

Date of Report: 7/18/2006

**BURNED-AREA REPORT**

(Reference FSH 2509.13)

**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds  
☐ 2. Accomplishment Report  
☐ 3. No Treatment Recommendation

**B. Type of Action**

- ☐ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)  
☒ 2. Interim Report # 1  
☐ 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: Bull Complex – Cove Mtn. B. Fire Number: UT-CCD-600322  
C. State: Utah D. County: Washington  
E. Region: Intermountain (4) F. Forest: Dixie  
G. District: Pine Valley H. Fire Incident Job Code: PDCS28  
I. Date Fire Started: June 30, 2006 J. Date Fire Contained: July 7, 2006  
K. Suppression Cost: 4.5 million  
L. Fire Suppression Damages Repaired with Suppression Funds  
1. Fireline waterbarred (miles): 0.5  
2. Fireline seeded (miles): 0  
M. Watershed Number: 150100080602 Upper Moody Wash, 150100080603 Lower Moody Wash and 150100080802 Tobin Wash-Santa Clara River  
N. Total Acres Burned: 18,825  
NFS Acres(8,080) BLM (10,618) State (125) Private (2)  
O. Vegetation Types: Pinyon-Juniper and mixed shrubs  
P. Dominant Soils: Dominantly moderately deep to very deep, fine-loamy to loamy-skeletal soils. The soil surface is typically 40 to 60 percent gravel and cobble.  
Q. Geologic Types: Typically rhyolite.

R. Miles of Stream Channels by Order: Order I – 28.43; Order II – 2.29; Order III – 3.26; Order 4 – 3.29

S. Transportation System

Trails: 5.19 miles      Roads: 6.67 miles

### **PART III - WATERSHED CONDITION**

A. Burn Severity (acres): 1,271 (Unburned) 4,668 (low) 12,886 (moderate) 0 (high)

B. Water-Repellent Soil (acres): 257

C. Soil Erosion Hazard Rating (acres):  
0 (low) 7,968 (moderate) 112 (high)

D. Erosion Potential: 19 tons/acre

E. Sediment Potential: 16 cubic yards / square mile

### **PART IV - HYDROLOGIC DESIGN FACTORS**

A. Estimated Vegetative Recovery Period, (years): 3 - 6

B. Design Chance of Success, (percent): 50%

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

D. Design Storm Duration, (hours): 30 minutes

E. Design Storm Magnitude, (inches): 0.49 inches

F. Design Flow, (cubic feet / second/ square mile): 20

G. Estimated Reduction in Infiltration, (percent): 10%

H. Adjusted Design Flow, (cfs per square mile): 22

### **PART V - SUMMARY OF ANALYSIS**

A. Describe Critical Values/Resources and Threats:

#### **Threats to Human Life**

Field reviews within and downstream of the burn confirmed there are no situations where human occupancy of flood prone areas exists. Therefore, the effects of the fire do not appear to have created any significant threats to human life.

#### **Threats to Property and Road/Trail Infrastructure**

There are numerous culverted crossings and road dips on Forest Road 006 and 873 that appear to be undersized, even for pre-fire conditions. With flood flows expected to increase as a result of the fire, there could be debris loading over the next few years that could result in culvert plugging and loss of the road prism in numerous

critical locations. Loss of this road due to poor drainage design will close one of the 5 most utilized roads on the district. Closing this transportation route is not feasible due to the connectivity of this road to the surrounding road system. Road drainage was evaluated on Forest Road 006 and 873 to determine if they can function with anticipated increased flows. On Road 006, 20 new culverts will need to be increased in size and 13 cleaned, also 4.5 of linear road drainage and rolling dip work will need to be conducted in the fall and again in the spring to properly handle anticipated flows. On Road 873, 20 rolling grade dips were determined to be needed to protect the roads from anticipated post fire hydrologic events.

3 ponds near the burned perimeter are at near capacity with sediment. Additional post fire runoff will fill retaining space in these impoundments and possibly cause over-topping and down cutting of these structures. It is recommended that these impoundments be cleaned to prevent further down stream degradation.

Approximately 4.5 miles of the Manera Wash/ Cove Mountain ATV Trail network is at risk. This area has a 90% probability of failure of the existing ATV trail from excessive sideslope runoff and expected gullying on the existing tread. Trail drainage (170 rolling dips) also with barriers (30 rock structure) will protect the trail system and the surrounding resource areas from ATV impacts.

### **Threats to Unacceptable Resource Degradation**

ATV encroachment and other off road travel is a concern to resource degradation; it is recommended that 20 signs be placed along critical resource areas along the General Steam Road (006) and the Manera Wash/Cove Mountain ATV system to prevent unacceptable degradation to the burned landscape. This signage would help educate and notify forest users of potential excessive degradation to burned watersheds.

The vegetative recovery and protection of proposed seeding treatments of the Cove Mountain fire is currently at risk along 8.5 miles of boundary between NFS and BLM. The BLM lands adjacent to NFS land have winter grazing that begins on November 1<sup>st</sup>. The threat of slow vegetative recovery on NFS lands with no barriers to prevent grazing on NFS land will restrict recovery and the potential for post fire seeding success on these burned watersheds. It is recommended that 8.5 miles of fence be built on the boundary to prevent the over utilization of the initial vegetative recovery of the proposed seeding. Initially the BLM has agreed to rest their winter allotment below the the Cove Mountain fire for two years. The strategy that the forest will use to replace this fence is as follows:

- Request National Fire Plan (NFN3-In-The-Black) funding for contract administration and fencing materials to replace this 8.5 miles of fence. The BLM is will also request the funding for the replacement of this fence. The two agencies will then cooperate on completing the contracting for this fence replacement.

To determine the need for future treatments, **noxious weed assessments** will be conducted to document if increased noxious weed invasion is occurring within the wildfire perimeter. During the fire suppression activities, fire transportation equipment and engines utilized areas near Gunlock and Veyo where noxious weeds are present. **Assessments** will begin in fiscal year 2006.

Cedar Springs has lost the riparian fences that protect the spring water sources and are at risk to potential contamination from ungulate grazing and vehicle traffic that is prevalent in this area. It is proposed that 0.25 miles of fence be reestablished to protect this vital riparian habitat.

### **Threats to Water Quality**

Field reviews within and downstream of the burn confirmed there are threats to water quality. There will be sediment, ash output and changes to chemical water quality. The effects to on-site and downstream water quality and aquatic resources are expected to be short term (3 years). The use of straw mulch or other erosion control material was not recommended due to topography and conditions of the landscape. This interim request includes the treatment of approximately 100 acres of steep slopes with PAM 12. The PAM 12 is a polyacrylamide

that has shown success in erosion control by holding soil particles together. The PAM 12 will be applied in a limited area. Monitoring of the effectiveness of the PAM 12 at reducing soil movement will be conducted.

### **Threats to Long-term Soil Productivity and Ecosystem Integrity**

Field reviews within the burn indicate there are serious and significant threats to long-term soil productivity and ecosystem integrity. This threat is related to an expected increase in cheatgrass (*Bromus tectorum*). The threat is due to past management of the area coupled with consumption of rangeland vegetation by the fire. Past management decisions of allowing fire exclusion, heavy grazing pressure, and invasion of cheatgrass has resulted in a burn area where vegetation succession processes have been interrupted. As a result, desired natural revegetation of the burn area is not expected to occur. Instead, it is expected the burn area will see minimal production of natives that show low vigor, and that will, in a very short time, be overtaken by cheatgrass (*Bromus tectorum*). This invasion will result in very poor range land condition and subsequent accelerated soil erosion and associated loss of long-term soil productivity.

Aerial seeding of aggressive native, sterile and non-native grasses is proposed for 6,011 acres. 1,460 acres (of the 6,011) is also proposed for chaining, this treatment would incorporate the seed into the soil and provide for better germination success and also provide a woody debris on the surface to protect the emerging seeded grasses and provide additional soil cover. These treatments would be effective in deterring cheatgrass domination, provide for reduced fire frequency and increase woody debris cover. This seeding treatment would also provide cumulative protection of water quality for Gunlock Reservoir (which is listed as a 303D lake for phosphorus) by providing additional soil stabilization of the watersheds that directly influence the reservoir.

This interim request includes the treatment of approximately 200 acres of the seeded area with PAM 12. The PAM 12 has shown some success at increasing plant growth and response on the Uinta NF when used in conjunction with seeding. The objective is to use the PAM 12 on 100 acres of seeded sites and 100 acres of chained and seeded sites to increase the ability of the seeded grasses species to grow. The PAM 12 will also be used to limit wind and water erosion on the seeded sites. Monitoring of the effectiveness of the PAM 12 at reducing soil movement and increasing plant growth will be conducted.

### **Threats to Heritage Resources**

Field reviews within and downstream of the burn confirmed there are no significant threats to heritage resources.

#### **B. Emergency Treatment Objectives:**

The primary purpose of the emergency response is to take prompt action necessary to effectively protect, reduce or minimize significant threats to unacceptable resource degradation, property, noxious weeds and invasive plants. The emergency treatments being recommended by the Dixie BAER Team are specifically designed to achieve the following results.

1. Protect roads, trails and impoundments in the area from post fire runoff.
2. Prevent cheatgrass (*Bromus tectorum*) expansion through the re-establishment of plant communities that reduce a threat to long-term soil productivity and protect the ecological integrity of the ecosystem.
3. Provide protection from unregulated grazing on burned areas that have seeding treatments.
4. Limit colonization and/or expansion of noxious weeds.
5. Provide protection to critical riparian areas.
6. Limit post fire hillslope erosion and reduce accelerated sediment delivery immediately following the fire.

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

Land 65-70 % Channel 70 % Roads/Trails 75 % Protection/Safety 75 %

#### D. Probability of Treatment Success

|                   | Years after Treatment |    |    |
|-------------------|-----------------------|----|----|
|                   | 1                     | 3  | 5  |
| Land              | 65-70                 | 75 | 80 |
| Channel           | 70                    | 75 | 80 |
| Roads/Trails      | 75                    | 85 | 90 |
| Protection/Safety | 75                    | 85 | 90 |

#### E. Cost of No-Action (Including Loss):

| Value At Risk                                                                                                          | Estimated Cost     |
|------------------------------------------------------------------------------------------------------------------------|--------------------|
| Loss of Long-term Soil Productivity and Ecosystem Integrity from an increase in cheatgrass ( <i>Bromus tectorum</i> ). | \$2,000,000        |
| Loss of Forest Road 006 and 873.                                                                                       | \$120,000          |
| Loss of Manera Wash/Cove Mountain Trail System                                                                         | \$90,000           |
| Loss of Cedar Springs Riparian Habitat                                                                                 | \$25,000           |
| Loss of Water Impoundment Areas                                                                                        | \$30,000           |
| ATV damage to watershed (rutting and vegetative trampling)                                                             | \$150,000          |
| <b>Total</b>                                                                                                           | <b>\$2,415,000</b> |

#### F. Cost of Selected Alternative (Including Loss):

| Value At Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Estimated Cost |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Loss of Long-term Soil Productivity and Ecosystem Integrity from an increase in cheatgrass ( <i>Bromus tectorum</i> ). This treatment is estimated to be 65% effective in reducing the frequency of cheatgrass invasion. The fire frequency from this treatment is also expected to be every 9-15 years with this treatment versus 2-4 years without treatment.<br><br>35% (failure rate of reducing cheatgrass) of \$2,000,000 plus \$568,818 of the cost of the treatment. | \$1,268,818    |
| Loss of Forest Road 006 and 873. This treatment is estimated to be 75% effective in reducing the road damage.<br><br>25% (failure rate from slow implementation or exceedingly high precipitation) of \$120,000 plus \$29,200 of the cost of the treatment.                                                                                                                                                                                                                  | \$59,200       |
| Loss of Manera Wash/Cove Mountain Trail System. This treatment is estimated to be 75% effective in reducing the trail damage.<br><br>25% (failure rate from slow implementation or exceedingly high precipitation) of \$90,000 plus \$14,250 of the cost of the treatment.                                                                                                                                                                                                   | \$36,750       |
| Loss of Cedar Springs Riparian Habitat. This treatment is estimated to be 90% effective in reducing impacts to the riparian area.<br><br>10% (failure rate from ATV traffic thru riparian or exceedingly high precipitation/runoff) of \$25,000 plus \$2,000 of the cost of the treatment.                                                                                                                                                                                   | \$4,500        |
| Loss of Water Impoundment Areas. This treatment is estimated to be 70% effective in reducing the damage to the impoundments and downstream effects.<br><br>30% (failure rate from slow implementation or exceedingly high precipitation) of \$30,000 plus \$4,500 of the cost of the treatment.                                                                                                                                                                              | \$13,500       |
| ATV damage to watershed (rutting and vegetative trampling). This treatment is estimated to be 90% effective in reducing the road damage.<br><br>10% (failure rate from off road vehicle damage) of \$150,000 plus \$2,000 of the cost of                                                                                                                                                                                                                                     | \$17,000       |

|                |                    |
|----------------|--------------------|
| the treatment. |                    |
| <b>Total</b>   | <b>\$1,599,768</b> |

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Rich Jaros

Email: sjaros@fs.fed.us

Phone: 435-865-3722

FAX: 435-865-3791

## H. Treatment Narrative:

### Land Treatments:

#### **Seeding**

To prevent cheatgrass (*Bromus tectorum*) expansion through the re-establishment of plant communities that reduces the threat to long-term soil productivity and protects the ecological integrity of the ecosystem.

Treatment: Aerial seeding will occur at a rate of 18 lbs/acre (Seed Mix #1) on 4,530 acres of moderate burn severity with moderate slopes and 39 lbs/acre (Seed Mix #2) on 1,481 acres on moderate burn severity with steep slopes. An estimated 140,000 pounds of seed will be used on approximately 6,011 acres. Additionally, 1,481 acres will be chained to increase the germination (seed/soil contact) and provide for additional woody debris. Chaining has been effective (Sherall Goodrich and Jeffery Ott) on deterring cheatgrass in post fire seeding. The ground-based chaining treatment will cost an estimated \$35 an acre. Aerial seeding will take place on all 6,011 acres at a cost of approximately \$15 an acre.

#### Seed Mix #1

| <u>Species</u>                       | <u>Lbs of mix<br/>PLS</u> | <u>Seeds/Lb PLS</u> | <u>Acres</u> | <u>Cost/Lbs PLS</u> | <u>Cost for Treatment Area<br/>PLS</u> | <u>Seeds/ft2 for treatment area</u> |
|--------------------------------------|---------------------------|---------------------|--------------|---------------------|----------------------------------------|-------------------------------------|
| Crested<br>Wheatgrass<br>(Fairway)   | 3                         | 200,000             | 4,530        | \$2.00              | \$27,180.00                            | 13.8                                |
| Intermediate<br>Wheatgrass<br>(Oahe) | 3                         | 175,000             | 4,530        | \$2.00              | \$27,180.00                            | 12.1                                |
| Triticale                            | 8                         | 11,000              | 4,530        | \$1.50              | \$43,035.00                            | 2.0                                 |
| Indian<br>Ricegrass<br>(Rimrock)     | 2                         | 141,000             | 4,530        | \$4.00              | \$36,240.00                            | 6.5                                 |
| Western<br>Wheatgrass<br>(VNS)       | 2                         | 110,000             | 4,530        | \$8.00              | \$72,480.00                            | 5.1                                 |
| <b>Total</b>                         | <b>18</b>                 |                     |              |                     | <b>\$206,115.00</b>                    | <b>39.4</b>                         |

#### Seed Mix #2

| <u>Species</u>                       | <u>Lbs of mix<br/>PLS</u> | <u>Seeds/Lb PLS</u> | <u>Acres</u> | <u>Cost/Lbs PLS</u> | <u>Cost for Treatment Area<br/>PLS</u> | <u>Seeds/ft2 for treatment area</u> |
|--------------------------------------|---------------------------|---------------------|--------------|---------------------|----------------------------------------|-------------------------------------|
| Crested<br>Wheatgrass<br>(Fairway)   | 3                         | 200,000             | 1,481        | \$2.00              | \$8,886.00                             | 13.8                                |
| Intermediate<br>Wheatgrass<br>(Oahe) | 3                         | 175,000             | 1,481        | \$2.00              | \$8,886.00                             | 12.1                                |
| Triticale                            | 30                        | 11,000              | 1,481        | \$1.50              | \$66,645.00                            | 7.6                                 |
| Indian<br>Ricegrass<br>(Rimrock)     | 2                         | 141,000             | 1,481        | \$4.00              | \$11,848.00                            | 6.5                                 |
| Western<br>Wheatgrass<br>(VNS)       | 1                         | 110,000             | 1,481        | \$8.00              | \$11,848.00                            | 2.5                                 |
| <b>Total</b>                         | <b>39</b>                 |                     |              |                     | <b>\$108,113.00</b>                    | <b>42.4</b>                         |

#### **Fencing to protect seeding**

Purpose: To prevent the over utilization of the initial vegetative recovery of the proposed seeding.

Treatment: Install 8.5 miles of fence. Funding will be pursued through National Fire Plan.

### Application of PAM 12

Purpose: To reduce soil loss on steep mountain slopes and to improve the success of seeded areas in competing with invasive cheatgrass.

Treatment: Aerial application of PAM 12 will occur on six 50 acre blocks of burned area. The PAM 12 will be applied at a rate of 600 lbs per acre. The material will be distributed on seeded and non-seeded areas as well as areas that will be seeded and channed. Monitoing of the treatment effectiveness will be coordinated with the Rocky Mountain Research Station and with the company representaties for the product. Cost for the material and application is estimated at \$450/acre for a total of \$135,000.

### Channel Treatments:

#### **Impoundment Cleaning and Riparian Protection**

Purpose: To protect excessive runoff/erosion within impoundments areas and protect riparian habitat.

Treatment: Clean existing impoundments at a cost of \$4,500 and provide fencing for the Cedar Springs riparian area. The riparian fencing estimate is \$2,000.

### Roads and Trail Treatments:

#### **Road and ATV Trail Drainage**

Purpose: To protect roads and trails from anticipated runoff and reestablish road and trail drainage after rainfall events where sediment deposits have impaired the function of the road drainage system.

Treatment: Install 20 culverts (\$18,000), clean ditches and culverts in the fall and spring (\$7,200) and install 20 rolling dips (\$4,000). ATV trial treatments include 190 rolling dips (\$14,250)

### Protection/Safety Treatments:

#### **Off Road Vehicle Prevention Signs**

Purpose: To protect watershed from off road vehicle damage.

Treatment: Install 20 signs for education and enforcement of cross country closure.

## **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.)

The seeding and PAM 12 treatments will be monitored in-conjunction with the Dog Valley Fire on the Fishlake NF. Monitoirng funds will be pooled together into one project to allow a greater quantification of treatment effectiveness. Also, we will reduce the amount of approved monitoring on the Oak City Canyon, Annebella and Sunset Canyon fires so a greater quantified sampling and monitoring can be conducted on this fire and the Dog Valley Fire (Fishlake NF). Approximately \$5000 will be used on the Dog Valley fire from a separate approval.

Monitoring-A detailed monitoirng plan will be produced by RMRS or univeristy partner to meet the objectives below.

What Treatment is to be monitored: PAM 12

1. Objective: Erosion Control Monitoirng will include the use of filter fabric erosion catchments on 3 or more locations. Installation of the fabic catchments will occur in the fall of 2006. Measuremets will occur in the summer of 2007.

2. Objective: Increase growth of seeded species: Monitoring will include the sampling of species production on areas that used PAM 12 and those that did not. Comparisons of the amounts of cheat grass will be made. The use of transects and fixed plots will be used to sample vegetation.

What Treatment is to be monitored: Aerially seeding



1. Objective: To determine if the areial seeded species have germinated and reduced the limited the amount of cheatgrass expansion into the burn area compared to un-seeded areas. The use of transects and fixed plots will be used to sample vegetation.

What Treatment is to be monitored: Chaining

1. Objective: To determine if chaning has improved the ability of the seeded species to germinate. Comparisons will be made to non-chained areas that were also seeded. The use of transects and fixed plots will be used to sample vegetation.

**Interim # Interim #1**



## **PART VII - APPROVALS**

2. \_\_\_\_\_  
Regional Forester (signature)