Range	[X] Wilderness
[ ] Forestry	[X] Wildlife	[ ] Fire Mgmt.	[ ] Engineering	[ ]
[ ] Contracting	[ ] Ecology	[X] Botany	[X] Archaeology	[ ]
[ ] Fisheries	[ ] Research	[ ] Landscape Arch	[X] GIS	

Team Leader: Gregory A. Kuyumjian/Rory Steinke

Email:rsteinke@fs.fed.us__ Phone:928.527.3451_ FAX:928.527.3620

H. **Treatment Narrative:**

Treatments listed in **black** are associated with the Initial BAER request, in **green** for Interim #1 request, in **blue** for Interim #2 request and **"Accent 6"** for Interim #3. Interim 3 is not requesting additional emergency funding but requesting approval of BAER legitimate activities and will be funded through cost savings from prevoius BAER approvals.

(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:

Cultural Sites:

Six sites within Oak Creek Canyon are being recommended for emergency treatments with the objective to mitigate potential adverse effects of direct damage from post fire storm related events (debris flow, rock fall and flooding) to significant cultural resources

Ranger Thomas homestead cultural site protection. The site is located near the mouth of West Fork of Oak Creek below a moderate and high burned hillsope. A row of straw bales anchored with 2 T-posts/bale to protect remaining foundation is recommended.

Lolomai lodge cultural site protection near ranger Thomas homestead, aerial application of certified weed free seeds (31 seeds/sq ft) and aerial mulching with certified weed free agricultural straw over the 2 acre site as part of the Interim 2 submission. Seeds include a mix of native and quick growing non-persistent barley (listed below).

This seed mix meets the BAER directive 6040 and is consistent with FSM 2070.3 policy. Part 3 states that select non-native plants may be used on an interim basis if they do not displace native species or offer serious long-term competition to the recovery of endemic species and are designed to aid in the re-establishment of native plant communities.

(Proposed mix for seeding all sites)

The seed mix shall be certified weed free. The seeding rate is 31 seeds/sq. foot (approximately 27 pounds per acre).

Table 1. Seed Mix for Slide Fire.

Common name	Scientific Name	Seeds/sq. foot	Pounds/acre
Barley	*Hordeum vulgare*	6	21
Slender wheatgrass	*Elymus trachycaulus*	10	2.7
Little bluestem	*Schizachyrium scoparium*	5	0.8
Squirreltail	*Elymus elymoides*	10	2.3

Cultural site protection of three historic ditches along terraces of Oak Creek just north of Slide Rock State Park to near West Fork of Oak Creek within burned perimeter Aerial seeding and aerial mulching hillslopes above sites to protect damage to historic ditches from expected rockfall, debris flows and flood events. Further details of this treatment is is spelled out later in Interim #2

BAER Interim #2

Hillslope Treatments

Aerial seeding (31 seeds/sq.ft.) of certifed weed free grass species would be applied followed by aerial certified weed free straw mulch application (1 ton/acre covering at least 70% of soil surface) on 3462 acres of moderate and high burn severity that exhibited very strong hydrophobic conditions (See Appendix D for total acres and Appendix F for aerial seeding and mulching acres).

Criteria for selected acres included: Slopes< 40% and for the most part, surface rocks fragments <50%. Selected acres were tied to improving conditions associated with the following values at risk: Sterling Canyon Spring, Heritage Sites, T & E habitat, geohazards, water quality and soil productivity. Of the 2175 acres, **697 are located within the Red Rock – Secret Mountain Wilderness.** The objective of mulching and seeding also would reduce soil loss and ash and sediment deposition to tributaries to West Fork of Oak Creek and Oak Creek perennial streams redicing adverse efffects to water quality and maintain soil and vegetative productivity in deep and moderately deep soils adjacent to Oak Creek.

Sterling Canyon Spring – a water supply for; Arizona Game and Fish “Sterling Springs Fish Hatchery”, Forest Service Pine Flats campground and supplemental water used at private residences would be better protected with seeding and mulching of soils with strong hydrophobic tendencies in the Sterling Sprign watershed.

Heritage Sites - Three historic ditches will be afforded some protection from erosion and sediment delivery. Reduced runoff into these ditches may add some prevention of ditches overtopping and breaching.

T & E – Seeding and mulching in Mexican Spotted Owl PACs and in Mexican spotted owl critical habitat should reduce, but not eliminate, accelerated soil erosion. Seeding and mulching will speed habitat recovery by improving soil productivity in treated areas. In addition to seeding and mulching, soil loss will

be mitigated by culvert removal, cleaning, road maintenance and hand seeding which will reduce, but not eliminate, sedimentation and ash into proposed critical habitat for the proposed narrow-headed gartersnake. Benefits to Mexican spotted owl critical habitat are realized by some of the acres identified for immediate treatment application.

Geological Hazards – The objective of seeding and mulching is to reduce debris deposits into mainstem of Oak Creek and West Fork Oak Creek from debris flow channels; the magnitude of direct flows from mulched acres would be reduced.

Water Quality – Oak Creek and West Fork of Oak Creek is a State of Arizona designated Outstanding Water (http://www.azdeq.gov/environ/water/permits/download/oaw.pdf) Seeding and application of straw mulch would reduce impacts to water quality.

Soil Productivity – Mulching and seeding in areas identified for immediate treatment would protect soil from accelerated erosion and loss of soil productivity from post-fire storm related events essential for forest vegetative growth and resilience.

All acres are on slopes less than 40 percent where local mulching and seeding has been shown to be effective and does not include chaparral hillslopes. The identified seed mix includes native species and a quick growing, non persistent barley that has been shown to be effective in germination in the first and second year reducing onsite erosion and particularly is effective at holding agricultural straw in place from blowing and removal by runoff. Seeding and mulching has been shown to be very effective at protecting the topsoil in both research and in areas of the nearby 2006 Brins Fire. Over 50% of the soil nutrients are contained in the topsoil. Therefore, protecting topsoil from accelerated erosion reduces soil loss and protects long term soil productivity essential in maintaining habitat for wildlife species while at the same time reducing sediment delvery to connected streamcourses and reducing adverse effects to water quality.

The objective of seeding and mulching would reduce the threats to wildlife and fisheries values at risk. Aerial application of seed and mulch will reduce soil loss, mitigate the loss of soil productivity, and help speed habitat recovery. These treatments target slopes less than 40 % in areas identified as exhibiting strong hydrophobic condtions Not all areas exhibiting strong hydrophobic conditions will be treated (see treatment map Appendix F in the attached appendices document).

Treatments would protect heritage sites, roads, and the Sterling Springs Fish Hatchery, and also reduce soil loss and resulting sediments and ash into drainages that connect to Oak Creek and West Fork of Oak Creek. In some areas, treatments could hasten the recovery of riparian habitat damaged by the fire.

Mulching and seeding have the objective reduce the effects of post-fire storm related effects to sediment delivery and ash to water quality and reduce post fire runoff effects to water quality in Oak Creek and West Fork of Oak Creek.

Mulching and seeding have the objective to reduce the magnitude of post-fire storm related debris flows, rockfalls, runoff and flooding to forest recreation sites including human life and safety both on Forest land and non Forest lands, the Sterling Spring water delivery system to Sterling Springs fish hatchery, Pine Flats campground, subdivisions along Oak Creek, and the hatchery itself.

Channel Treatments:

Sterling Spring Infrastructure Protection (junction box). Preliminary design will enhance concrete encasement with structural reinforcement. This design shall also incorporate a more hydrodynamic form than the existng condition. Additionally, the stream bed reach above the junction box will be reinforced with rip rap to further protect the upstream side of the box and encourage flows to migrate away from river left, to reduce the amount of flow going directly to the box and produce a more direct and efficient flow through the channel.

Storm patrols are proposed to monitor conditions and implement cleanout of Forest road culverts within ponderosa pine forests and drainages connected to Oak Creek after runoff generating precipitation events. The objective is to remove debris from culverts or drainages that otherwise might plug up and pose risk of breach that might damage structures or flood downstream values including road infrastructure and non-forest residential developments. Flooding events posing further risk to human life and safety along Oak Creek may require additional resources.

Roads and Trail Treatments:

Initial BAER request in black –

Extract 3 Culverts on FSR 231 Road – Beyond gate on portion of road beyond gate leading up to East Pocket Lookout. Within areas of moderate and high burn severity, the objective of pulling 3 culverts and cleaning 10 more would provide for water passage under road footprint and protect road infrastrusture and reduce the effects of wildfire to downstream water quality described below.

Clean inlets/outlets and flush 10 culverts FSR 231 between junctions of 231A and 231J.

Repair approximately 20 miles of ML2 road drainage structures (rolling dips and lead out ditches) in moderate to high burn areas. The objective of improving and installing road drainage on 20 miles of forest roads is to protect road footprint from accelerated erosion and runoff and reduce runoff and erosion downstream that would otherwise compromise the road footprint.

Interim #1 BAER request in green –

AB Young Trail Protection – Same trail segment as described in cultural above. Trail to be closed with gate in-place with the objective to protect trail footprint from post fire storm events expected to wash away trail segment.. Existing gate at East Pocket Lookout to be locked and closed to public through at least the end of the first year's monsoons. Approximately 0.75 miles of designated and cultural trail stabilized with improved drainage (rolling dips and water bar drains) to prevent loss of trail footprint in areas of high and moderate soil burn severity. Cost includes sawyer crews for killer trees. Trail work will start after sawyers have cleared killer trees to provide a safer working condition for crews implementing trail protection.

Storm Patrol. Storm patrols are proposed to monitor conditions and implement cleanout of Forest road culverts within ponderosa pine forests and drainages connected to Oak Creek after significant precipitation events. The objective is to remove debris from culverts or drainages that otherwise might plug up and pose risk of breach that might damage structures or flood downstream values including road infrastructure, non-forest residential developments and flooding events posing further risk to human life and safety along Oak Creek. Where warranted, the storm patrol crew would activate the Forest road crew or other crew to address the concerns.

Protection/Safety Treatments:

Install warning signs at all access travelways into the burned area with the objective to prevent public entry and personal injury or loss of life into or below burned affected areas.

Install barricades at potential access points into the closed area of the fire. The objective is to prevent public entry into areas with high risk of fallen trees, debris flows, rock slides and flooding with the objective of preventing personal injury or loss of life to forest users.

Pump, sanitize, and close three vault toilets located in floodplains with the objective to prevent flood waters from carrying contaminants to Oak Creek. The vault toilets do not need to be sealed.

Asbestos testing of a burned cabin adjacent to West Fork of Oak Creek. Adjacent to West Fork of Oak Creek there is concern of a concentration of asbestos. Asbestos testing is recommended. The objective is to determine if hazardous material is present and determine the need for subsequent hazardous material cleanup. If present, asbestos would pose a threat to water quality, and public safety.

Notification letters to County and City officials, Slide Rock State Park, National Weather Service, USGS and NRCS for Emergency Watershed Protection Program assessment and implementation on non forest lands of BAER identified values at risk. Approximately 50 entities will receive letters specific to their nexus to the burned area. Notification letters to County and City officials, Slide Rock State Park, National Weather Service, USGS and NRCS for Emergency Watershed Protection Program assessment and implementation on non forest lands of BAER identified values at risk. The objective is to notify each entity of BAER assessment findings that may pose a risk to life, property and resources on non forest system lands.

Early Warning System ALERT station support (including approval of Emergency Special Use Permit) to Yavapai County and Emergency Services for installation. Yavapai County is the lead for acquisition, installation and maintenance of stations and dissemination of data. Request excludes purchase of ALERT stations. The objective is to coordinate authorization of emergency special use permit and placement of station on forest lands.

West Fork Trail closure gate at Call of Canyon at mouth of West Fork of Oak Creek with the objective to restrict public access and protect human life and safety from debris flows, rock falls and flood events.

Public Information Officer partner coordination, collaboration, press releases and public briefings during implementation of identified treatments. Incorporated into treatment costs. The objective is to provide funding collaboration between forest and public and other agencies during implementation.

Asbestos Site Stabilization: Test Results were positive for asbestos at the burned cabin site near West Fork of Oak Creek posing a threat to water quality and human safety. Hazardous cleanup was determined not to be a legitimate BAER expense. Other funds are being sought. Point stabilization was considered but determined to pose risk to crew and may not be effective anyway.

Well Head Protection (funded through cost savings of previous approvals): Potable Water supply well heads susceptible to flooding will be protected from floodwaters with a combination of visqueen, sandbags, and isolation of water system components, at Cave Spings, Manzanita and Banjo Bill Campgrounds. Well vents will be plugged and cleaning supplies removed from well houses. Visqueen and 2 rows of sandbags, 3 high, will be placed around the well houses with the objective to prevent cross contamination of Oak Creek water quality from floodwaters.

Eight additional vault toilets susceptible to flooding have been identified for pumping, sanitizing and locking (funded through cost savings of previous approvals):Three of the vaults are located at Manzanita, one at Banjo Bill Campground and four within Loop E at Cave Springs Campground. The objective is to prevent contamination of connected Oak Creek water quality from floodwaters entering human waste.

Install about 100 additional warning signs made from plastic and placed on barracades (No Public Entry) and related materials at all access points, primarily along the State Route 89A/Oak Creek Canyon corridor with the objective to prevent public entry and personal injury or loss of life into or below burned affected areas.

Additional barricades (100) – 8 foot plastic, and closure materials are requested (funded through cost savings of previous approvals): The objective is to prevent public entry into areas with high risk of fallen trees, debris flows, rock slides and flooding with the objective of preventing personal injury or loss of life to forest users.

Administrative Closure Compliance Enforcement (funded through cost savings of previous approvals): Dozens of fire and creek access points are present and have been administratively closed through approved BAER activities including barricaded and signed closed with warning and hazard signs. Experience and recent illegal trespassing incidents during the fire closure indicates personnel law enforcement is necessary to assure public compliance of closure. Request is for 60 days after which patrol is probably not needed. The objective is to prevent risk to human life and safety from illegal access to creek and within the fire perimeter.

BAER Interim #4, in Purple

Extension and continuation of the previously approved Administrative Closure Compliance Enforcement (funded through cost savings of previous approvals): The forest has assessed the risk to life and human safety from post monsoon storm events and determined to shrink the existing administrative closure to high risk areas only. Subtantial risk to life and safety still exists from rockfall, debris flows and flood from occasional high intenstiy storms that occur post monsoon in the West Fork of Oak Creek drainage where a main hiking trail exists and high visitor use during the fall and winter months. Additional high risk is persent in the area upstream of Slide Rock State Park and Halfway forest recreation sites where visitor use is high also. Therefore, the forest intends to keep these two areas closed post monsoon and requests emergency funding to enforce closure with onsite presence (high use visitor days), educate and prevent public entry. The objective is to to prevent personal injury or loss of life to forest users in these high risk areas from fallen trees, debris flows, rock slides and flooding .

Experience indicates personnel law enforcement is necessary to assure public compliance of closure.

Experience from this previously approved activity shows excellent compliance with closure and illegal trespassing incidents with a person onsite most days.

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.)

Level 1 monitoring of seeding and mulching treatments is requested in years one and two with the objective to determine the effectiveness of seeding and mulching on relatively flat slopes (5%) and on steeper slopes (about 25%).

The following outlines the proposed monitoring plan.

1. Monitoring questions (answered in results section below)
    - Did these treatments increase soil cover?
    - On what slopes do the mulching and seeding remain intact and effective and what are the differences?
    - Did these treatments provide for soil stabilization and reduce erosion?
    - Does seeding with annual non-native barley prevent native plant recovery?

2. Measurable indicators

Based on the Monitoring questions to be answered, measurable indicators for the seeding/mulching treatments include:

- Presence of germinating seed
- Presence and percent cover of native grass and forb species
- Visual signs of soil erosion
- Mulch cover and depth

3. Data collection techniques (consistent with appropriate protocols)

Treated areas of seeding and mulching/seeding will be evaluated on in those burn areas classified as moderate or high severity on various slopes including less than about 5% and 25%.

Treatment sites reflect similar vegetation types, soil types, slope, aspect, and elevation. Daubenmire frames and transects will be used to assist in determining percent cover. Data collection will include:

- Plant cover and presence of seeded species and native species.
- Soil cover metrics will include plant, litter (cover of mulch and depth of mulch), rock fragment percent.
- Detection surveys to determine if further BAER treatments are needed to improve vegetative (mulch and seed) ground cover to protect values at risk.
- Geo-referenced plots and photo points

4. Evaluation, Results and Conclusions. The final BAER monitoring report will detail the results and conclusions.

Part VI – Emergency Stabilization Treatments and Source of Funds **Interim # 3**

20 Miles ML2 Road Drainage Structu	each	850	20	$17,000	$0		$0		$0	$17,000
Cave Springs Loop E Infrastructure	each	2500	1	$2,500						$2,500
AB Young Trail Protection	each	9000	1	$9,000						$9,000
Storm Inspection and Response	days	1100	15	$16,500						$16,500
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$54,900	$0		$0		$0	$54,900
D. Protection/Safety										
Warning Sign Installation	each	250	50	$12,500	$0		$0		$0	$12,500
Asbestos Test	each	1500	1	$1,500	$0		$0		$0	$1,500
Barricades	each	200	30	$6,000	$0		$0		$0	$6,000
Pump, Sanitize, close vault toilets	each	1200	3	$3,600						$3,600
Notification Letters	each	110	50	$5,500						$5,500
Closure Gate West Fork Oak Cr.	each	5000	1	$5,000						$5,000
Support for ALERT Installation	each	3000	4	$12,000						$12,000
Well Head Protection	each	3,300	3	$9,900						$9,900
Additional Warning Sign Installations	each	20	100	$2,000						$2,000
Pump, Sanitize, close vault toilets	each	1,200	8	$9,600						$9,600
Closure Compliance Enforcement	days	60	417	$25,020	$0		$0		$0	$25,020
Additional Barricades and Materials	each	135	100	$13,500						
Add. Closure Compliance Enforcemt	days	90	222	$19,980						
Subtotal Structures				$126,100	$0		$0		$0	$92,620
E. BAER Evaluation					99,000					
estimated				---			$0		$0	$0
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$99,000		$0		$0	$0
F. Monitoring										
Seeding and Mulching				$4,800	$0		$0		$0	$4,800
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$4,800	$0		$0		$0	$4,800
G. Totals				$2,140,675	$99,000		**$0**		**$0**	**$2,107,195**
Previously approved - cost savings				-$64,820						
Previously approved - cost savings				-$19,980						
Previously approved				$2,055,875						
Total for this request				**$0**						

PART VII - APPROVALS

1. _____ _____
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date