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

Date of Report: July 9, 2002

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

[x] 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

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Louisiana

B. Fire Number: BDF 5419

C. State: CA

D. County: San Bernardino

E. Region: 5

F. Forest: San Bernardino

G. District: Front Country

H. Date Fire Started: June 26, 2002

I. Date Fire Controlled: Estimated July 13, 2002

J. Suppression Cost: $4,200,000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 2.5 mi. of dozer line and 6 miles of handline
2. Fireline seeded (miles): 0
3. Other (identify): Roads within and on the perimeter of the fire were graded.

L. Watershed Number: 1807020305 Lytle Creek

M. Total Acres Burned: 6,559 acres
NFS Acres(5,574) Other Federal (10) State (15) Private (960)

N. Vegetation Types: Dominate: Chamise chaparral, lower montane mixed chaparral, buckwheat and semi-desert chaparral—Others are scrub oak, big-cone douglas fir, alluvial scrub, riparian

scrub/woodland and cottonwood/willow (which is a subset of scrub/woodland) around Lost Lake with possible California sagebrush

O. Dominant Soils: Typic Xerorthents, Typic Haploxeralfs, badlands, Lithic Xerorthents, Soboda—Hanford association and Soboda—riverwash association. Since virtually all soils in the fire area are truncated through erosion, it is difficult to say how the profiles key out using the Soil Taxonomy. They are all eroded phases of other soils.

P. Geologic Types: Pelona Schist, Arkosic conglomerate and sandstone, Arkosic sandstone and old alluvium

Q. Miles of Stream Channels by Order or Class:!
1st Order - 77 2nd Order – 27 3rd Order – 15 4th Order –13 5th Order – 3

R. Transportation System

Special Use Roads 22 miles PCT 5 miles County 10 miles FS Roads: 1.2 miles Caltrans: 13 miles Rail road tracks 14.8 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 655 (low) 1,968 (moderate) 1,311 (high)

B. Water-Repellent Soil (acres): 2,300

C. Soil Erosion Hazard Rating (acres):
___ (low) ___ (moderate) 4,250 (high)

D. Erosion Potential: 30 tons/acre

E. Sediment Potential: 33,000 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS!

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

B. Design Chance of Success, (percent): 80

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

D. Design Storm Duration, (hours): 1

E. Design Storm Magnitude, (inches): 0.92

F. Design Flow, (cubic feet / second/ square mile): 242

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

H. Adjusted Design Flow, (cfs per square mile): 303

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Introduction

The Louisiana Fire burned 6,559 on National Forest and Private lands. Watershed response over the fire areas was characterized as follows:

Severity Rating	% of Fire	Acres Within Fire
High	20%	1,311
Moderate	19%	1,968
Low	9%	655
Unburned	40%	2,125

Slopes are gently sloping to steep and very steep, averaging between 30 and 50 percent. Evidence of debris flows and mass wasting are found throughout the burn area. Vegetation consists primarily of chamise chaparral, lower montane mixed chaparral, buckwheat, and semi-desert chaparral. There is some scrub oak, big-cone douglas fir, alluvial scrub and riparian scrub/woodland. Elevations range from 2,700 feet in Cajon Wash to 4,659 feet at the top of Ralston Peak.

Based upon field surveys with our partners (CalTrans, BNSF, UP, Kinder Morgan, and Southern California Gas Co.), coupled with the stream flow and sedimentation analyses, the following watershed emergencies exist:

Life and Property

Flooding, debris flows, and sediment bulked flows are a threat to human life and property in the following locations:

Life and Property

1. Low water crossing of Cajon Creek on the Swarthout Canyon Road. .
2. Pacific Crest Trail as it crosses Cajon Creek and several intermittant channels in Lone Pine Canyon and where it crosses two unnamed washes uphill of the rail-road tracks in sections 35 and 2. Note: Chances of a hiker or other user getting caught in a flash flood is an order of magnitude greater than before the fire.
3. Exposed portions of the high pressure gas line within channels inside the fire boundary especially near Perdew Canyon.
4. Service roads without adequate culverts and drainage under special use permit to the 500 KV powerline and pipeline companies.
5. Near powerline towers and service road subject to mass failure in Section 35.
6. Below NFS boundaries in the Cajon Creek channel.

Property

1. High pressure gasline that crosses Perdew and Keenbrook Canyons managed by So. Cal. Gas Co.
2. UP rail-road culvert near Swarthout Canyon Road that has a mashed culvert intake.
3. UP culvert in Rail-road draw that is in danger of being blocked by woody debris and sand. A culvert blockage could threaten the rail-road fill at this site.
4. Numerous culverts, overflows, pipes and low-water crossings related to service roads managed by powerline companies and pipeline companies are at risk in sections 1,2 and 35.
5. Portions of the Pacific Crest Trail are subject to damage due to dry ravel from both above and below the fill slope.
6. Lost Lake could be impacted by ash and sand.

7. Powerline towers and related service road in section 35 that are impacted by mass wasting.
8. Speckled Dace habitat in Lone Pine Canyon and Cajon Canyon.
9. Arroyo toad habitat in Cajon Wash.
10. Least Bell's vireo and southwest willow flycatcher habitat in Cajon Wash and around Lost Lake.

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Loss of Control of Water

Based on the storm and stream flow analysis, the loss of control of water, i.e., flooding with associated sediment/debris in front drainages to Cajon Creek threaten all of the locations above. Estimated flows approximate an order of magnitude greater following the Louisiana Fire. Soil non-wettablility problems are significant to this increase, which will take about two years to return to pre-fire conditions. Focus of this risk assessment has been on the immense Cajon Pass transportation and utility corridor. This area is particularly critical relative to National and regional interests. Concerns for protecting and retaining uninterrruped use of these facilities is emphasized by all cooperators. User facilities are Interstate 15, State Hwy.138, Union Pacific Railroad, Burlington Northern and Santa Fe Railroad, and Forest Service system roads and utility service roads (gas, petroleum, KV power lines, and fiber optic cables).

Water Quality

Perennial and Intermittent streams in Lone Pine Canyon as well as Cajon Creek will have increased sedimentation, with subsequent adverse effects on water quality.

Long Term Soil Productivity

Soils within the fire are vulnerable to accelerated erosion rates compared to pre-fire erosion rates due to loss of vegetative canopy and groundcover and slight to strong hydrophobicity.

Natural Resources

Lost Lake is the only natural and perennial lake within the boundaries of the San Bernardino National Forest. The Forest has invested over $100,000 to conserve the lake and its surrounding habitat. It is associated with scarps along the San Andreas Fault and riparian vegetation around its edges is unique. It is a known habitat for endangered species notably the southwestern willow flycatcher and least Bell's vireo, however, it is very heavily used by recreating publics. The cost of restoration of cottonwood/willow riparian habitat capable of supporting Southwest willow flycatcher and least Bell's vireo had been estimated at $20,000 to $30,000 per acre by CalTrans and the Fish and Wildlife Service. Protecting these areas and allowing natural recovery could save hundreds of thousands of dollars of restoration costs which could result from OHV damage around Lost Lake and Cajon Wash.

Off highway vehicle use was very heavy until the district took action to gate the local access and close the area immediatily around the lake to vehicle use with barriers and a designated parking lot. Gates and fencing tied into natural vegetative barriers had been used to control the OHV use and related soil compaction and rill erosion. Now that the Louisana Fire has eliminated all of the vegetative barriers, much of the area surrounding Lost Lake is wide open to OHV use, and another round of severe soil disturbance and erosion could be triggered. The BAER Team recommends a one year closure of the area around Long Lake to unauthorized people and vehicles with the possibility of extending the closure to a second and possibly third year. The Forest needs to do additional thinking about the extent and timing of this closure. Additional measures will be needed to allow the area to recover from the fire and prevent unauthorized vehicle use in the Lost Lake watershed once the closure is over. There is a need to add additional cable fencing or rows of rocks to the gates that currently exist to prevent unauthorized access to service roads that intersect Lone Pine Canyon road. To keep the gates working, repairs of the locking mechanisms will be required. Signage and other educational materials will need to be added or replaced. Monitoring will be needed quickly identify breaches in the closure so they can be repaired to ensure vehicles do not enter sensitive areas. Storm patrol and effectiveness monitoring will be needed as well as vandalism maintenance and repair of gates and fences. A

breakdown showing several alternatives can be found in the land and channel treatments section of this report.

Cajon Wash is habitat for southwestern willow flycatcher, least Bell's vireo and the arroyo toad, which are all Federally listed species. It also contains the largest population of speckled dace on the San Bernardino National Forest and is critical to the species survival. Off highway vehicles were out of control in the canyon in the 1980's and the Forest invested well over $100,000 in getting control of OHVs and to provide protection to the stream. The stream has recovered greatly but now many the natural vegetation barriers have burned up in the fire. The same kind of barrier work, monitoring and maintenance is needed to protect this critical area as is described for Lost Lake.

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

Land 70% Channel 60%
Roads 30%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
	70%	80%	80%
Channel			
	60%	100%	100%
Roads			
	30%	50%	75%
Early Warning	85%	90%	100%

E. Cost of No-Action (Including Loss**):** $545,000

F. Cost of Selected Alternative (Including Loss): $705,000 Alternative Cost: $223,000
Value treated: $63,000

G. Skills Represented on Burned-Area Survey Team:

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

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H. **Treatment Narrative:**

Land Treatments on NFS Lands:

Because the Louisiana Fire burned most of the vegetative barriers in the critical Lost Lake watershed, there is great concern about OHV traffic on the site. There are now no vegetative barriers to stop OHV use. As such, this use could trigger another round of severe erosion. The BAER Team recommends a one year closure to all unauthorized people and vehicles for the area surrounding Lost Lake with the possibility of extending the closure one or two additional years. The value of a protected Lost Lake, the only natural lake on the Forest, and its value to T&E species such as least Bell's verio and the southwest willow flycatcher and other fish and wildlife in impossible to quantify. The values used in he cost/risk analysis represent the best try by the BAER Team and the Forest to place values on Lost Lake and the Cajon Wash. Alternatives for action are:

Lost Lake Alternative #1. Small closure around the lake to unauthorized vehicles using existing parking lot, barriers and gates plus signs, information brochures and patrols to complete the protection. Law enforcement will be provided by shifting priorities for law enforcement personnel and existing Forest budget. All alternatives include surface treatment of a special use road within the Lost Lake watershed. Also included are wing ditches to drain road water away from the Lost Lake watershed and two rolling dips in the road. A gully just below the road will be reshaped and armored to prevent further cutting. Several silt barriers will be placed between the special use road and Lost Lake to reduce the chances of ash and sand being transported into the lake. Cost for Storm patrol, effectiveness monitoring, and vandalism treatment and repair totals $58,300. This alternative has a low potential for success due to the amount of open access for unauthorized users that will ignore the closure to access the Lake by vehicle.

Lost Lake Alternative #2. Closure around the lake to unauthorized people and vehicles using closure signs and information brochures along with monitoring and maintenance to complete the protection. Cable fencing or rock barriers will be used to extend existing gates to prevent OHV entry to the lake as the closure is discontinued following a two or three year period. Included would be cost of hand acarification and seeding in he immediate vicinity of Lost Lake to loosen up compacted soil. This includes channel work as described in Alt. 1. Law enforcement will be provided by shifting priorities for law enforcement personnel and existing Forest budget. Cost for Storm patrol, effectiveness monitoring, and vandalism treatment and repair totals $106,300. This alternative has a better chance of being successful

Lost Lake Alternative #3. A much larger closure area conforming to natural lines of defense, lined with rock barriers backed up by existing gates, signs, information brochures and monitoring and maintenence. The rock barriers would extend to the Chalk Hills almost ¾ mile to the north of Lost lake. This row of barrier rocks would be about 3 miles long to surround Lost Lake to aid Forest patrols in keeping out unauthorized vehicles and people. This alternative would certainly stop OHV caused rill erosion and soil compaction to aid short term rehabilitation but would also be in place to aid long term recovery of native vegetation and the vital riparian area near Lost Lake after the closure is over. If OHVs are allowed to impact sprouting native vegetation it is doubtful if vegetation will fully recover and an unmanageable system of unauthorized roads would develop. In addition to protection of the soil from erosion, this alternative will result in a more managable recreation site. Included would be cost of hand scarification and seeding in the immediate vicinity of Lost Lake along with funding for an interpretive sign telling about fire and Lost Lake. This alternative includes channel work as described in Alt. 1. Law enforcement will be provided by shifting priorities for law enforcement personnel and existing Forest budget. This is the preferred alternative recommended by the BAER Team and the Forest. Cost for barrier construction, storm patrol, effectiveness monitoring and maintenance, and vandalism monitoring and maintenance totals $146,300. This alternative has a 95-100% chance of being successful in protecting the lake and sensitive area.

Additional land treatment measures are needed in Cajon Wash to protect the area from accelerated erosion, to give the unique riparian habitat time to recover, and to protect the habitat of several T&E species (least Bell's vireo, Southwestern willow flycatcher, Santa Ana speckled dace, Arroyo toad and the

San Bernardino kangaroo rat. The key measures are information and education, public contact, effectiveness monitoring and maintenance, and barrier extension to make sure OHVs are kept out of the sides and bottom of Cajon Creek. Interpretive and regulatory signs should be printed at a cost of $6,000.

Channel Treatments:

Channel treatments near Lost Lake include rocking several low water crossings on a poorly maintained service road that is eroding and drains sediment into the lake. Also included are wing ditches and two rolling dips in the road surface to drain water away from the Lost Lake watershed. A gully below the service road will be reshaped and armored to prevent further cutting. Several silt barriers will be placed between the special use road and Lost Lake to reduce the chances of ash and sand washing into the lake. This work will be cost $33,300 and will be completed regardless of which Lost Lake Alternative is picked.

Cajon Creek and some larger side channels will be protected from additional erosion by controlling OHV use with patrols, gates and cable fences until vegetative cover in the channels starts to recover. Protecting these areas to allow them to recover naturally could save up to $20,000 to $30,000 per acre which Cal Trans estimated to be the cost of restoring an acre cottonwood/willow vegetation type. Up to 20 acres of riparian habitat could be seriously degraded if vehicles are not controlled within the wash.

Many culverts will be cleaned out and repaired by the BNSF and UP railroads, by CalTrans on I-15, the County in Lone Pine Canyon and by powerline and pipeline companies on their service road systems. Trash racks will be cleaned and some upsizing will be done on culverts under the rail-road system. These partners (cooperators) of the San Bernardino National Forest are spending tens of thousands of dollars to get their roads, rail-road fills and bridges “storm-proofed” prior to the first substantial rain and stormflow.

Roads and Trail Treatments on NFS Lands:

The only requested road work is described above because of effects on the primary channel to Lost Lake.

Only 1.2 miles of road within the Louisiana Fire boundary are part of the Forest Service system. The rest of the roads are maintained by the county, Caltrans or by special use permittees such as the Union Pacific Rail-road Company or Southern California Edison. These permittees specifically asked the San Bernardino forest to keep the service road network open along with the Forest Service roads to allow OSHA specifying access to the powerlines, rail-roads and pipelines.

These same cooperators are spending tens of thousands of dollars to improve drainage on their service roads that are under special use permit.

Numerous road drainage structures will be impacted by the fire. The major concern is the capability of the structures to carry increased debris, silt, and additional runoff caused by the lack of ground cover and hydrophobic soil conditions. The failure of drainage structures and flows and debris overtopping the roadway would result in damage to the road surface, embankment, and areas downstream of the drainage structure, In addition there will be slides wich will result in temporary road closure. These hazards will exist to some extent throughout the recovery period, but will be the most extreme during the first two to three years following the burn.

Resource concerns are related to the capability of the road system within the Louisiana Fire boundary to withstand increased debris, silt and run-off.

In general, the following mitigation measures need to be completed immediately prior to the next rain. The inlet and catch basins of culverts will require cleaning of all loose debris and silt which has the potential to restrict culvert openings. All drainage structures need to be cleaned. Road surfaces need to

be graded to ensure all earth drainage features (intercept dips, road surface cross sloped for proper drainage, earth berms channeling flows) are functioning properly.

Monitoring and an increase in the maintence intensity of roads will be required for the next two years to ensure that all drainage facilities are working to their maximum efficiency.

As part of the rehabilitation effort, a storm patrol and early warning plan will be developed and implemented jointly with all of the affected transportation and utility companies.

There is approximately 5 miles of the Pacific Crest Trail within the burned area. With loss of vegetation and increased water flows, the trail will be exposed to increased soil movement causing sloughing onto the trail and possibly rutting at stream crossings and graded dips. All native surface drain dips will be kept open to handle the runoff. Storm patrols will be increased to monitor conditions, Also, warning signs will be placed near channel crossings to warn of flash floods. The cost is $6,200 for the first year with a possible need for the same amount the second year.

Structures:

The San Bernardino National Forest will cooperate with CalTrans, BNSF Railroad, UP Raiload, San Bernardino County, and the National Weather Service to install Early Warning System rain gauges in the Blue Cut fire area to monitor precipitation. The Louisiana fire burned close enough to the Blue Cut Fire that a second system for the Louisiana fire could be linked with that of the Blue Cut Fire. The system will link to local government emergency response and flood control agencies. A flashing light system using the approprate electronic linking system is proposed on State Highway 138 and potentially at Swarthout Canyon Rd. to initiate closure within 5 minutes of recorded precipitation. The partners and San Bernardino County would be responsible for the installation, maintenance and operation of the early warning system.

H. **Monitoring Narrative:**

The road work will be monitored using storm patrol for two to three years to ensure that the prescribed treatments are effective and minor improvements are made quickly where needed.

Monitoring the land and channel treatment at Lost Lake will be done several times during the rainy season.

Effectiveness monitoring for the control of vehicles around Lost Lake area and Cajon Wash will be a high priority to make sure all treatments are working properly . This monitoring will need to be done almost continuously so that extension of barriers and maintenance can be done as quickly as possible to avoid serious damage.

The area inside the Louisiana Burn will be monitored for noxious or invasive weed increase caused by fire effects and BAER treatments. Weeds that need to be looked for include arundo, pampas grass, tamarisk, tree of heaven, black locust and others found in the general vicinity, as well as new invasions that may have been brought in on equipment. This monitoring will take place twice a year for two years to determine if there is a spread or introduction of noxious or invasive weeds. At this time, $6,000 is requested for the first year.

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

A. Land Treatments										
Vehicle control barriers+							$0		$0	$0
signing in sensitive				$166,000			$0		$0	$166,000
areas.										
Storm Patrol for Mtc.				$11,000			$0		$0	$11,000
Treatment Effect.				$30,000			$0		$0	$30,000
Monitoring for Mtc.										
Subtotal Land Treatments				$207,000			$0		$0	$207,000
B. Channel Treatments										
Silt Dams		1000	3	$3,000			$0		$0	$3,000
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Channel Treat.				$3,000			$0		$0	$3,000
C. Road and Trails										
Lost Lake Prot.		33000	1	$33,000			$0		$0	$33,000
Pacific Crest Trail				$6,000			$0		$0	$6,000
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Road & Trails				$39,000			$0		$0	$39,000
D. Structures										
Early Warning Syst.				$20,000			$0		$0	$20,000
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Structures				$20,000			$0		$0	$20,000
E. BAER Evaluation										
				$17,000			$0		$0	$17,000
				$0			$0		$0	$0
F. Monitoring				$6,000			$0		$0	$6,000
Invasive plants				$0						
G. Totals				**$292,000**			**$0**		**$0**	**$292,000**

PART VII - APPROVALS

1. /s/ Gene Zimmerman — July 9, 2002
   Forest Supervisor (signature) — Date

2. /s/ Gilbert Espinosa (for) — 7/11/02
   Regional Forester (signature) — Date