Date of Report: 11/3/04

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[**X**] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

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

[**X**] 2. Interim Request
[**X**] Updating the initial funding request including FY05 monitoring
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Hawkins

B. Fire Number: P4A9QF

C. State: UT

D. County: Washington

E. Region: 04-Intermountain

F. Forest: 07-Dixie NF

G. District: 01-Pine Valley

H. Date Fire Started: July 28, 2004

I. Date Fire Contained: August 6, 2004

J. Suppression Cost: $3,000,000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles):2.5 miles of dozer line
2. Fireline seeded (miles): 1.5 miles of dozer line
3. Other (identify):

L. Watershed Number:

HUC6 Name	HUC6 #	Low Burn Severity Acres	Moderate Burn Severity Acres	High Burn Severity Acres
Spring Creek	160300060203	489	1814	580
Middle Shoal Creek	160300060204	304	1002	218
Little Pine Creek	160300060202	1697	5947	2280
Slaughter Creek	150100100103	0	649	1222
Moody Wash	150100080604	1154	6035	2582
East Fork Beaver Dam	150100100105	211	3403	2066

M. Total Acres Burned: 35,234 (19,000 was considered Wildland Fire Use)
NFS Acres (31,602) Other Federal (3,232) State ( ) Private (400)

N. Vegetation Types:

Vegetation Type	Acres
Gamble Oak, Mixed Shrub	12,1000
Pinyon-Juniper	10,893
Mountain Brush	6,704
Pinyon-Juniper, Mountain Brush	1,373
Wyoming Big Sagebrush	318
Basin Big Sagebrush	214
Total (NFS VEG)	31,602

O. Dominant Soils: Soil map unit data is from the Draft Soil Survey – Dixie National Forest. The soils are typically shallow to moderately deep with very gravelly or cobbly surface textures formed from rhyolitic and latite rocks.

P. Geologic Types: Predominantly Tertiary volcanic flows and ash-flow tuff consisting primarily of rhyolite, latite and andesite, and Quaternary-Tertiary basalt flows.

Q. Miles of Stream Channels by Order or Class: Perennial: 0.41; Intermittent/ephemeral: 149.36

R. Transportation System

Trails: 16.76 miles Roads: 53.13 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3,855 (low) 19,189 (moderate) 9,194 (high)

B. Water-Repellent Soil (acres): 4,510

C. Soil Erosion Hazard Rating (acres):
5,228 (low) 26,374 (moderate) 0 (high)

D. Erosion Potential: 0.98 tons/acre

E. Sediment Potential: 500 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-5

B. Design Chance of Success, (percent): 55

C. Equivalent Design Recurrence Interval, (years): 2

D. Design Storm Duration, (hours): .5

E. Design Storm Magnitude, (inches): .65

F. Design Flow, (cubic feet / second/ square mile): 322

G. Estimated Reduction in Infiltration, (percent): 45

H. Adjusted Design Flow, (cfs per square mile): 144

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Hawkins fire started on July 28, 2004. This incident was initially managed as wildland fire use until July 31 (19,000 acres were consumed at this time) when the town of Enterprise, Utah became at risk. On July 31st, a Type 1 (Martin) IMT was ordered to fully suppress this incident. This BAER assessment and plan only represents treatments and values at risk that were not part of the initial wildland fire use portion of this fire.

Threats to Property and Human Life:

Spring Creek Watershed into the town of Enterprise

Potential flooding damage to the town of Enterprise, prospective damage to the irrigation system diversion structures and the Pendleton Culinary Spring source have been determined to be at risk. The treatments proposed from this will consist of riparian broadcast seeding in Black and Upper Calf Springs Creek and upland broadcast seeding in Pinyon-Juniper areas to help stabilize the moderately and severely burned areas and help restore cover more quickly.

Enterprise Reservoir Watersheds

Storage capacity from increased flow and potential increased sedimentation into the reservoirs were evaluated. It has been determined with modeling that this would not be an imminent threat and no treatments are proposed.

Moody Wash Watershed

Evaluation of effects to the Kern River Gas Pipeline because of increased flows to the Magotsu Creek and Moody Wash confluence and associated private property has shown that these areas would not be an imminent threat and no treatments are proposed.

Mitigation for Threats to Property and Life

To inform the public about risks to human life and property, hazard-warning signs will be necessary. These proposed signs would be posted at 3 major points of entry into the fire perimeter to notify forest visitors of potential flash flooding, rock fall and debris flows that could occur.

Threats to Road Infrastructure

Road drainage was evaluated on 63 culverts to determine if they can function with anticipated increased flows. 14 culverts will need to be cleaned and 13 culverts will need to be increased in size for anticipated post fire hydrologic events associated with the BAER effort. An additional 16 culverts will need to be cleaned and 9 replaced with a National Fire Plan In-The–Black request.

Threats to Unacceptable Resource Degradation:

Five known cultural resource sites were evaluated to determine if they will need additional resource protection would be needed. After review of these sites, no treatments are needed.

ATV encroachment and other off road travel is a concern in this area; it is recommended that signage be placed at critical resource areas to prevent unacceptable degradation to the watershed. Currently an administrative closure is in effect. The signage proposed would help educate and notify forest users of potential excessive degradation to burned watersheds.

Threats to Long Term Soil Productivity:

No treatments are being proposed for the protection of long-term soil productivity. An evaluation of potential erosion from the WEPP model indicates that none of the soils in the 2-year simulation would exceed soil tolerance values.

Threats of Noxious Weeds and Invasive Plant Invasion:

To prevent invasive plant invasion from cheat grass; 3,200 acres have been identified for seeding associated with the BAER effort. An additional 5,000 acres have been identified for seeding and will be proposed with a National Fire Plan In-The–Black request.

To determine the need for future treatments, monitoring will be conducted to document if increased noxious weed and invasive plant invasion is occurring within the wildfire perimeter.

B. Emergency Treatment Objectives:

The primary purpose of the proposed emergency rehabilitation is to take prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to unacceptable resource degradation, property and human life and noxious weeds and invasive plants. The emergency treatments being recommended by the Hawkins BAER Team are specifically designed to achieve the following results.

1) Provide for public safety (road and flood hazard identification) and promote fire recovery by communicating the post fire hazards to the public.

2) Limit colonization and/or expansion of noxious weeds and invasive plants species onto National Forest System lands.

3) Reduce the potential for significant resource damage to and from roads as a result of increased fire related runoff.

4) Reduce the potential for excessive water flow and sediment movement by increasing cover to watershed areas where significant resource damage has occurred.

5) Provide monitoring of vegetative conditions to consider potential emergency treatments that may be required in the near future.

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

Land **70** % Channel ___ % Roads **90** % Other ___ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	65	70	75
Roads	90	90	90

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

Value at Risk	**Estimated Cost**
Damage to Enterprise City Pendleton Springs Culinary Water Structure	$250,000
Damage to Irrigation Structures	$50,000
Flooding Damage to Enterprise Town	$1,200,000
Noxious Weed Encroachment	$75,000
Damage to Roads	$300,000
Invasive Plant Encroachment	$1,400,000
ATV damage to Watershed (rutting, vegetative trampling)	$75,000
Total	**$3,350,000**

F. Cost of Selected Alternative:

Treatments Selected	Estimated Cost
Black Canyon and the Calf Springs Creek Headwaters Seeding	$10,000
Prevention of cheatgrass/watershed cover enhancement in Pinyon/Juniper areas (Aerial Broadcast Seeding/Raking)	$148,907
Culvert cleaning and replacement	$34,740
ATV signage for prevention of resource damage	$1,800
Seeding Implementation	$10,000
Hazard warning signs for life safety issues associated with flash flooding and rockfall	$1,500
Total	**$206,947**

Monitoring Selected	Estimated Cost – FY05	Estimated Cost – FY06	Estimated Cost – FY07
Noxious Weed Monitoring	$1,500	$1,500	$1,500
Vegetation Recovery Monitoring	$2,000	$1,500	$1,500
Total	**$3,500**	**$3,000**	**$3,000**

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Richard Jaros

Email: sjaros@fs.fed.us Phone: 435-865-3722 FAX: 435-865-3791

H. **Treatment Narrative:**

Land Treatments:

Emergency Watershed Stabilization Seeding on the Black Canyon and Calf Springs Creek Riparian Corridors

Seeding the terrace (100 feet on each side of drainage) areas adjacent to these riparian corridors is recommended for Black Canyon and the Calf Springs Creek headwaters near Pilot Peak. The purpose is to increase grass cover to impede probable high water flows, reduce the amount of sediment entering the stream and provide root-holding capacity in the riparian areas. This area is important to Enterprise town as a culinary spring source, for irrigation diversion dams and structures and potential flooding into town. This treatment would compliment the emergency seeding of burned Pinyon-Juniper sites by adding additional quick cover to the watershed.

This treatment was successful in meeting our germination and cover goals within the Sanford burn in 2002. It was felt at that time we did not use a proper target rate and this area will be treated at a much higher rate.

This seeding was completed on Sept. 22, 2004.

Actual Seed Mix (Target Rate 80 lbs/acre- 24 seeds per square foot)

Species	% of mix	Estimated Seeds per Pound	Cost per pound	Acres	PLS	Cost per Acres for Seed	Cost per species for 50 acres
Sterile Triticale QuickGuard	100	13,000	$1.7569	50	4000	$140.55	$7,027.60
Total							$7,027.60

Emergency Seeding of Burned Pinyon-Juniper sites

Burned pinyon-juniper areas necessitate treatment as watershed emergencies; the sparse under-story before the fire, combined with past evidence of cheatgrass makes these areas susceptible to unacceptable resource degradation. The lack of a viable seed bank also makes these zones more vulnerable to invasive plants, such as cheatgrass, which threatens ecosystem structure and function.

Our analysis shows that sites that are the most favorable for invasive cheatgrass growth are on south slopes up to 45 percent, and all other aspects up to 20 percent. We have focused our 3,200-acre seeding on these parameters. After the Magotsu Fire in 1996, seeding of similar grasses as proposed was successful; cheatgrass was also impeded in the reseeded areas.

Raking will be used on 157 acres to supplement seed coverage and promote higher germination.

This seeding was completed on Sept. 22, 2004. Field raking with ATV drag rakes and 30 inch wide landscape rakes occurred during Oct. 3-29, 2004. This work was completed by a 6-person fire crew and overseen by two district employees.

Actual Seed Mix (Target Rate 15 lbs/acre – 111 seeds per acre)

Species	% of mix	Estimated Seed per Pound	Cost per pound	Acres	PLS	Cost per Acres for Seed	Cost per species for 3,200 acres
Bluebunch Wheatgrass P7 Cultivar	33 (4.95 lbs)	140,000	$1.7569	3,200	15,840	$16.08	$27,829.30
Thickspike Wheatgrass	33 (4.95 lbs)	156,000	$1.7569	3,200	15,840	$12.38	$27,829.30
Western Wheatgrass	27.4 (4.1 lbs)	110,000	$1.7569	3,200	13,120	$11.28	$23,050.52
Sandberg Bluegrass	3.6 (.55 lbs)	925,000	$1.7569	3,200	1,760	$2.89	$3,092.14
Sand Dropseed	3 (.45 lbs)	5,600,000	$1.7569	3,200	48,000	$2.36	$2,529.94
Total	100 (15 lbs)			3,200			$84,331.20

Estimated Seed Raking Costs

Estimated Total Raking Costs	Acres	Estimated Cost per Acre
$30,000.00	157	$191.08

An Air Tractor 802 was utilized to complete the Hawkins BAER Seeding. This aircraft was loaded with 2,100 pounds of seed (in a 800 gallon bin) and covered 117 acres with 15 lbs of PLS seed each cycle.

Roads Treatments:

Culvert Cleaning and Replacement

Fourteen culverts will need to be cleaned to function properly and 13 will need to be replaced with larger diameter culverts to prevent projected road damage. In order to calculate the flow rates for the culverts, their positions were located using a GPS system. To calculate the flow rates, a 25-year precipitation event was planned for using the NOAA Atlas. Taken into consideration for the calculations of the watershed for each culvert were: burn severity, basin area, soil type, basin terrain, storm intensity, and vegetative type. After the data was applied, a culvert-sizing chart was used to determine the appropriate size of the culverts that were needed. Listed below are the findings:

Culvert Cleaning	**14 culverts**	**$2,240**
Culvert Replacement	**13 culverts**	**$32,500**

Hazard Warning Signs

Road signs stating that there is a risk of flash flooding, rock fall and mud flows have been placed above Enterprise Reservoir, General Steam Road and the Calf Springs area for public information for next few years until adequate vegetation is established in the watersheds.

Example of Road Sign design:

WARNING

Due to the 2004 fires, All areas behind this sign are subject to the following hazards:

- ***EXTREME FLOODING***
- ***FALLING ROCKS***
- ***DEBRIS FLOWS and EROSION HAZARDS***

BE RESPONSIBLE

Off-Road (ATV) encroachment and other off road travel is a concern in this area. Signage has been placed at critical resource areas to prevent unacceptable degradation to the watershed. Currently an administrative closure is in effect. The signage proposed would help educate and notify forest users of potential excessive degradation to burned watersheds.

Example of ATV (Off-Road) signs:

END OF TRAIL

No motor vehicles beyond this point. OHV violations or removal of this sign jeopardize the future of this OHV opportunity. Questions? Call U.S. Forest Service (435) 652-3100

ATTENTION: OHV RIDERS

This OHV trail is open for your recreation pleasure. Please stay on the designated trial.

The immediate area off the trail is closed for burned area recovery.

Riding off the trail is a violation of Federal regulations and punishable by fine and/or imprisonment.

I. **Monitoring Narrative:**

Noxious Weed and Invasive Plant Monitoring

Monitor the location of the known sites and likely sites for new infestations and implement control actions as specified in the Noxious Weed Amendment to the Dixie Forest Plan (2000) and also monitor for cheatgrass invasion. Randy Russell (Pine Valley Range Conservationist) will be responsible for the noxious weed monitoring and Mark Madsen will conduct the invasive plant monitoring.

Hawkins BAER
Invasive Plant Monitoring

OBJECTIVE: Monitor vegetative recovery to determine needs for future BAER treatments to resist invasive plants (cheatgrass) and to determine if this treatment was effective.
ITEM TO MONITOR: Vegetative recovery of all species in selected plots to determine if BAER seeding was effective in deterring invasive plant species.
TYPE OF MONITORING: Effectiveness
METHODS/PARAMETERS: Nested Frequency
FREQUENCY/DURATION: FY05, FY06 and FY07.
PROJECTED COSTS: $2000 FY05, $1,500 FY06 and $1,500 FY07.
REPORTING PROCEDURES: Annual Hawkins BAER Monitoring Report
RESPONSIBILITY: Mark Madsen, Forest Botanist

Hawkins BAER
Noxious Weed Monitoring

OBJECTIVE: Monitor noxious weeds the Hawkins fire perimeter to prevent an outbreak.
ITEM TO MONITOR: Presence and spread of musk thistle and presence of cheatgrass in burned areas within the Pinion/Juniper ecotype.
TYPE OF MONITORING: Site visit/occular
METHODS/PARAMETERS: Visit known location of musk thistle. Grid exam in burned areas of Pinion/Juniper.
FREQUENCY/DURATION: FY05, FY06 and FY07.
PROJECTED COSTS: $1,500.00 (per year FY05, FY06 and FY07)
REPORTING PROCEDURES: Annual Hawkins BAER Monitoring Report
RESPONSIBILITY: Randy Russell, Range Conservationist

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

		Unit	# of	WFSU	DWR	# of	NFN3	# of	NFS	Total
Line Items	**Units**	**Cost**	**Units**	**SULT $**	**$**	**units**	**$**	**Units**	**$**	**$**
A. Land Treatments										
Seed Purchase	acres	28.11	3250	$91,358	$0	5000	$140,550		$0	$231,908
ATV Signage	signs	30	60	$1,800	$0		$0		$0	$1,800
Aerial Seeding	acres	11	3250	$35,750	$0	5000	$55,000		$0	$90,750
Seeding Implmentation	per job	10000	1	$10,000						
Raking	acres	191.08	157	$30,000	$0		$0		$0	$30,000
Subtotal Land Treatments				$168,907	$0		$195,550		$0	$354,457
B. Channel Treatments										
Flood Warning Signs	each	500	3	$1,500	$0		$0		$0	$1,500
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$1,500	$0		$0		$0	$1,500
C. Roads										
Clean Culverts	each	160	14	$2,240	$0	16	$2,560		$0	$4,800
Upsize Culverts	each	2,500	13	$32,500	$0	9	$9,900		$0	$42,400
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Road & Trails				$34,740	$0		$12,460		$0	$47,200
D. Structures										
				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
Assessment	staff days	300	46.34	$13,902	$0		$0	15	$4,500	$18,402
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Subtotal Evaluation				$13,902	$0		$0		$4,500	$18,402
F. Monitoring										
Noxious Weed	each	1500	1	$1,500			$0	2	$3,000	$4,500
Invasive Plant	each	2000	1	$2,000			$0	1	$2,000	$4,000
							$0		$0	$0
							$0		$0	$0
Subtotal Monitoring				$3,500	$0		$0		$5,000	$8,500
G. Totals				**$222,549**	**$0**		**$208,010**		**$9,500**	**$430,059**

PART VII - APPROVALS

1. /s/ Robert A. Russell — 11-3-2004
Forest Supervisor (signature) — Date

2. _____ — _____
Regional Forester (signature) — Date

Hawkins BAER Team