

Date of Report: 12/10/04 **Bruggink Edit 3/29/05****BURNED-AREA REPORT**

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☒ 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)
- ☒ 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 DESCRIPTIONA. Fire Name: FarmingtonB. Fire Number: UT-WCF-252C. State: UTD. County: DavisE. Region: R4F. Forest: Wasatch-CacheG. District: Salt LakeH. Date Fire Started: July 10, 2003I. Date Fire Contained: July30, 2003J. Suppression Cost: 1.5 million

K. Fire Suppression Damages Repaired with Suppression Funds

- 1. Fireline waterbarred (miles): 2
- 2. Fireline seeded (miles): .25
- 3. Other (identify):

L. Watershed Number: Great Salt LakeM. Total Acres Burned: 1831

NFS Acres(1748) Other Federal () State () Private (83)

N. Vegetation Types: Gambel Oak, Sage-Grass, Douglas FirO. Dominant Soils: Ridd rocky sandy loam, 30 to 70% slopes, eroded and Kilburn-Francis association, 30 to 50% slopes, eroded.

P. Geologic Types: Archean schist and gneiss, Holocene and Pleistocene landslide deposits, Pleistocene Lake Bonneville Group

Q. Miles of Stream Channels by Order or Class:

Perennial – 2.5

Intermittent – None

Ephemeral – 6 miles

R. Transportation System

Trails: 3 miles

Roads: 6 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1273 (low) 448 (moderate) 0 (high) 110 (unburned)

B. Water-Repellent Soil (acres): 0

C. Soil Erosion Hazard Rating (acres):

521 (low) 900 (moderate) 300 (high)

D. Erosion Potential: 25 tons/acre (average for low and moderate severity areas)

E. Sediment Potential: 20 cubic yards / acre, 1600 cy total from 84 acre watershed

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): 25

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 2.85

F. Design Flow, (cubic feet / second): 35

G. Estimated Reduction in Infiltration, (percent): 0

H. Increased Storm Water Volume, (ac.ft.): none

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

1) Flood Hazard to Human Life and Property - Despite extensive BAER treatments in 2003 and 2004, some private residences in Farmington City remain at risk from flood events that might occur as a result of high intensity thunderstorms when soils are saturated following snowmelt during the spring and early summer of 2005. While the majority of residences in the city are protected from flooding or debris flows by the existence of debris basins in Farmington, Shephard, Rudd Canyon, and Compton Bench, there are a

number of homes between these canyons and downslope of first order streams that have no such flood control structures. Although these drainages are small in size, they are exceedingly steep and have all been affected to some extent by the fire. Where these drainages have burned at moderate severity or higher, 2003 BAER treatments were implemented in an effort to temporarily provide sufficient ground cover to protect the soils from accelerated erosion. In 2004, storm events delivered heavy rainfall and debris flows to the Compton bench (April 2004) and South Farmington Bench (July 2004) areas of the fire, damaging homes and city storm drains. BAER funded gully stabilization work above Compton Bench appears to be moderating runoff and erosion from the upper portions of the watershed damaged by the April 2004 thunderstorms. Monitoring of the high intensity thunderstorms that occurred during the fall of 2004 has shown these treatment to be very effective in controlling runoff and flooding from the burned areas above Compton Bench. Natural recovery of vegetation, in combination with BAER seeding treatments implemented in 2003 and 2004, are expected to restore ground covers to pre-fire levels by mid-summer of 2005. However, there remains a gap of flood vulnerability during the spring and early summer of 2005. Runoff and sediment volumes from a thunderstorm over these drainages could overwhelm the city storm drain infrastructure and inflict flood damages on these residences. Also, soil productivity values continue to be at risk from very high runoff and erosion rates along the steeper slopes above the upper Bonneville shoreline terrace located on the South Farmington Bench. These areas are currently in a degraded watershed condition with numerous areas of rill and gully erosion created by the April and July storm events.

2) Invasive Plants – Monitoring of invasive plants during the summer of 2004 showed a dramatic increase in populations of many weed species, the most critical invasive being Dyers Woad. Two 20 acre infestations were identified for treatment in 2004 on terraces above Compton Bench. One of the infestations was successfully treated with goat grazing, but the goat herd was not available to complete all needed treatments.

3) Deterioration of Channel Treatments Structures - Channel treatment structures such as detention fences were intended as a temporary measure to control sediment until vegetation and ground covers have recovered. Once pre-fire conditions have been restored, deterioration of fence materials make these structures a hazard to channel bed and bank stability that should be removed.

4) Monitoring Success of 2004 Treatments – Late summer monitoring of vegetation establishment showed that the majority of watersheds are averaging between 45 and 65% effective ground cover. Prevention of further fire related flooding damage to residences in Farmington is heavily dependent upon successful restoration of vegetation and ground cover. While some residences will always be at risk because of their location on alluvial fans and floodplains, the only way to determine if the fire related emergency to these homes is over is to document when pre-fire reference ground covers have been substantially restored in the burned watersheds.

B. Emergency Treatment Objectives:

1) Flood Hazard to Human Life and Property - There is little opportunity for further BAER land or channel treatments to reduce the potential for fire related flood events to damage homes in Farmington. Fortunately, future flood events are likely to be small and home owner installed protection around individual residences are likely to prevent or minimize flood damages. However, an unusually large thunderstorm event in the spring or summer of 2005 is still capable of creating a threat to human life. The objective of this treatment is to assist the Davis County Sheriff in flood warning and evacuation decisions should they become needed. We currently have an active RAWS station in Farmington that broadcasts heavy rainfall warnings directly to the Davis County Sheriff.

2) Invasive Plants – Treatment of invasive plants will be accomplished with other (in the black) fire restoration funds.

3) Deterioration of Channel Treatments Structures - The objective of this treatment is to completely uninstall the wire and fabric silt detention fences wherever they still exist. While these structures need to remain in place where they are still useful, where upper watershed vegetation has recovered they are no longer needed and should be removed. The potential for unnatural bank or bed scouring increases as the strength of these structures diminishes over time.

3) Monitoring Success of 2004 Treatments – The objective of monitoring is to determine the effectiveness of previous treatment and monitor the progress of vegetation recovery. Previously installed structures, such as channel sediment storage fences and the RAWS station, should not be removed until monitoring shows substantial post fire recovery of watershed conditions.

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

Land 0 % Channel 0 % Roads 0 % Other %

D. Probability of Treatment Success

Years after Treatment			
	1	3	5
Land	80	100	
Channel	100		
Roads	100		
Other			

E. Cost of No-Action (Including Loss): The no action alternative presents the possibility of loss of human life if a large thunderstorm were to cause serious flooding in the residential communities' downslope of the fire. There are at least 3 individual homes along the lower benches directly threatened with flooding from moderately burned first order drainages along Compton bench.

F. Cost of Selected Alternative (Including Loss): \$13,500

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Paul Flood

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H. Treatment Narrative:

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

Channel Treatments: Only 40 of the sediment fence structures built in 2003 survived the flood events of 2004. Once ground and vegetation covers have been monitored and bare soil averages less than 35%, these structures should be removed. We believe these conditions **were** met in late summer 2004. Cost: \$150 per structure or \$6,000.

Structures: This treatment will maintain the RAWs station during 2005. All sensor packages will need to be exchanged out in the fall of 2005 with parts supplied by the BLM. The local Forest RAWs technician will need to make at least 3 separate site visits to maintain the station in the spring, summer, and fall of 2005. It is essential that this station be maintained in place for 2005. Cost: \$2,000.

H. 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.)

Effectiveness of Treatment Monitoring

Watersheds above Compton Bench and South Farmington Bench should be sampled during the summer of 2005 for ground cover values, and to determine if live vegetation is replacing the helicopter applied mulch as a significant component of the ground cover. Cost: \$4500.

Precipitation Monitoring

Rainfall will be monitored during the late summer and early fall monsoon seasons of 2004 and 2005. This will be done via telemetric connection to a Forest Service RAWs. Assessment of data will be done by the National Weather Service in Salt Lake City. Data will be analyzed to support flood warning forecasts by the NWS and evacuation warnings by the Davis County Sheriff Department. This RAWs was installed in March of 2004 and is currently configured to transmit a warning tone to the Davis County Sheriff Department in the event of any precipitation intensity that exceeds .1 inch in 15 minutes. Cost: \$1,000.

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

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands				All Total \$
			# of Units	WFSU SULT \$		# of units	Fed \$	# of Units	Non Fed \$	
A. Land Treatments										
				\$0			\$0			
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$0			\$0		\$0	\$0
B. Channel Treatments										
Remove Sed Fences	each	150	40	\$6,000			\$0		\$0	\$6,000
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$6,000			\$0		\$0	\$6,000
C. Road and Trails										
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$0			\$0		\$0	\$0
D. Structures										
Maintain RAWS	each	2000	1	\$2,000			\$0		\$0	\$2,000
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Structures</i>				\$2,000			\$0		\$0	\$2,000
E. BAER Evaluation Assessment										
				\$0			\$0		\$0	\$0
G. Monitoring Cost				\$0			\$0		\$0	\$0
Past Teatments	report	4500	1	\$4,500						\$4,500
Rainfall	report	1000	1	\$1,000						\$1,000
<i>Subtotal Monitoring</i>				\$5,500						\$5,500
H. Totals				\$13,500			\$0		\$0	\$13,500

PART VII - APPROVALS

1. /S/ Faye Krueger
Forest Supervisor (signature)

Date

2. /s/ Joe Kennedy for
Regional Forester (signature)

04/01/2005
Date