USDA-FOREST SERVICE FS-2500-8 (7/00)

Date of Report: 03/04/2003

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

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

[ ] 2. Interim Report
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Ryan

B. Fire Number: AZ-CNF-114

C. State: Arizona

D. County: Santa Cruz and Cochise

E. Region: 3

F. Forest: Coronado

G. District: Sierra Vista

H. Date Fire Started: April 29, 2002

I. Date Fire Contained: May 2, 2002

J. Suppression Cost: $1,408,088

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles):
2. Fireline seeded (miles): 0
3. Other (identify):

L. Watershed Number: 1505020203 (Babocamari), 1505030102 (Sonoita Creek), and 1505030101 (Santa Cruz River Headwaters)

M. Total Acres Burned:
NFS Acres(16,683) Other Federal (8,483) State (1,723) Private (11,290)

N. Vegetation Types: grassland and mixed juniper-oak woodland

O. Dominant Soils: Typic Haplustalfs, Lithic Haplustolls, Lithic Ustochrepts, Fluventic Ustochrepts

P. Geologic Types: Sedimentary bedrock and sedimentary deposits

Q. Miles of Stream Channels by Order or Class: 103 miles of first order streams, 11 miles of second order streams

R. Transportation System

Trails: 4.5 miles Roads: 41.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 10318 (low) 5559 (moderate) 0 (high)

Watershed	Low Burn Severity	Moderate Burn Severity
Baldwin Tank	745	20
Redrock	1730	82
Vaughn	139	26
Meadow Valley	297	31
Sheep Ranch	299	10
Lyle	151	1115
O'Donnell	3322	959
Turkey	92	1098
Post	3541	1786
Sycamore	2	432
Total	10318	5559

B. Water-Repellent Soil (acres): 0

C. Soil Erosion Hazard Rating (acres):
3920 (low) 11952 (moderate) 3925 (high)

Watershed	Low Erosion Hazard Rating	Moderate Erosion Hazard Rating	High Erosion Hazard Rating
Baldwin Tank	259	765	
Redrock	691	1730	82
Vaughn	96	165	
Meadow Valley	53	328	
Sheep Ranch	52	309	
Lyle	0	1266	
O'Donnell	764	3322	959
Turkey	448	92	1098
Post	314	3541	1786
Sycamore	1243	434	
Total	3920	11952	3925

D. Erosion Potential: 2.59 tons/acre

E. Sediment Potential: 1100 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3 to 10 years

This estimate is based on previous fires in the same area. Chaparral recovers in 3 years of less due to vigorous sprouting of the various chaparral species.

Oak Woodland will recover in 3 to 5 years based on leaf fall and grass recovery. Litter layer is expected to recover to pre-burn conditions in 10 years.

Grasslands are expected to recover in 2 years, grass litter is expected to return in 5 years under moderate grazing (based on observations made following changes in grazing management to moderate grazing after many years of heavier grazing).

B. Design Chance of Success, (percent): 100

Treatments are limited to protecting culverts and deferring grazing until grass has recovered (2 years).

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 3.8

F. Design Flow, (cubic feet / second/ square mile): 51

G. Estimated Reduction in Infiltration, (percent): 25

H. Adjusted Design Flow, (cfs per square mile): 75

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency: The Ryan Fire burned very rapidly over a large number of ownerships. It included portions of the following watersheds:

Watershed	Predicted Increase in Peak Flow	Predicted Increase in Sediment Production
Baldwin Tank	7%	2%
Redrock	11%	3%
Vaughn	7%	4%
Meadow Valley	5%	3%
Sheep Ranch	8%	5%
Lyle	5%	7%
O'Donnell	44%	18%
Turkey	20%	14%
Post	92%	38%
Sycamore	12%	5%

Unlike other fires that have recently occurred on the Coronado National Forest, nearly all the area within the identified perimeter burned at least at low intensity. However, none of the area was identified as burning at high intensity. Even where the entire brush or tree canopy

was burned, the soil did not appear to be heated to the point where physical changes occurred. The burn intensity map was made from satellite imagry, then field checked.

The following discussion covers all aspects of the fire damage evaluated by those who worked on the BAER assessment.

Seeding:
Those involved in the damage assessment did not recommend a seeding treatment of any Ryan Fire acreage. All of the fire is in grassland, oak-juniper woodland, and chapparal. The grass component of all these vegetation types does not appear to be damaged by the fire even though the tops were burned off. The brush species are all known to sprout and grow quickly after fires. The woodland species generally sprout and grow after being burned, although the effects of the dry winter may result the death of some individual trees especially in the moderate burn areas. Grasses within the woodland will protect the ground within two years even if the trees do not sprout. Downslope effects of possible runnoff and debris were considered, but in light of the expected response from existing burned vegetation, no benefits from seeding could be seen.

Erosion Control Structures: No channel structures are proposed. The riparian areas within and downstream of this fire have good natural deergrass, sedge, cottonwood, and willow populations that, even though damaged, are expected to hold the banks in place and catch new sediment. There will be some local erosion and sedimentation that will change the character of some short reaches of riparian area. However, attempts to mitigate these situations would have a high risk of failure and are not proposed.

Road Channel Crossings:
There are about 25 culverts that will need protection from increased sediment in order to avoid plugging the culverts and consequently losing them. Sediment traps are proposed to treat this situation. These are the only erosion control structures proposed.

Major channels such as O'Donnell Creek and Turkey Creek are crossed with fords, and thus there are not culverts or bridges to lose. All road channel crossings will have to be monitored to determine if the sediment traps are adequate, and if they are found to be failing or a larger event than the 3.8 inch rain used to develop the design occurs, some crossings may have to be reconstructed. An interim request for funds will be made if such a project is deemed necessary.

These structues will require maintenance in the form of cleaning out sediment trapped in them between runoff events. It is estimated that three cleanings for each trap may be required.

Trails:
The Arizona Trail traverses the southern portion of the fire. It was not used as a fireline, the fire generally burned at low intensity in the vicinity fo the trail, and the trail drainage features are expected handle predicted flows.

Signs:
No known sign damage occurred as a result of the Ryan Fire.

Range Improvements:
Stockponds will probably receive a great amount of the sediment produced from the Ryan Fire. Several have recently been maintained and have plenty of room to catch sediment and remain functional. Stockponds identified as needing new sediment traps may be identified in the coming weeks and an interim request for funds will be made if such projects are necessary. Several fences and water lines have burned up. These are not damages that

can be repaired with BAER money. Once these are inventoried, a request for funds under the appropriate authorities will be made.

The entire fire will require some rest from grazing. Two years of rest is recommended. The following pastures may need more than two years. If total rest of the pasture is not available as an alternative, a temporary fence should be constructed to keep cattle out of the moderate burn intensity areas until they have developed sufficient grass basal area and canopy to allow grazing and sustain hydrology factors at pre-fire conditions. Funding for temporary fences, if needed, will be requested in a supplemental request. The attached map highlights those areas.

Fences or exclusion of cattle from pastures for 2+ years.
West Pasture (O'Donnell)
Canelo Pasture (O'Donnell)
Eleven Pasture (Papago)
Reata Pasture (Papago)
Caloway Pasture (Post)
Mountain Pasture (Post)
HP1 Pasture (O'Donnell)

B. Emergency Treatment Objectives **COMPLETED, ONLY TWO STRUCTURES WERE DETERMINED TO BE NEEDED**: The objective is to keep road crossings functional by constructing channel structures upstream from culverts to catch the additional sediment caused by the fire. 25 structures, each costing about $1,000 are needed. The cost reflects the purchase of materials and personnel to install them. (Materials for each dam will cost about $750, and labor is about person-25 hours per structure at $10.00 per hour).

Maintence will cost about $50 per structure each time it is cleaned. Total cost will be $1,875 if all 25 structures are cleaned three times.

It is expected that some structures will receive greater amounts of flow or sediment that the design level in spite our efforts to size them correctly. These will have to be rebuilt or perhaps the culvert will have to be replaced where structures fail. The estimated cost of replacing culverts that fail is $14,000.

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

Land **n/a** % Channel **n/a** % Roads **100** % Other **n/a** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	N/a	N/a	N/a

Channel		70%	
Roads		70%	
Other			

E. Cost of No-Action (Including Loss): **Replacing 25 culverts would cost about $50,000 based an average cost of $2,000 per culvert.**

F. Cost of Selected Alternative (Including Loss): $45,396

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Robert E. Lefevre

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Other Team Members:
Tom Lorenz (Range)
Salek Shafiqullah (Hydrology)
Debbie Sebesta (Biology, Riparian)
Tom Skinner (Biology)
Tom Deeckan (Biology)
Charlie McDonald (Botany)
Lou Leibbrand (Engineering)

H. **Treatment Narrative:**
The objectives are to encourage a return to pre-fire hydrologic conditions by allowing regrowth of native grasses and to keep road crossings functional while that occurs. The return to pre-fire hydrology will be accomplished by keeping cattle off the burned area. Road crossings will be kept functional by constructing channel structures upstream from culverts to catch the additional sediment caused by the fire. 25 structures, each costing about $1,000 are needed. The cost reflects the purchase of materials and personnel to install them. (Materials for each dam will cost about $750, and labor is about person-25 hours per structure at $10.00 per hour).

Land Treatments: The entire fire will require some rest from grazing. Two years of rest is recommended. The following pastures may need more than two years. If total rest of the pasture is not available as an alternative, a temporary fence should be constructed to keep cattle out of the moderate burn intensity areas until they have developed sufficient grass basal area and canopy to allow grazing and sustain hydrology factors at pre-fire conditions. Funding for temporary fences, if needed, will be requested in a supplemental request.

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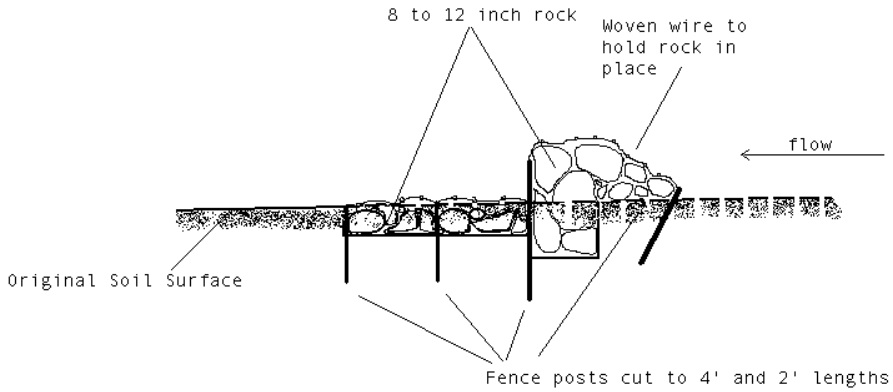
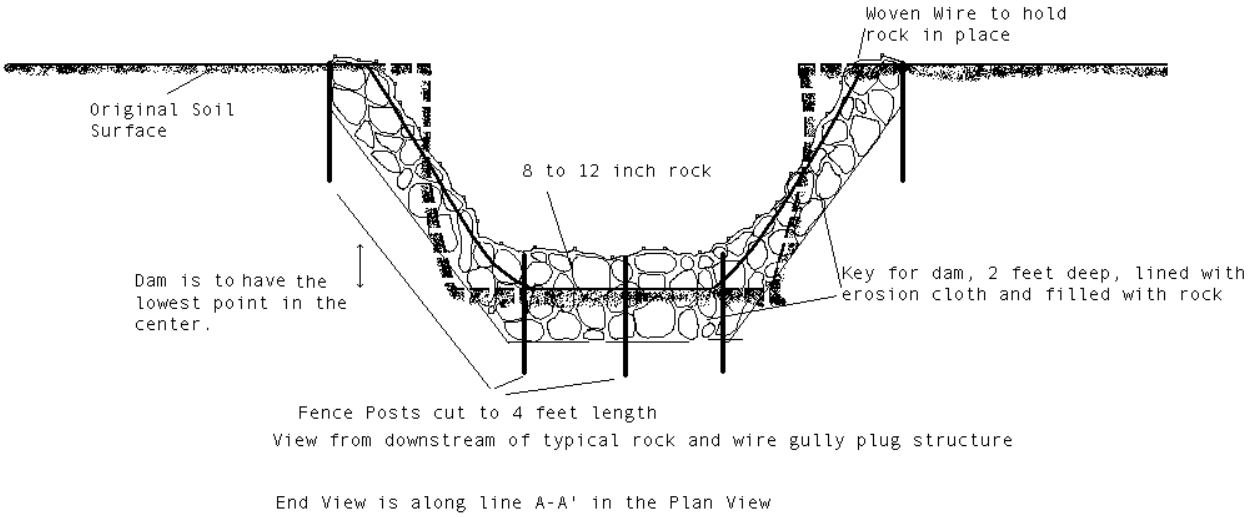
HP1 Pasture (O'Donnell)

Channel Treatments: n/a

Roads and Trail Treatments: Culverts will be protected from increased sediment by structures up stream from each culvert. Each structure will consist of a small dam approximately 20 feet wide and 1.5 feet tall. The following diagram illustrates a typical design.



Longitudinal View of Gully Plug Structure



Straw bales may be used instead of rock .

Structures: See above.

I. **Monitoring Narrative:**

Monitoring will be done as part of our Forest Plan and Range Allotment monitoring. We have riparian data from within the fire area that we can use to compare pre- and post-fire condtions.

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

			NFS Lands				Other Lands				All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$	units	$	Units	$	$
A. Land Treatments										
				$0			$0		$0	$0
				$0			$0			
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Land Treatments				$0			$0		$0	$0
B. Channel Treatments										
Materials (rock, wire, posts, erosion cloth,		750	25	$18,750			$0		$0	$18,750
Labor		625	10	$6,250			$0		$0	$6,250
Maintenance		75	25	$1,875			$0		$0	$1,875
Loss, Replacement		2,000	7	$14,000			$0		$0	$14,000
Subtotal Channel Treat.				$40,875			$0		$0	$40,875
C. Road and Trails										
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Road & Trails				$0			$0		$0	$0
D. Structures										
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Structures				$0			$0		$0	$0
E. BAER Evaluation										
Robert Lefevre	days	306	12	$3,672			$0		$0	$3,672
Tom Lorenz	days	222	2	$444			$0		$0	$444
Debbie Sebesta	days	205	1	$205						$205
Salek Shafiqullah	days	200	1	$200						$200
				$4,521						$4,521
F. Monitoring				$0			$0		$0	$0
G. Totals				**$45,396**			**$0**		**$0**	**$45,396**

PART VII - APPROVALS

1. _____ _____
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date