Date of Report: 09-09-2009

BURNED - AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report:

[X] 1. Funding … Request for Emergency Stabilization Funds

[ ] 2. Accomplishment Report

[ ] 3. No Treatment Recommendation

B. Type of Action:

[X] 1. Initial Request (best estimate of funds needed to complete eligible stabilization 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: Sawmill Canyon Wildfire

B. Fire Number: UT-FIF-000191

C. State: Utah

D. County: Millard

E. Region: Intermountain - 04

F. Forest: Fishlake NF - 0408

G. District: Fillmore - D1

H. Fire / Incident Job Code: P4E41C

I. Date Fire Started: 08-05-2009 at 1603 - Lightning

J. Date Fire Contained: 09-08-2009 (80 %)

K. Suppression Cost: $ 1,490,482 … as of 09-09-2009 at 0740 / ICS – 209 … Incident Status Summary

L. Fire Suppression Damages Repaired with Suppression Funds

1. Handline waterbarred / seeded … 3.0 miles were treated

2. Other (identify) … 12.3 miles of Dozer Line were re-seeded … selected areas were waterbarred or covered with vegetative debris for erosion control purposes; 2.6 miles of Bobcat Bullhog Line were re-seeded and treated for erosion on an as-needed basis; additional disturbances were 1 Helibase in a gravel pit, 3 Helispots, 3 spike camps and 2 drop points for cargo nets

M. Watershed Numbers: 160300050412 / Round Valley Creek (6th Field HUC)
160300050410 / Scipio Valley – Devil's Canyon (6th Field HUC)

N. Total Acres Burned: 6,981 acres

(Summary of the Acres Burned by Land Ownership)

4,426	**USDA - FS**	675	**USDI - BLM**	383	**State of Utah**	1,497	**Private**

O. Vegetation Types:	Much of the burn consisted of Gambel oak with mountain big sagebrush and curlleaf mountain-mahogany (32 %) on fan terraces, foothills and mountainsides; gravelly and stony spots found on the fan terrace had supported PJ with mountain big sagebrush (19 %); the high elevation mountainsides had been in mixed conifers - consisting of white fir, Douglas fir and subalpine fir with a minor component of aspen (28 %); various sagebrush communities (black, basin, Wyoming etc) were mapped on the nearly level / alluvial plain (13 %); stable PJ was observed on the shallow foothill sites (7 %) while the remaining areas were in curlleaf mountain-mahogany or cliffrose and located on shallow soils found along ridgetops and very steep canyon walls (1 %)
P. Dominant Soils	The upper mountainsides had Lithic Haplocryalfs, Inceptic Haplocryalfs and Mollic Haplocryalfs located under the mixed conifers; the mid-elevation mountainsides were identified as Typic Argiustolls and Typic Haplustolls under Gambel oak and mountain big sagebrush; our lower hillsides were mapped with Lithic Argiustolls and Lithic Haplustolls under stable PJ; while the alluvial fan terrace consisted of Calcic Argiustolls and Calcic Haplustolls in most areas
Q. Geologic Types:	The fan terrace and lower toeslope areas consist of mixed alluvium and colluvium derived from various sedimentary rocks (50 %); the canyon walls were formed from Price River Sandstone and Indianola Conglomerate (37 %); the upper shoulderslopes of this mountain are a combination of limestone and the secondary mineral dolomite (12 %) … finally, the few remaining areas were mapped as calcareous and clayey sediments of the North Horn Formation – a well known geologic hazard (1 %)

R. Miles of Stream Channels by Order:

Stream Names	Zero Order	1st Order	2nd Order	3rd Order	4th Order
All	-0-	14	1	-0-	5.5

S. Existing Transportation Systems (2)

Trails: 4.8 miles … these trails support foot, equestrian and ATV travel – all of the trails occur on NFS lands

Roads: 10.7 miles … includes a service road maintained by Rocky Mountain Power; it's located inside a designated Right-of-Way (ROW) and used to access their 345 kV / Powerline. The road ownerships are as follows:

USDI – BLM … 0.81 miles

Millard County … 1.33 miles

USDA – FS … 3.32 miles

Private Ownership … 5.3 miles

Total … 10.7 miles

PART III - WATERSHED CONDITION

A. Burn Severity Classes … based on a Burned - Area Reflectance Classification (BARC) 256 Map taken from Landsat 5 / Imagery on 09-02-2009 combined with on-the-ground sampling observations:

Burn Severity Classes	# of acres	% of entire burn
Unburned	**802**	**11 %**
Low	**2,473**	**35 %**
Moderate	**2,738**	**39 %**
High	**968**	**15 %**
Total …	**6,981**	**100 %**

B. Estimate of Water-Repellent Soils: 2,792 acres (~ 40 % of the burned-area)

C. Soil Erosion Hazard: 1,745 acres (~ 25 % of the burned-area is in a High hazard zone)

D. Erosion Potential: 22.8 tons / acre (ERMiT Model – Wills Hole / Subwatershed)

E. Sediment Potential: 8,331 cubic yards / square mile (ERMiT Model – Wills Hole / Subwatershed)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period	**5 years**
B. Design Chance of Success	**65 %**
C. Equivalent Design Recurrence Interval	**5 years**
D. Design Storm Duration	**1 hour**
E. Design Strom Magnitude	**0.76 inches**
F. Design Flow	**121 cfs**
G. Estimated Reduction in Infiltration	**35 %**
H. Adjusted Design Flow	**197 cfs**

PART V - SUMMARY OF THE ANALYSIS

A. Describe the Critical Values-at-Risk / Resource Concerns and Immediate Threats …

Most of the concern associated with this burning disturbance involves … maintaining long - term / soil productivity and keeping the ecological integrity on NFS lands located about 3 to 6 miles south of Scipio, UT. **The immediate threats to**

our Forest include … an unacceptable degradation of its resources from 1) unwanted establishments of noxious weeds – especially, musk thistle, Scotch thistle, houndstongue and squarrose knapweed and 2) understanding there is a strong likelihood that cheatgrass and other annual weeds will invade into our low elevation / fire - damaged areas. In some instances, we will need to stabilize erosive ground conditions occurring on severely burned terrain. Overall, the Fishlake NF / BAER Team has determined that 1,090 acres should be treated with seeding and chaining – and, another 692 acres will require broadcast seeding to limit soil erosion losses and limit the spread of unwanted plants. Overall, 1,782 acres are being recommended for land treatments in order to stabilize existing ground conditions.

In 1996, the Fishlake NF / BAER Team did the initial assessment work on the Eightmile Fire; this burn was located about 3 miles WSW of Scipio, UT along the west-side of Interstate – 15. Both the Sawmill Canyon Fire and the Eightmile Fire were very similar incidents in many respects. Each fire was greater than 5,000 acres in size. Each location had supported much the same vegetation … PJ, oakbrush, mountain big sagebrush etc. Both fires were located on comparable types of terrain … consisting of alluvial fan terraces, foothills and mountainsides. The burn severity mapping was about the same for each fire – and, each incident had about 30 to 40 % water – repellent soils.

Today … 13 years after the Eightmile Incident … many of the soils located on the upland foothills near Scipio Pass currently support a blend of perennial grasses intermixed with a large amount of cheatgrass and annual weeds (see Photopage # 8). Back in 1996, the Forest Service did not allow its BAER funds to be used for the treatment of noxious or invasive plant species. Meaning, many of the burned - areas that should, and could, have been treated with broadcast seeding or other mechanical treatments were left to stabilize / untreated over time. And … what we see today is … about ⅓ to ½ of the acreage inside the perimeter of the Eightmile Fire has been adversely affected by poa bulbosa, a cheatgrass invasion and assorted weeds. Much of the low elevation / fire - damaged terrain of the Sawmill Canyon Fire is very susceptible (much like the Eightmile incident) to noxious and invasive weeds.

Can a burned - area be treated for the potential infestation of an invasive species such as cheatgrass ? It depends .. burned - areas where the native seed source has been lost or critically impaired may be treated to prevent imminent threats of noxious or invasive weed infestation. **According to our Fishlake NF / Ecologist - Bob Campbell … many of the resident plants observed on the fan terrace before the fire will NOT re-sprout after the burn – leaving, open areas subject to a continued invasion by cheatgrass.** Values-at-risk must be considered when determining the need for treatment. In this instance, if cheatgrass and noxious weeds are allowed to invade on NFS lands … it's just a matter of time before the pastures, prime farmland areas and irrigated croplands surrounding the community of Scipio, UT become infested with these unwanted plants too.

As a part of our overall strategy, the Fishlake NF / BAER Team is recommending we 1) monitor and inventory for noxious weeds inside the perimeter of the burned-area during Year # 1 using WFSU – SULT funds. Locations to be monitored for weeds would include … dozer lines, Bobcat lines, handlines, helispots, existing roads and trails along with all disturbed areas occurring along the fire perimeter … a total of 844 acres. And … if the various thistles, houndstongue or knapweed plants are observed in a rosette stage of growth … apply herbicides to eradicate these unwanted weeds. We expect about 40 acres will be needing herbicide treatments during Year # 1. If available, the weed issue in this area will be addressed using NFN3 or WFW3 / Rehabilitation and Restoration funds starting in Year # 2

On 09-01-2009, another 2,202 acres of upland terrain was consumed by the Sawmill Canyon Fire; most of this new acreage was affected by a moderate to high severity burn. Much of the conifer growing in Wills Hole was destroyed by the wildfire. The soils in this area are strongly hydrophobic to a depth of several inches. The Wills Hole area is considered to be a potential flood source site at this time. Resource damage is extensive. The last time we had a mixed conifer landscape modified by flame to this extent … was over at Johnson Canyon located inside the perimeter of the CY 2000 / Swains Fire. The fire – damaged terrain of Johnson Canyon flooded several times in 2000, 2001, 2002 and 2003. On one occaision … a dramatic debris flow exited the mouth of Johnson Canyon and assorted material was deposited on the adjacent fan terrace. The flood water from that event eventually impacted several homes in Holden, UT - located 6 miles to the west. With all that being said … the Wills Hole area currently resembles the Johnson Canyon landscape from CY 2000. I do think fewer acres burned in Wills Hole – but, the canyon will remain problematic for another couple of years. This area needs several emergency land treatments in an effort to help stabilize its steep, erosive, fire-damaged terrain.

B. Emergency Treatment Objectives …

- Recommend emergency seed mixes consisting of native and introduced grass species that will be adapted to our burned–area for the specific purpose of 1) stabilizing erosive terrain, 2) minimizing the establishment of noxious weeds and 3) limiting the invasive threat of cheatgrass and other annual plants - such as bulbous bluegrass. Seed mixes will be developed for both low elevation / fam terraces and high elevation / mountainsides occurring on NFS lands. Application rates will be about 11.5 to 15 lbs / acre … which corresponds to about 68 to 72 seeds / $FT^{2.}$

- Conduct a 100 % Archaeological Survey on all NFS lands deemed suited for a seeding / double – chaining treatment. We need to make sure our recommended BAER treatments are compatible with the Forest Plan and do not cause any damage to our Cultural Resources.

- Combine the low elevation / broadcast seeding operation with a double – chaining treatment in order to 1) prepare the site for seeding operations on the fan terrace and 2) cover the seed with surface litter and soil material allowing for an increased rate of germination – meaning, a more successful treatment. Simply stated … the selected seed mix would also act to stabilize erosive ground conditions occurring in hot, charred areas - limiting accelerated rates of soil erosion on unprotected slopes.

- Conduct weed monitoring in Year # 1 … inventory all disturbed areas located inside the perimeter of the burned – area for musk thistle, Scotch thistle, houndstongue and squarrose knapweed. Monitoring may be funded using BAER dollars in Year # 1 to observe the post - fire emergence of noxious weeds – especially, if there is 1) a strong likelihood for a new introduction – or, 2) a rapid expansion by these unwanted plant species.

- During Year # 1, eradicate all known – and, any new, populations of noxious weeds occurring inside the perimeter of the burn.

- Purchase and post five explanatory / safety signs in order to protect the general public and fellow Fishlake employees from potential flooding hazards associated with the recent burn, The signs could also contain some wording that would limit the entry of local residents into the BAER treatment areas. Simply stated … **we don't want anyone injured or killed from flooding, mudslides or debris flows – and, we don't want to introduce any seed from noxious weeds into the burned – area**. Signs would be located along the Gap Road, near the Monroe Cattle Ranch, near Wills Hole and on the county road located between Sawmill Canyon and Noon Rock Canyon.

  (Note) … please use generic wording on these signs – so, they can be used once again for other incidents of wildfire – see page # 11 for examples of signing.

- Conduct Year # 1 monitoring activities on both the implementation and effectiveness of 1) our combined seeding / chaining treatment for erosion and weed control, 2) our broadcast seeding treatment for erosion control on moderately steep to steep terrain, 3) our weed monitoring with the D1 / Weed Crew, 4) our recommended signing – and, how much cheatgrass successfully invaded into our burned-area.

- Utilize 6½ miles of temporary fence to serve as a physical barrier - preventing domestic livestock from entering our low elevation / seeding - chaining treatment area of 1,090 acres.

- Our QD - RAWS just completed its annual inspection and standard maintenance agreement for Year # 2 … get the station up and running in close proximity to Noon Rock Peak and have an Early Warning System in place to alert officials and local residents about potential flooding hazards.

- Use a Type I or Type II helicopter to implement 100 acres of aerial mulching over in Wills Hole to control accelerated rates of soil erosion; this part of the burn is very susceptible to potential flooding hazards. The mulch will be applied to severely burned landscapes having high mountain terrain measuring < 40 % slopes. The straw will be applied at a rate of 1 to 1½ tons / acre. Seeding in this area will include the sterile Triticale hybrid.

C. Probability of Completing Emergency Stabilization Treatments Prior to a Storm Damaging Event:

Land	**80 %**	**Channel**	**-**	**Roads / Trails**	**-**	**Protection / Safety**	**90 %**

D. Probability of Treatment Success: (on NFS lands)

Treatment Types:	← Years After Treatment →		
	1	3	5
Land Treatments	**80 %**	**85 %**	**90 %**
Channel Treatments	**-**	**-**	**-**
Road / Trail Treatments	**80 %**	**-**	**-**
Protection / Safety Treatments	**90 %**	**80 %**	**N/A**

E. The Cost of Taking No - Action: $ 8,385,000 (includes the potential for a debris flow, mudslide or flooding on pastures, irrigated cropland and prime farmland located near Scipio, UT; impacts to local dwellings along with possible damage to both private roads and county roads; an increased hazard exists for more unplanned ignitions causing repeated wildfires in the area … all from having too much cheatgrass growing on the surrounding terrain … meaning, additional fire suppression costs; making unplanned repairs to the Rocky Mountain Power / 345 kV Powerline and its support towers – repairs associated with this recent incident amounted to about $ 1,500,000, possible contaimination of the domestic water supply for the community of Scipio; prolonged infestation of unwanted weeds and invasive plant species on NFS lands – and, a genuine potential exists for an episode of flooding on US - Hwy # 50)

F. The Cost of the Selected Alternative: $ 850,000 (including loss)

G. Skills Represented on the Initial / Burned - Area Emergency Response Team:

X	**Hydrology (2)**	**X**	**Soils**	**X**	**Geology**		**Range**	**X**	**BLM**
	Forestry		**Wildlife**		**Fire Mgt.**		**Engineering**		**NRCS**
	Contracting	**X**	**Ecology**	**X**	**Botany**	**X**	**Archaeology**		**Helitack**
X	**Fisheries**	**X**	**Research**		**Visuals**	**X**	**GIS (2)**	**X**	**District Staff**

Team Leader: Michael D. Smith / Soil Scientist – Technical Specialist (THSP)

Email: mdsmith01@fs.fed.us Phone: (435) - 896 -1071 Fax: (435) - 896 - 9347

H. Treatment Narratives: 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

(Please see our 11 x 17 " GIS display for noxious weed monitoring and recommended BAER Treatments at this time)

Land Treatments (15 … $ 366,654)

Cultural Resources - conduct the required 100 % / Archeological Survey on all 1,090 acres of NFS lands currently being recommended for a combination broadcast seeding / double - chain treatment. Have the survey work start in October of 2009 – and (if possible) start heavy equipment work during late November of 2009. If the weather does not cooperate with this suggested timeline … the survey work could wait until March or early April of 2010 – and, the actual work with the Ely Chain and D-9 / Cat's could begin in May of 2010. While we're waiting for the survey to be completed … a member of the BAER Team could take a GPS unit out to the site and walk the treatment polygon making any necessary adjustments for steep terrain, rock outcrops, natural spring sites etc … refining the Final Treatment Map (to the extent

possible) for the BAER / Implementation Team. Upon completion of the survey, our Forest Archaeologist and his field assistant will prepare a report on their findings – and, if necessary, consult with SHPO on the upcoming treatments. (Conduct an Archeological Survey using Fishlake NF employees … $ 16,350)

Double - Chain - about the same time we're conducting the Archaeological Survey … we should be preparing a solicitation for the approved chaining work. The first pass would be made using an Ely chain – then, the site would be seeded … and, a second pass would be implemented using either the same Ely chain or a smooth chain to cover the seed with surface litter and soil material. Chaining a second time in the opposite direction increases 1) the effectiveness of removing tree stumps – and, 2) it can be useful tool … increasing soil cover on the seed. (Chaining Treatment – Contract … $ 81,750)

Low Elevation / Seed Mix - we would need to prepare a second solicitation in order to purchase grass seed for our high elevation / broadcast seeding and the low elevation / seeding - chaining treatment. Some of the vendor's we have used in the past include Maple Leaf of Ephraim, UT, Granite Seed of Lehi, UT and Rainier Seed from SLC, UT. Simply stated, we need to secure at least 3 bids before we can purchase any seed for these land treatments. Next … we're going to work in cooperation with the Utah Procurement Center in SLC, UT to secure the services of a fixed-wing aircraft for implementing much of the low elevation / seeding treatment – please see our GIS display for recommended BAER Treatments. It's going to take 1 or 2 days to spread 15 lbs seed / acre over 1,010 acres (~ 324 / 50 lb bags). **The purpose of our broadcast seeding is to 1) minimize the invasion of cheatgrass on NFS lands, 2) limit the spread and establishment of noxious weeds and 3) stabilize erosive ground conditions on severely burned terrain.** (Purchase a low elevation seed mix and broadcast it over much of the burned - area using a fixed – wing aircraft; this action is intended for all NFS lands located on fan terraces found west of the 345 kV powerlines – then, use a Bobcat with a rangeland drill to apply the remaining seed on 80 acres of NFS lands located east of the RMP powerlines …$ 68,680 + $ 5,040 = $ 73,720)

High Elevation / Seed Mix - the fire consumed another 2,202 acres of NFS, BLM, State of Utah and private lands on Tuesday / 09-01-2009 … currently, the burn measures 6,981 acres in total size. The Fishlake NF / BAER Team is continuing with our rapid assessment of the disturbance – and, it looks like the Team will be recommending a second seed mix for stabilizing erosive ground conditions occurring on severely burned / high elevation terrain. The actual recommendation by the BAER Team is to treat 692 acres in 1) Crooked Canyon, 2) Noon Rock Canyon and 3) surrounding Wills Hole. The seeding at Wills Hole will be combined with 100 acres of aerial mulching using weed-free straw to prevent uncontrolled overland flows. We are recommending a seeding treatment similar to the higher elevation seed mixes that we applied to the areas of the Cottonwood and Johnson fires. These two burned areas had similar precipitation and eastern aspects to this Sawmill Canyon burned area. Monitoring from those burned area treatments indicated that the seeded species responded well and provided adequate vegetation cover. These species are proven performers in our area. The species-specific statements from the Intermountain Planting Guide provide some of the best information available from USU, ARS, and NRCS.

We know from our experience in the area that fire burn recovery takes about three years for nearly complete recovery. In order to get more expedited recovery from the drainages that burned the hottest and are the areas that are being proposed for treatment that drain into Scipio, it would be beneficial to limit soil loss and limit any excess flooding from these areas even if effects are not discernible until possibly the second year. In order to gain the second year benefits the seeding treatment must be implemented this fall. We have already observed debris being deposited on alluvial fans from a few of the drainages that are being proposed for treatment. Only relatively small storms have occurred on the burn areas so far. There is a legitimate risk of larger storms occurring at any time. (Purchase a high elevation seed mix and broadcast it on 392 acres of the burn using a Type III / Helicopter … $ 27,832)

Using Triticale - after much discussion, it was decided to keep the BAER Team recommendation of seeding 692 acres of severely burned / high elevation terrain; however, 300 acres located in close proximity to Wills Hole will be seeded with a mix that also includes 20 lbs / acre of sterile triticale … a hybrid grass commonly used for erosion control on very steep terrain. (Purchase a high elevation seed mix with triticale and broadcast it on 300 acres of the burn near Wills Hole using a Type III / Helicopter … $ 31,500)

Temporary Fencing for Treatment Protection - in order to protect the low elevation / seeding – chaining treatment planned for the fan terrace locations … the BAER Team recommends purchasing 6½ miles of temporary fencing to protect the site from domestic livestock. The barrier would follow our administrative boundary for 6½ miles and link into natural barriers found east of Wills Hole and north of Noon Rock Canyon. The cost of the fence would be about $ 3,000 / mile. (Temporary fencing to protect the low elevation / seeding - chaining treatment …$ 19,500)

The following seed mixes were developed specifically for **EMERGENCY STABILIZATION TREATMENTS** within the context of Forest Service Manual (2523.2 p. 22; effective 5/26/2004) … " Mulching, seeding or planting of grass, forbs, shrubs or trees when needed to prevent unacceptable erosion, to stabilize critical or significant natural or cultural resources, to prevent permanent impairment to critical habitat for Federal and State listed, proposed, or candidate threatened or endangered species – or, to prevent detrimental invasion by non-native plants. Use only planted materials that should be effective within two growing seasons." We feel these are seed mixes "of species known to be effective for erosion control, adapted to the target area and compatible with future management objectives" (FSH 2509.13,20 p. 13). Our seed mixes will help to restore ecosystem function and protect against the rapid increase of cheatgrass. The mixes contain a strong component of native species as well as some introduced species. In light of Executive Order 13112 (2/3/1999) on invasive species, we considered and determined that the introduced species in these mixes will not be "likely to cause economic or environmental harm or harm to human health."

The seed purchased will be certified to the variety claimed. Also, the mixes will be certified that NO noxious weed seeds are present. Pure live seed (PLS) equals the percent of purity times the percent total germination (PLS = % P x % TG).

Price estimates were obtained from Granite Seed Company in Lehi, UT. Actual costs may vary depending on availability at time of purchase from the successful bidder. The following table shows the pounds / acre of seed (PLS) that would be used in each mix.

Native or Introduced	**Species to be Seeded (Planting Guide for Utah)**	**Low Elevation Seed Mix (MAP … 14 to 20 inches)**	**High Elevation Seed Mix (MAP … 20 to 26 inches)**
N	Big bluegrass "Sherman"	0.25	-
N	Bluebunch wheatgrass "Anatone"	1.5	-
N	Snake River wheatgrass "Secar"	1.5	-
N	Canby bluegrass	0.5	0.5
N	Sandberg bluegrass (not Canby)	0.25	0.5
N	Slender wheatgrass "Pryor"	3	-
N	Slender wheatgrass "San Luis"	-	3
N	Mountain brome "Bromar"	4	5
N	Thickspike wheatgrass "Bannock"	1	1
I	Crested wheatgrass "Hycrest"	2	-
I	Orchardgrass "Paiute"	1	-
I	Orchardgrass "Potomac"	-	1
I	Timothy "Climax" or "Mohawk"	-	0.5
Pounds / Acre (PLS)	Total Pounds / Acre	15	11.5
	Total Seeds / FT^2 1 /	68	72
	Estimated Seed Cost / Acre	$ 47.88	$ 25.75
	Estimated Cost of the Seed Mix / Pound	$ 3.19	$ 2.24

1 / Recommended rates for broadcast seeding mixes are about 50 – 100 seeds per square foot.

The sterile triticale hybrid (20 lbs / acre @ $ 1.10 / acre for 300 acres = $ 6,600 – or an extra $ 22 / acre) – so, the adjusted seed cost / acre becomes $ 47.75 when adding triticale to the high elevation seed mix – and, the estimated treatment cost becomes $ 105 / acre when you factor-in the additional flight time using a Type III / Helicopter

These seed mixes include the recommendations of District and Forest Specialists. We referred to seed mixes previously used on the Forest and the Intermountain Planting Guide, from Utah State University Cooperative Extension Service, while designing these seed mixes to achieve the FSM objectives listed above.

(Note) … the cost of using a Type III / Helicopter with its own pilot, mechanic and fuel truck driver – plus, getting a support crew consisting of a Helicopter Manager and several Helitack along with having an Implementation Team Leader available on the job site was estimated at $ 45 / acre when conducting a high elevation / broadcast seeding treatment. (it's $ 57 / acre when sterile triticale is added to the seed mix) In comparison, we approximated the cost of using a fixed-wing aircraft to apply seed at $ 20 / acre which includes - transporting the seed out to the job site, loading the seed hopper, having security on-site to control access into the area - along with, having personnel on-the-ground to mark the various treatment areas. Our recommendation is to have the fixed-wing aircraft seed burned-areas located in the range of 3 to 25 % slopes. The helicopter will be working on steep to very steep terrain measuring 25 to 60 % slopes. Finally, we will be using a Bobcat with a seeder attachment for 80 acres of seeding located in close proximity to the 345 kV powerline – cost of this equipment with an operator was valued at $ 15 / acre.

Cost of the seeding operation was estimated at $ 63 / acre – low elevation treatment … Bobcat

Cost of the seeding operation was estimated at $ 68 / acre – low elevation treatment … Fixed-Wing

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Cost of the seeding operation was estimated at $ 71 / acre – high elevation treatment … Type III / Helicopter

Cost of the seeding operation was estimated at $ 105 / acre – high elevation treatment … Type III / Helicopter

(includes adding 20 lbs of sterile triticale / acre near Wills Hole)

Most of the seed will be applied in areas that receive about 14 to 26 inches of precipitation annually. Some of the species in these mixes each have the ability to dominate a stand depending on the location. The value of multiple species in the seed mix provides the flexibility for different species in the seed mix to thrive in a microsite that is best suited for that certain species.

Specific ecological attributes valued for some of the species include the following:

Big bluegrass— "when properly managed, will compete with cheatgrass"

Bluebunch and Snake River wheatgrass— "long-lived, drought tolerant, widespread"

Sandberg and Canby bluegrass— "important for soil stabilization…one of the first grasses to green-up in the spring…excellent in low rainfall native mixes - these bluegrasses should be very competitive with cheatgrass)

Slender wheatgrass— "valuable in erosion control because of its rapid development"

Mountain brome— "will establish and grow on rather poor, depleted soils … recommended sites include weedy openings"

Thickspike wheatgrass – "adapted to disturbed range sites and dry areas subject to erosion"

Crested wheatgrass— Hycrest is "a hybrid between standard and introduced…outstanding seed producer, excellent seedling vigor, easy to establish under harsh conditions"

Orchardgrass – "adapted to pinyon - juniper and mountain brush…greens up early in the spring"

Timothy – "used as a ground cover…to control erosion on cut - over or burned - over timberland"

Sterile Triticale Hybrid – "hardy and durable – but, not persistent or invasive…adapts to a wide range of soil and moisture conditions"

There may be opportunities to add other species to the seed mix. We suggest that District personnel contact the Utah Division of Wildlife Resources (UDWR) prior to actual purchase of the seed. Depending on seed availability and time of seeding, the Division may have seed for forb and browse species that could be added to the seed mix that would enhance both wildlife habitat and diversity in the area.

We constrained the total number of acres to be seeded by several guiding factors:

Only seed in disturbed areas located on NFS lands.

Generally speaking, seed suitable areas located within moderate and high / burn severity zones.

Seed areas in proximity to other ownerships where cheatgrass is abundant.

Seed areas where pre-burn juniper stands lacked adequate grass seedbank.

The Planting Guide for Utah gives the following information in the " Wildfire Seedings " section. " Steep slopes and rough areas that are not accessible to conventional ground equipment can be aerial seeded … if it is not possible to cover seed, plant late in the fall and increase the seeding rate ... burned sites, including forest and desert ranges are often seeded within a few days or weeks following the fire, in the mistaken belief that the ash will cover the seed … even if an ash residue or a loose seedbed is present, seed only during the appropriate seasons. Do not plant on a loose dry seedbed … plant in the late fall when seedbeds are firm."

Aerial Mulching - in an effort to stabilize several areas of severely burned terrain – and, to limit the potential for a debris flow, mudslides or flooding hazards from the Wills Hole area … the Fishlake NF / BAER Team is recommending an emergency treatment of about 100 acres of aerial mulching using a Type I or II / helicopter; the larger aircraft will be necessary to move loads of 2,500 lbs in cargo nets across high elevation terrain at 8,500 feet. We used a Type I / KMAX helicopter on the Devil's Den Fire for this type of work and had excellent results with the implementation. And … we used a Type II / Bell 205++ helicopter for aerial mulching on the Annabella Fire – again, with exceptional results. Weed - free straw would be applied to our fire – damaged areas at a rate of 1 to 1½ tons / acre. The mulching activities would be limited to high mountain locations with < 40 % slopes … allowing the straw product to remain in place protecting our fragile soils from rain-drop impact. Values-at-Risk in this area of the burn include … 1) the domestic water supply for the community of Scipio, UT – which is a fenced-off 9 acre development, 2) potential flooding hazards on US / Hwy 50 and 3) the degradation of NFS resources – followed by, the establishment of noxious weeds and invasive species in flood damaged areas. Cost of the project is expected to be about $ 875 / acre. FYI, these same 100 acres would be treated with broadcast seeding containing triticale " prior " to the application of any straw mulch. (Aerial Mulching Treatment … $ 87,500)

Diversion Berms - Millard County has instructed its Road Crew to assist the community of Scipio, UT in their time of need. To my understanding, the Road Crew will be utilizing one of their D-9 Cats to construct 2 soil berms which would deflect flood waters away from the town's domestic water supply. This land treatment will be occurring on lands administered by the State of Utah. **As such, there are no BAER dollars attached to this activity**. For information sharing purposes, the 2 diversion berms will be plotted on the Final / BAER Treatment Map. (Diversion Berms $ -0-)

Noxious Weed Monitoring - the D1 / Weed Crew would remain active during 2010 by monitoring for new infestations of noxious weeds in the burned-area. Unwanted weeds known to be growing in close proximity to this burn include 1) musk thistle, 2) squarrose knapweed, 3) Scotch thistle and 4) houndstongue. Disturbances that need to be inventoried for weeds in 2010 include the new dozer line, the Bobcat line, handlines, Helispots, the ROW along the 345 kV Powerline – plus, all existing roads and trails located on NFS lands; about 844 acres. (Weed Monitoring … $ 6,752)

Herbicide Treatments - finally, we expect to find small infestations of noxious weeds out within the burn during 2010; as such, we want to provide chemical herbicides to the D1 / Weed Crew for the eradication of these unwanted plants; the CY 2010 cost of the chemicals was estimated at $ 2,000 / job. Our best estimate is … during May, June and July of 2010 … approximately 40 acres will need to be treated with herbicides. In FY '09 … our R4 / Invasive Species Staff has suggested it costs about $ 70 / acre to eradicate weeds. (Purchase Herbicides and Apply Herbicide Treatments … $ 2,000 + $ 2,800 = $ 4,800)

Temporary Seed Storage - for at least 700 bags of grass seed in Fillmore, UT … up to 8 months at $ 150 / month – covering the cost of 2 sheds. (NTE $ 1,200 / for all Seeding Treatments during Year # 1)

D1 - BAER / Implementation Crew – simply stated, this is a pretty ambitious plan with all of its recommended treatments and safety measures. In order to complete the stabilization of our Sawmill Canyon Fire in a timely manner … the Fillmore RD will need the help of two GS – 5 seasonal employees. These individuals will assist the Ranger District with its broadcast seeding and aerial mulching treatments, posting signs, construction of the temporary fence, transporting the RAWS over to Scipio, UT, moving cargo nets and our seeding bucket between Helispots along with marking the Forest Boundary for the upcoming chaining treatment. (Two employees … $ 12,000 for about 3 to 4 months of GS – 5 / part-time work on various BAER Treatments)

Monitoring of Implementation

Implementation Monitoring: 10 specialist days @ $ 375 / day	**$ 3,750**

Channel Treatments (N/A)

Road / Trail Treatments (2 … $ 1,125)

Culverts - many of the CMP / culverts and concrete box culverts located along US / Hwy 50 in the SE part of this burn (Section 22) are blocked by assorted debris and vegetative cover. For the most part, these pipes and structures are completely non-functioning at this time. The BAER Team would suggest that UDOT send a work crew (inmates ?) out to this section of highway and clear-away all materials (green vegetation, woody debris, trash, noxious weeds etc) from the roads drainageway. **Much of this work will be done on Right-of-Ways occurring along private, BLM or State of Utah Lands – as such, there are no BAER dollars involved with this activity**. If the burn continues, and the fire actually moves down into Raspberry Canyon – then, it becomes increasingly possible that flood waters may actually impact US / Hwy 50 during periods of inclement weather. One of the best ways to protect this transportation surface is to keep its drainage network – open, clean and functioning as the Engineers planned during the initial road construction. (Clean Culverts on US / Hwy 50 … $ -0-)

Storm Patrol – If the Emergency Warning System connected with our RAWS sends out its alert message down to Fillmore indicating a large storm is impacting the Sawmill Canyon Fire … several employees from the Fillmore Ranger District should immediately drive out to the burn to 1) clear the debris away from blocked culverts along US / Hwy 50, 2) work in cooperation with local officials and law enforcement officers to keep the general public safe and away from potential flooding hazards and 3) if necessary, close the highway down in the area located 2½ miles east of Wills Hole. (Storm Patrol - 1 event / year involving 3 individuals … $ 1,125)

Protection and Safety Measures (2 … $ 6,000)

Signs – design and purchase 5 metal signs which alert the general public to the potential for flooding hazards from the burned-area during summer thunderstorm events; secondly, the signs will be used as a tool to control-the-entry of curious residents into the various treatment areas. Simply stated, we don't want the general public spreading any unwanted seeds from noxious weeds in the burned-area. Signs would be placed near Wills Hole, the Gap Road (2), the Monroe Cattle Ranch and on the alluvial plain located between Sawmill and Noon Rock Canyons. (Safety / Explanatory - Signs …$ 2,000)

RAWS / Early Warning System – The community of Scipio, UT, along with the Millard County / Sheriff's Office and employees of the Fillmore Ranger District have asked the BAER Team to position our QD – RAWS up near Noon Rock Peak to function as an Early Warning System in the event a summer thunderstorm impacts the charred terrain of the Sawmill Canyon Fire. Apparently, Sheriff Robert Dekker was really impressed with how well our RAWS worked in connection with the Devil's Den Fire near Oak City, UT. In that instance, once the rain gauge received > 0.2 inch of rain in a 10 minute period of time … its alert function sent a warning message down to the Millard County / Sheriff's Dispatch Office. The Dispatch Office responded by sending 2 uniformed patrolmen up to Oak Creek Canyon to investigate the potential for flooding hazards. The storm damaged the road surface in upper Oak Creek Canyon near Limekiln Canyon with raging floodwaters. If the storm had continued … the Officer's were ready to evacuate the FS / Oak Creek Campground. Certainly, we would try to coordinate the transport of our RAWS with some of the other planned helicopter activities (broadcast seeding, aerial mulching, Year # 1 / monitoring etc) – but, if we need to get our RAWS operational ASAP … then, it's going to take a day with a CWN / Type III / Helicopter plus a couple Helitack to get the station operational once again. (RAWS / Early Warning System … $ 4,000)

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I. Monitoring Narrative: BRIEFLY 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 R4 / BAER COORDINATOR

A detailed Year # 1 / Monitoring Plan has been prepared by the Fishlake NF / BAER Team for this incident of wildfire; our plan includes a thorough discussion of Year # 1 / monitoring activities on the following topics:

Broadcast Seeding vs Seeding and Chaining

Noxious Weed Detection and Eradication

Soil Erosion and Storm Flow Monitoring

Explanatory and Safety Signs

Year # 1 / Monitoring Report and Interim BAER Reports

As requested, a copy of our Monitoring Plan will be sent to R4 / BAER Coordinator – Jeff Bruggink up in Ogden, UT as a separate document from this 2500 - 8 / Initial BAER Report And … at the same time, we're going to paste a copy of our detailed plan right into this document too. This permits our fellow employees, local units of government, other State and Federal Agencies with an opportunity to view our strategy for examining the disturbance.

Year # 1 / Monitoring Plan – Sawmill Canyon Wildfire / Fillmore Ranger District

This Monitoring Plan briefly describes elements of both implementation monitoring and effectiveness monitoring. Our monitoring activities will be qualitative and designed to answer the questions presented in each of the respective sections below.

SEEDING AND SEEDING PLUS CHAINING TREATMENTS

Portions of the burned area will be chained to loosen the soil. Then seed will be aerially broadcast and followed by a second pass with the chain to cover the seed. Some areas of high burn severity, mostly at higher elevations, will only receive an aerial broadcast seeding treatment.

Implementation monitoring will provide answers for these questions. Were the recommended seed mixes used? How were the application rates calibrated? Were the two seed mixtures applied to the intended sites at the proper rates? How well did the first pass with the chain prepare the seedbed? How adequately did the second pass of the chain cover the seed? For the unchained areas, was the seed applied during fall 2009 just prior to, or just after, the first snowfall?

Results from chaining and aerial seeding should include establishing effective ground cover thus preventing the increase of cheatgrass dominance and/or the establishment of noxious weeds. Also, is accelerated soil erosion reduced, and is desirable vegetation reestablished? During field reviews of the treated areas, ocular estimates of species presence and abundance will be observed. What is the percent cover for each of the seeded species? Was the burned area rested from livestock grazing? What proportion of the treated area has cheatgrass as the dominant species? How much accelerated soil erosion is evident? In addition, a number of photo points may be established; photographs at each point will be re-taken in June and August 2010.

Adequate moisture from spring rains will be key to a successful response from the aerial broadcast seeding treatment. Forest personnel should anticipate the need to monitor in 2010 and be prepared to seed a second time in late fall 2010, but only on the fan terrace. The Forest should be prepared to request rehabilitation and restoration funds if needed.

NOXIOUS WEED DETECTION MONITORING

The purpose of this monitoring is to detect possible expansion of, or new, noxious weed populations in the burned area beyond existing known populations along access routes and fire suppression lines. Noxious weed species generally will be treated at the same point in time they are discovered.

Monitoring will be done by the Fillmore District weed crew. This monitoring will be on Forest-administered lands 100 feet on each side of any line or route and within 500 feet of the forest boundary or any previously known location of a noxious weed species. New weed locations will be documented with GPS positions, and photographed when possible. Monitoring will occur three times during the growing season preferably in early May, mid June and late July of 2010. This frequency should allow individual young weeds to be detected and treated before they reach full maturity and set seed. Monitoring levels may be increased if substantial amounts of young noxious weeds are detected. Monitoring of weed expansion and treatments beyond Year 1 will be funded with rehabilitation and restoration dollars or other appropriated funds.

The major noxious weed species of concern for this burned area include musk thistle, squarrose knapweed, Scotch thistle and houndstongue. Other noxious weed species that occur in, or adjacent to, the burned area include Russian-olive, saltcedar, and field bindweed (morning glory). How many new locations of each of these noxious weed species (or others) occurred in the burned area? Were all new locations for 2010 documented in the District's weed database? Were all new occurrences of noxious weeds treated with herbicide? Do any of these new populations dominate the local site?

SOIL EROSION AND STORM FLOW MONITORING

Post storm event monitoring will visually assess the movement of soil and water off the mountain and into the valley below. One or 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. Peak flows from post-fire storms will be estimated where possible. How effective is ground cover in Year 1 with respect to limiting overland flow and soil movement? How is hydrologic recovery of the burned area after Year 1? What is the estimate of additional recovery time needed? Is there a need for additional treatments? Photo points may be established on the lower alluvial fan areas. Photographs will be re-taken during fall 2010 to show the amount of soil movement, if any, which occurred.

PROTECTION AND EXPLANATORY SIGNS - RAWS / EARLY WARNING SYSTEM

Were signs placed at the designated locations? Was the lettering readable, and was the message clear and appropriate? Was installation timely? Inspections made throughout Year 1 will determine if signs have achieved their intended purposes. If necessary, did the QD – RAWS send out an alert message to the Millard County / Sheriff's Dispatch Office as part of our Early Warning System?

MONITORING REPORT AND INTERIM REQUESTS

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

*** BAER Monitoring … Cost Breakdown – Year # 1 ***

Monitoring Activities, Supplies and Aircraft Time	Estimated Costs
Helicopter: 3 hours flight time @ $ 1,000 / hour	**$ 3,000**
Rain Gauges: 2 tipping bucket rain gauges with Hobo recorders @ $ 250 / each	**$ 500**
Effectiveness Monitoring: 5 specialist days @ $ 375 / day	**$ 1,875**
Document Preparation: 5 specialist days @ $ 375 / day	**$ 1,875**
Total - Year # 1 Monitoring ……	**$ 7,250**

(prepared by Pete Haraden and Adam Solt, Hydrologists; Michael D. Smith, Soil Scientist; David Tait, Botanist and Bob Campbell, Ecologist – 09/05/2009)

Michael D. Smith

(Examples of Signs used on other Incidents of Wildfire)

Part VI – Emergency Stabilization Treatments and Source of Funds - Initial BAER Report

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
Weed Monitoring	acre	8	844	$6,752	$0		$0		$0	$6,752
Purchase Herbicides and S	job	2000	1	$2,000	$0		$0		$0	$2,000
Herbicide Application	acre	70	40	$2,800	$0		$0		$0	$2,800
Archaeological Survey - C	acre	15	1090	$16,350	$0		$0		$0	$16,350
Temporary Seed Storage F	month	150	8	$1,200	$0		$0		$0	$1,200
Broadcast Seeding - Low	acre	63	80	$5,040	$0		$0		$0	$5,040
Broadcast Seeding - Low	acre	68	1010	$68,680	$0	80	$7,440		$0	$76,120
Chaining - Contract	acre	75	1090	$81,750	$0	80	$6,000		$0	$87,750
Broadcast Seeding - High	acre	71	392	$27,832	$0	0	$0		$0	$27,832
Broadcast Seeding - High	acre	105	300	$31,500	$0	0	$0		$0	$31,500
Diversion Berms - D9 Cat	job	3500	0	$0	$0		$0	1	$3,500	$3,500
Aerial Mulching - Wills Hole	acre	875	100	$87,500	$0		$0		$0	$87,500
Temporary Fence - to prot	mile	3000	6.5	$19,500	$0		$0		$0	$19,500
Implementation Crew - 2 S	job	6000	2	$12,000	$0		$0		$0	$12,000
Implementation Monitoring	day	375	10	$3,750			$0		$0	
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$366,654	$0		$13,440		$3,500	$379,844
B. Channel Treatments										
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road / Trails										
Clean Culverts - Hwy 50	job	2500		$0	$0		$0	1	$2,500	$2,500
Storm Patrol - 1 Storm / 3 F	event	375	3	$0	$1,125		$0		$0	$1,125
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$0	$1,125		$0		$2,500	$3,625
D. Protection / Safety										
RAWS / Warning Station -	job	4000	1	$4,000	$0		$0		$0	$4,000
Explanatory Signs	sign	400	5	$2,000	$0		$0		$0	$2,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$6,000	$0		$0		$0	$6,000
E. BAER Evaluation										
BAER Team	job	33,058	1	$0	$33,058		$0		$0	$33,058
Assessment Supplies & D	misc	850	1	$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Evaluation				$0	$33,058		$0		$0	$33,058
F. Monitoring										
Year 1 ... includes docume	job	3750	1	$3,750	$0		$0		$0	$3,750
Hobo Rain Gauges	each	250	2	$500	$0		$0		$0	$500
Helicopter - Type III	hour	1,000	3	$3,000	$0		$0		$0	$3,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$7,250	$0		$0		$0	$7,250
G. Totals				**$379,904**			**$13,440**		**$6,000**	**$429,777**
Previously approved				$0						
Total for this request				**$379,904**						

PART VII - APPROVALS

1.	**/s/ Diane Freeman (Acting Forest Supervisor)**	**09-10-2009**
	Forest Supervisor (signature)	**Date**
2.	_____	**09-14-2009**
	Regional Forester (signature)	**Date**