

P. Dominant Soils: Three major soil types occur within the fire perimeter: 203 – Spager – Escalante families complex, 15 to 30 percent slopes; 205 – Spager – Sierocloff families complex, 30 to 50 percent slopes; and 212 – Van Wagoner – Forsey – Rock outcrop complex, 40 to 70 percent slopes.

Q. Geologic Types: Dominant surface geology is Salt Lake Sediments, alluvium and colluvium, limestone and quartzite.

R. Miles of Stream Channels by Order or Class:

1st Order: 34.7, 2nd Order: 13.1, 3rd Order: 3.0, 4th Order: 0.4, 5th Order: 0.0

S. Transportation System

Motorized Trails: 2.9 miles

Roads: 14.1 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,185 (unburned) 7,235 (low) 958 (moderate) 362 (high)

B. Water-Repellent Soil (acres): 420

C. Soil Erosion Hazard Rating (acres): 3,338 (low) 4,219 (moderate) 0 (high)

D. Erosion Potential: 5.0 tons/acre

E. Sediment Potential: 395 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 60

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

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 1.26

F. Design Flow, (cubic feet / second/ square mile): 2.0

G. Estimated Reduction in Infiltration, (percent): 15

H. Adjusted Design Flow, (cfs per square mile): 7.5

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats (narrative):

Threats to Life and Property

Field reviews within the burned area and downstream of the wildfire confirm that threats to life are unlikely although there is an elevated flash flood risk on the Dry Creek road that is built along the canyon bottom. The Oak Creek campground and access road are located safely away from any potential fire related impacts.

Most of the burned watersheds that drain to the north flow directly towards the town of Oak City, Utah that is built on an expansive alluvial fan. No flood control is currently in place. The loss of vegetation and soil impacts created by the wildfire have elevated the inherent potential for flooding commercial, agricultural, and residential properties. One house below the fire has flooded twice in the last 5 years without any disturbance. The fire did not burn severely over enough acres to appreciably increase the chance for debris flows in drainages that are inherently prone to those types of events. If such an event were to occur, most of the debris would deposit before approaching residences. Water lines for irrigation and culinary water run down the Dry Creek road, but are deeply buried. There is a small risk that surface flow intercepted by the road or from scour at channel crossings could expose portions of these lines. There is an irrigation canal and several stock ponds on private lands. Increased flows and sediment could cause canal breaches or filling and may fill in the ponds. The pond catchments have a low risk of breaching catastrophically. Some roads within the burn perimeter will intercept, concentrate, and reroute water which could increase stormflow peaks and slope erosion potential. The increased runoff and erosion could also damage the road template. There are no at-risk stream crossings on National Forest Systems lands although one Oak Creek crossing on private lands below the fire is undersized given post-fire watershed conditions. A communications site nearly consumed by the wildfire is not at risk from post-fire conditions because it is located at the top of a stable hill.

Threats to Long-Term Soil Productivity and Ecosystem Function

Field reviews indicate potential threats to long-term soil productivity and ecosystem function. Observations of the Oak City Canyon post-fire conditions suggest that there will likely be an increase in cheatgrass, particularly from adjoining private lands. There is also risk of spread from existing infestations of hoary cress and Russian knapweed. Areas invaded by noxious weeds can lead to a decline in effective ground cover. This could increase erosion and reduce soil productivity and desired ecosystem function, and could decrease the habitat value of the critical deer winter range burned by the fire. Perhaps more importantly, cheatgrass could expand into the Partridge Mountain Research Natural Area that was designated in part based on its value as for pristine native vegetation.

Threats to Water Quality

Two culinary spring sources are located within the fire perimeter. Most of the source area above the springs is either burned with low severity. The points-of-diversion are not at risk from flooding given the structure locations and the minimal amount of moderate to high severity burn in the source area. There are no perennial streams within the fire perimeter. Dry Creek drains into Oak Creek after the entire flow amount has been diverted into the

irrigation ditch. Any water quality impacts to the irrigation beneficial use are expected to have a short duration.

B. Emergency Treatment Objectives (narrative):

The emergency treatment objectives are 1) to reduce threats to human life and property in and around Oak City and on National Forest System lands; to maintain soil productivity by preventing erosion and the expansion of noxious weeds and invasive plants in the burned area and eastward into the Partridge Mountain RNA; 3) to maintain critical winter range for mule deer; and 4) to reduce concentration of water and subsequent erosion on and below forest routes within the fire perimeter.

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

Land 60% Channel 60% Roads/Trails 60% Protection/Safety 60%

D. Probability of Treatment Success

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

E. Cost of No-Action (Including Loss): 499,000

F. Cost of Selected Alternative (Including Loss): 238,000

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Dale Deiter

Email: ddeiter@fs.fed.us **Phone:** 435-896-1007 **FAX:** 435-896-9347

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.)

Land Treatments:

- *Herbicide Application*

Method

Weed and invasive plant expansions are likely due to the loss of protective soil cover caused by the wildfire and due to soil disturbance and possible introduction of weed seeds from fire suppression activities. Chemical treatments will reduce expansion into previously unpopulated areas by directly killing new noxious plants. Treatment will occur at the same time as the monitoring. **Jeff Lyman of the Oak City Water System must be contacted for any chemical treatments within the source areas for First and Mayparty culinary springs.**

Potential noxious weed expansion areas within the fire perimeter and along access routes and dozer lines will be treated with herbicides during the first year after containment of the fire to prevent expansion of weed populations. Of the 572 acres monitored, about 20 acres are expected to need treatment. The 14 miles of suppression dozer line will be monitored for new populations due to high risk of noxious weed establishment.

Funding for treatments after the first year will be provided either through Key Point 2 dollars or regular appropriations. Note: The Fishlake National Forest has a signed noxious weed EA with provisions for the use of herbicides.

Objective

1. Meet Forest Plan standards for weed and invasive plant control using a least cost to risk strategy.
2. Reduce long-term treatment cost and avoid the resulting impacts to other resource values.
3. Protect long-term soil productivity and critical mule deer winter range.

- *Aerial Seeding*

Method

Two seed mixes are planned. The first includes native and introduced species that will be applied using a fixed wing aircraft. The second mix includes native species only and will be applied by helicopter. Seeding should reduce the amount of time needed to reestablish protective ground cover, which will reduce the ability of noxious weeds and cheatgrass to expand. This treatment could also reduce erosion and flood response on areas with moderate burn severities. Areas with pinyon-juniper and mountain brush that experienced stand replacing fire will be seeded since these areas likely do not have an adequate seed bank of understory species that can reestablish quickly. This includes slopes burned with high and moderate severity in Basin Hollow and Dry Creek, which are likely flood source areas. Critical mule deer winter range will also be seeded where cheatgrass is expected to expand or increase in abundance. The second seed mix,

comprised only of native species, will be used near, but no closer than about 300 yards from the Partridge Mountain Research Natural Area in an effort to reduce the likelihood of cheatgrass migration into the RNA. The BAER seed mix will be supplemented with contributions from the Utah Division of Wildlife Resources for browse and forb species in critical winter range away from the RNA. All tolled, these treatments would cover about 3,210 acres. Based on comparisons with untreated areas, this treatment proved effective in most cases on the 1981 Clay Springs, 1996 Leamington Complex, and 2000 Mourning Dove wildfires, which are located within to the north of the Oak City Canyon fire. A similar seed mix approved in 2000 for the Morning Dove fire is proposed for the Oak City Canyon fire. Indian Ricegrass has been added because it is a native that responds favorably after fire and the seed cost has reduced dramatically since 2000. Sandberg bluegrass was added with the prospect that it will provide excellent competition against cheatgrass.

Objective

1. Meet Forest Plan standards for weed and invasive plant control using a least cost to risk strategy.
2. Protect long-term soil productivity and critical mule deer winter range.
3. Possibly, reduce the risk of flooding in and around Oak City by shortening the time required for hydrologic recovery.

Seed Mix 1 – Native and Introduced			
NATIVE or INTRODUCED	COMMON NAME	SCIENTIFIC NAME	PLS LBS/ACRE
Native	Bluebunch wheatgrass "Anatone"	<i>Agropyron spicatum</i>	1
Native	Indian ricegrass "Rimrock"	<i>Oryzopsis hymenoides</i>	1
Native	Sandberg bluegrass VNS	<i>Poa sandbergii</i>	1
Native	Slender Wheatgrass "Pryor"	<i>Elymus trachycaulus</i>	3
Native	Thickspike wheatgrass "Bannock"	<i>Elymus lanceolatus</i>	0.5
Native	Thickspike wheatgrass "Critana"	<i>Elymus lanceolatus</i>	0.5
Introduced	Crested wheatgrass "Hycrest"	<i>Agropyron cristatum</i>	3
Introduced	Alfalfa "Ladak"	<i>Medicago sative</i>	1
Introduced	Small burnet	<i>Sanguisorba minor</i>	1
Total Pounds per Acre			12
Total Seeds per Square Foot			63
Estimated Seed Cost per Acre			\$29.25
Estimated Cost of Seed Mix per Pound			\$2.44

Seed Mix 2 – Native Only			
NATIVE or INTRODUCED	COMMON NAME	SCIENTIFIC NAME	PLS LBS/ACRE
Native	Bluebunch wheatgrass "Anatone"	<i>Agropyron spicatum</i>	1
Native	Indian ricegrass "Rimrock"	<i>Oryzopsis hymenoides</i>	2
Native	Sandberg bluegrass VNS	<i>Poa sandbergii</i>	1
Native	Slender Wheatgrass "Pryor"	<i>Elymus trachycaulus</i>	5
Native	Thickspike wheatgrass "Bannock"	<i>Elymus lanceolatus</i>	1
Native	Thickspike wheatgrass "Critana"	<i>Elymus lanceolatus</i>	1
Total Pounds per Acre			11.0
Total Seeds per Square Foot			58
Estimated Seed Cost per Acre			\$34.50
Estimated Cost of Seed Mix per Pound			\$3.14

The species in these seed mixes have been used successfully on the forest in the past for short and long-term erosion control.

Channel Treatments: None

Roads and Trail Treatments:

- *Install Graded Dips*

Method

Standard grade dips are additions to the existing grade dips and are designed to handle increased runoff by dispersing the flows quickly. The roads in Basin Hollow and Dry Creek are included because they have the greatest need for cross-drainage and because they are in areas that have a greater likelihood of generating overland flow to drainages that flow directly to Oak City. An estimated 80 standard grade dips for 7.6 miles of road are required.

Objective

Minimize the ability of roads to exacerbate storm flow and erosional response to the burned slopes and reduce potential damage to the road system.

Protection/Safety Treatments:

- *Fence Repair*

Method

The fire burned 18 wooden corner braces that are needed to maintain the integrity of the boundary fence between National Forest System lands and private. A functional fence is needed to protect emergency BAER land treatments from use by trespass livestock from private lands.

Objective

Protect BAER stabilization treatments and natural recovery in areas where we cannot effectively control livestock use from private lands using administrative controls or procedures.

- *Temporary Fencing*

Method

A two-wire electric fence will be installed to prevent livestock from adjoining unburned pastures from entering the burned area. This fence is needed to protect emergency BAER land treatments.

Objective

Protect BAER stabilization treatments and natural recovery in areas where we cannot effectively control livestock using administrative controls or procedures.

- *Protection Signing Installation*

Method

Two major entry points onto National Forest System lands, will be signed to provide warning and direction to users in the burned area. Example wording for the sign: "ATTENTION – Please help these burned areas recover. Drive only on open designated roads and trails." Carbonite signs are also needed to make it obvious that dozer lines are closed to motorized travel.

Objective

1. Protect BAER emergency land treatments.
2. Promote natural recovery from fire effects.

- *Safety Signing Installation*

Method

Two major entry points onto National Forest System lands, will be signed to provide warning and direction to users in the burned area. One sign will be located at the base of Dry Creek and the other will be located at the National Forest boundary. Example wording for the sign: "CAUTION – Areas within and downstream of Burned Areas are subject to Extreme Flooding and other Hazards including falling rocks and trees."

Objective

Reduce the likelihood that forest users will be harmed by post-fire floods and falling rocks and debris.

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.)

Noxious Weed Monitoring

The purpose of this monitoring is to determine if noxious weed populations have expanded into the fire from existing populations, along access routes, and from dozer lines. Noxious plants generally will be treated at the same point in time they are discovered. Monitoring of treatments and weed expansion beyond Year 1 will occur using Key Point 2 or appropriated funding sources.

Monitor Seeding Effectiveness

The results from the aerial seeding towards establishing effective ground cover will be evaluated in Year 1. Effective ground cover will be assessed with regards to whether or not the seeding reduced or prevented expansion of noxious weeds and cheatgrass and if potential for erosion and runoff is reduced in the first year.

Soil Erosion and Storm Flow Monitoring

Post storm even monitoring will visually assess the movement of soil and water off the mountain and into the valley below. Two storms in the first year will be monitored. Data collected by a tipping rain bucket will be used to determine the size and duration of storm events.

Monitoring Report and Interim Requests

A Year 1 monitoring report will be submitted to the RO even if an interim BAER request is not submitted.

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

Line Items	Units	NFS Lands				Other \$	Other Lands				All Total \$
		Unit Cost	# of Units	BAER \$	# of units		Fed \$	# of Units	Non Fed \$		
A. Land Treatments											
Weed Monitoring	acres	\$4.00	552	2,208.00	\$0		\$0		\$0	2,208.00	
Herbicide Application	acres	\$80.00	20	1,600.00	\$0		\$0		\$0	1,600.00	
Aerial Seeding - Mix 1	acres	\$29.25	2667	78,009.75	\$0		\$0		\$0	78,009.75	
Aerial Seeding - Mix 2	acres	\$34.50	543	18,733.50	\$0		\$0		\$0	18,733.50	
Fixed Wing Application	acres	\$5.00	2667	13,335.00	\$0		\$0		\$0	13,335.00	
Helicopter Application	acres	\$35.00	543	19,005.00	\$0		\$0		\$0	19,005.00	
				0.00	\$0		\$0		\$0	0.00	
<i>Subtotal Land Treatments</i>				132,891.25	\$0		\$0		\$0	132,891.25	
B. Channel Treatments											
N/A				0.00	\$0		\$0		\$0	0.00	
				0.00	\$0		\$0		\$0	0.00	
				0.00	\$0		\$0		\$0	0.00	
				0.00	\$0		\$0		\$0	0.00	
<i>Subtotal Channel Treat.</i>				0.00	\$0		\$0		\$0	0.00	
C. Road and Trails											
Install Graded Dips	each	\$50.00	100	5,000.00	\$0		\$0		\$0	5,000.00	
				0.00	\$0		\$0		\$0	0.00	
				0.00	\$0		\$0		\$0	0.00	
				0.00	\$0		\$0		\$0	0.00	
<i>Subtotal Road & Trails</i>				5,000.00	\$0		\$0		\$0	5,000.00	
D. Protection/Safety											
Fence Braces	each	\$60.00	18	1,080.00	\$0		\$0		\$0	1,080.00	
Temporary Fencing	miles	\$2,500.00	3.1	7,750.00	\$0		\$0		\$0	7,750.00	
Protection Signing	each	\$400.00	2	800.00	\$0		\$0		\$0	800.00	
ATV Signing	each	\$50.00	3	150.00	\$0		\$0		\$0	150.00	
Safety Signing	each	\$400.00	2	800.00	\$0		\$0		\$0	800.00	
				0.00	\$0		\$0		\$0	0.00	
<i>Subtotal Structures</i>				10,580.00	\$0		\$0		\$0	10,580.00	
E. BAER Evaluation											
BAER Team	each	\$14,000.00	1	---	14000						
Supplies & Documents	each	\$800.00	1	---	800						
BARC Image	each	\$580.00	1	---	580						
				---			\$0		\$0	0.00	
				---	\$0		\$0		\$0	0.00	
<i>Subtotal Evaluation</i>				---	\$15,380		\$0		\$0	15,380.00	
F. Monitoring											
Year 1 + Report	each	\$3,000.00	1	3,000.00	\$0		\$0		\$0	3,000.00	
				0.00	\$0		\$0		\$0	0.00	
<i>Subtotal Monitoring</i>				3,000.00	\$0		\$0		\$0	3,000.00	
G. Totals											
				151,471.25	\$15,380		\$0		\$0	166,851.25	
Previously approved				0.00							
Total for this request				151,471.25							

PART VII - APPROVALS

1. \s\ Mary C. Erickson _____
Forest Supervisor (signature) Date

2. _____
Regional Forester (signature) Date