Date of Report: November 14, 2013

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[x] 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)

[X] 2. Interim Report #____.
[X] 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: Goslin

B. Fire Number: UT-ASF-201

C. State: Utah

D. County: Daggett

E. Region: 04 - Intermountain

F. Forest: Ashley

G. District: Flaming Gorge

H. Fire Incident Job Code: P4HR57

I. Date Fire Started: July 22, 2013

J. Date Fire Contained: July 28, 2013

K. Suppression Cost: $ 637,855

L. Fire Suppression Damages Repaired with Suppression Funds: No fireline constructed using mechanized equipment. Approximately 1,500 to 2,500 ft. constructed by hand crews. Minimal resource damage with no recommendation made by the Resource Advisor (Hydrologist) to rehab firelines.

1. **Fireline waterbarred (miles)**: NA
2. **Fireline seeded (miles):** NA
3. **Other (identify):** NA

M. Watershed Number: 140401060507 (Goslin Creek-Green River HUC6)

N. Total Acres Burned:
[630] NFS Acres [0] Other Federal [0] State [0] Private

O. Vegetation Types: Pinyon-Juniper at crown covers at or exceeding 40% with an understory purged of vegetation (≈180 acres). Remainder within the 2002 Mustang Burn and consisting primarily of bunch grasses and forbs of a moderate to high value for watershed protection. Select areas on south facing slopes locally dominated by cheatgrass.

P. Dominant Soils: Sandy loam. Ustic intergrade of an aridic soil moisture regime and mesic soil temperatures

Q. Geologic Types: Sedimentary and metamorphic strata. Sandstone, conglomerate, and quartzite

R. Miles of Stream Channels by Order or Class: No intermittent or perennial streams within or within the immediately vicinity of the fire perimeter. Numerous ephemeral drainages leading into the Green River within and immediately adjacent to the fire perimeter. At the closest point, burned portions of ephemeral drainages leading into the Green River are 2,000 ft. apart.

S. Transportation System

Trails: 0 **miles** **Roads:** 0 **miles**

PART III - WATERSHED CONDITION

A. Burn Severity (acres): ≈ 559 **(low)** ≈ 141 **(moderate)** 0 **(high)**

B. Water-Repellent Soil (acres): ≈ 85

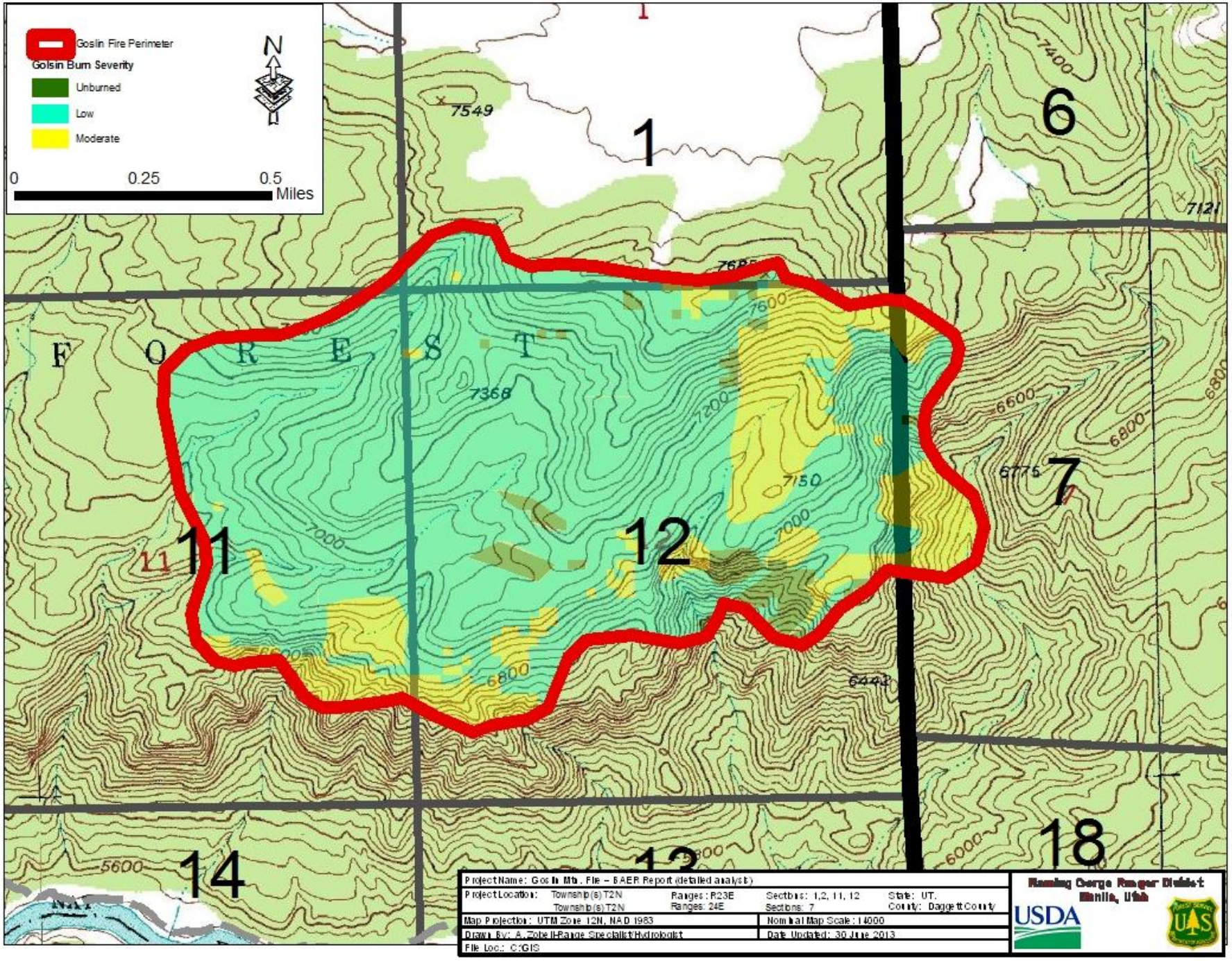
C. Soil Erosion Hazard Rating (acres)[1]: 100 **(low)** 380 **(moderate)** 150 **(high)**

[1]soil erosion hazard rating based largely upon slope of the area (<15% = L; 15%-45% = M; >45% = H) given the geology, soil type, and expected climatic events occurring until watershed recovery occurs.

D. Erosion Potential: Disturbed WEPP indicates the "average" erosion potential over a 100 year period is 0.15 to 0.19 tons/acre within areas burned at a high intensity and moderate severity. This includes approximately 141 acres of the fire. Erosion potential at areas previously burned in the 2002 Mustang Fire is lower as the burn intensity and severity of these areas is light (i.e. very little additional erosion is expected in these areas when compared to pre-disturbance conditions). A relatively large storm event which occurred during the BAER assessment supports these findings.

E. Sediment Potential: No sediment delivery is expected to occur within any perennial or intermittent drainage. On "average" and over a 100 year simulation of climatic events ≈ 0.12 tons/acre is expected to be delivered to ephemeral drainages at areas burned at a high intensity and a moderate severity. This includes approximately 141 acres of the fire. Very little if any additional sediment delivery to any ephemeral drainage is expected when compared to pre-disturbance conditions at other areas consumed in the fire. A relatively large storm event which occurred during the BAER assessment supports these findings. 0.12 tons/acre equals approximately 0.62 cubic yards/square mile (assumes a drainage area of approximately 141 acres using an average soil density of 110 lbs/ft^3.

Figure 1.0 Goslin Fire Burn Severity



PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2 years within areas previously burned in the 2002 Mustang Fire. 5-10 years for P-J dominated areas outside of areas burned in the 2002 Mustang Fire assuming seeding occurs. If no seeding occurs, vegetative recovery of plants of a moderate to high value for watershed protection is not expected. In this case, ANF monitoring data indicates these areas will be dominated by cheatgrass within a few growing seasons of the Goslin Fire and continue to occupy these sites into the foreseeable future (see enclosed documentation).

B. Design Chance of Success, (percent): N/A (no hydrologic treatments rec.)

C. Equivalent Design Recurrence Interval, (years): N/A (no hydrologic treatments rec.)

D. Design Storm Duration, (hours): N/A (no hydrologic treatments rec.)

E. Design Storm Magnitude, (inches): N/A (no hydrologic treatments rec.)

F. Design Flow, (cubic feet / second/ square mile): N/A (no hydrologic treatments rec.)

G. Estimated Reduction in Infiltration, (percent): N/A (no hydrologic treatments rec.)

H. Adjusted Design Flow, (cfs per square mile): N/A (no hydrologic treatments rec.)

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats (narrative): Potential critical values and possible threats are discussed below. See Figure 2.0 for a location of identified Critical values/Resources.

HUMAN LIFE & SAFETY: There are no critical values within the fire perimeter. Approximately 2,000 ft. outside of the perimeter at the nearest point is the Green River. The Green River is considered a world class fishery and as such numerous individuals visit this area throughout the year. The value at risk is life and safety. The threat is flooding.

Analyzed critical VAR using GIS information in ArcGIS and Disturbed WEPP modeling. Analysis indicate an increased likelihood of erosion, runoff, and sediment delivery to ephemeral drainages burned when compared to pre-burn conditions. However, the probability of increased erosion, runoff, and sediment delivery remains relatively low (see Table 1.0 below and enclosed Water Resource and Range Ecology BAER report) with up to an 80% probability that very little if any erosion and sediment delivery to ephemeral drainages leading to the Green River will occur the year following the fire. This suggests the VAR identified in this BAER assessment in regards to Health and Safety are only at a nominally increased risk when compared to pre-disturbance conditions. This is particularly true considering the relatively small size of the fire, the amount of the fire which burned at the intensity and severity analyzed, and the limited contributing watershed above the fire. Other than the Green River and its associated recreational areas there are no other known human life and/or safety concerns.

PROPERTY: There are no critical values within the fire perimeter. Approximately 2,000 ft. outside of the perimeter at the nearest point is the Green River. The Green River is considered a world class fishery and contains numerous developed and undeveloped recreational areas. Other than these recreational areas including their associated campgrounds there are no other known critical values related to property. VAR is structures located in these recreational areas and campgrounds. The threat is flooding.

Analyzed critical VAR using GIS information in ArcGIS and Disturbed WEPP modeling. Analysis indicate an increased likelihood of erosion, runoff, and sediment delivery to ephemeral drainages burned when compared to pre-burn conditions. However, the probability of increased erosion, runoff, and sediment delivery remains relatively low (see Table 1.0 below and enclosed Water Resource and Range Ecology BAER report) with up to an 80% probability that very little if any erosion and sediment delivery to ephemeral drainages leading to the Green River will occur the year following the fire. This suggests the VAR identified in this report in regards to Property are only at a nominally increased risk when compared to pre-disturbance conditions. This is particularly true considering the relatively small size of the fire, the amount of the fire which burned at the intensity and severity analyzed, and the

limited contributing watershed above the fire. Other than the Green River and its associated recreational areas there are no other known human life and/or safety concerns.

NATURAL RESOURCES: See discussion below in regards to critical values at risk related to natural resources.

Water: There are no perennial/intermittent streams or other waterbodies located at or in the immediate vicinity of the burn. Further very little if any runoff from the burn is expected (see Table 1.0 below and enclosed Water Resource and Range Ecology BAER report). No emergency risk is believed to be present in regards to water resources. This includes the Green River and its designated beneficial uses.

Soil Productivity and Hydrologic Function: Short term effects to soil productivity and hydrologic function may be expected as a result of the burn. However, other than the long-term effect to watershed condition and integrity which is discussed in item (d) below there are no emergency risks associated with soil productivity and hydrologic function (see enclosed Water Resource and Range Ecology BAER report).

Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal or plant species on or in close proximity: No critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal or plant species has been identified (see enclosed correspondence with D. Olsen, Wildlife Biologist of the Ashley National Forest).

Native or naturalized communities on NFS lands where invasive species or noxious weeds are absent or present in only minor amounts: The VAR includes the approximately 180 acres of Pinyon-Juniper communities not burned in the 2002 Mustang Fire. The threat is invasion and dominance of cheatgrass, an invasive plant rated by the ANF as having a low value for watershed protection. Currently these areas have very little if any invasive or noxious weeds present.

Analysis of this VAR was analyzed using available ANF monitoring data at areas having a similar ecological type and having undergone a similar disturbance. This includes monitoring data collected from the 2002 Mustang Fire as well as subsequent fires that have burned since this fire within the original 2002 Mustang Fire.

Literature as well as Ashley National Forest studies from the 2002 Mustang Fire indicate that without seeding with a seed mix proven capable of competing with cheatgrass both warm and cool exposures will be rapidly invaded and shortly thereafter dominated by cheatgrass (Huber *et. al., 1999;* USDA, 2013a). Assuming seeding does occur, monitoring indicates an exceptionally high success rate on cooler exposures with plants of a moderate to high value for watershed protection rapidly establishing at these sites. Monitoring also indicates a relatively high success rate for those areas on warmer exposures with seeded plants also establishing in these areas. Cheatgrass may also be expected on these warmer aspects post-seeding but generally in not high enough

densities to drive plant and watershed dynamics (i.e. these areas will more or less be dominated by plants of a moderate to high value for watershed protection).

Less concern exists in regards to this critical value within areas previously burnt in the 2002 Mustang fire as current ANF monitoring suggests these areas are moderately-high to highly responsive post-burning. Regardless, monitoring of these areas is recommended to continue to validate this finding. Suspected noxious weeds in the area in small amounts and which may threaten this critical value include musk thistle (*Carduus nutans)* and Canada thistle (*Cirsium arvense)*.

Table 1.0 Disturbed WEPP Analysis (Pre-burn vs. Post-burn Conditions

	Probability (%)			**Predicted Average (ton/acre)**		**Predicted 5 year Event (ton/acre)**		**Predicted 50 year Event (ton/acre)**	
	Runoff	*Erosion*	*Sediment Delivery*	*Upland Erosion Rate*	*Sediment Delivered*	*Upland Erosion Rate 0*	*Sediment Delivered*	*Upland Erosion Rate*	*Sediment Delivered*
Pre-burn Condition	6%	0%	6%	0.00	0.00	0.00	0.00	0.00	0.00
Post-burn Conditions	16-22%	17-22%	21-26%	0.138	0.080	0.00	0.0022	3.02	1.82

B. Emergency Treatment Objectives (narrative): Protect and/or maintain the ecological capability of the area by minimizing the establishment and spread of cheatgrass and other invasive plants through as of yet noxious and invasive free P/J communities which were burned in the Goslin Fire. Treatment recommended to accomplish this objective is aerial seeding with a seed mix proven capable of rapidly establishing and preventing and/or minimizing the establishment of cheatgrass in these areas. Areas recommended for seeding are shown in Figure 3.0.

C. Probability of Completing Treatment Prior to Damaging Storm or Event[1]:

Land NA**%** **Channel** NA**%** **Roads/Trails** NA**%** **Protection/Safety** NA**%**

D. Probability of Treatment Success

		Years after Treatment[1]		
		1	**3**	**5**
Land Treatments	Cool Exposures (≈70 acres)	75%	85%	95%
	Warm Exposures (≈110 acres)	50%	60%	75%
Channel		N/A		
Roads/Trails				
Protection/Safety				

[1]Based upon RMRS-GTR-63 for hillslope treatments and adapted to reflect ANF monitoring of areas having similar ecological types, disturbances and treatments (see enclosed documentation).

E. Cost of No-Action (Including Loss): The Critical Value of Natural Resources - N*ative or naturalized communities on NFS lands where invasive species or noxious weeds are absent or present in only minor amounts is a* non-market value and as such no actual "cost" was calculated should the no action occur. However, the non-monetary cost of the no action would include the loss of plants native to the area to cheatgrass, an invasive exotic. This in return will have an adverse effect on overall watershed condition and integrity as cheatgrass is a plant having a low rating for watershed protection. Associated adverse effects to wildlife species including Bighorn sheep, elk, deer, and to a lesser degree pronghorn and sage grouse (winter primarily) would also be expected. The probability of the threat occurring is at or approaching 100% as demonstrated through the literature and ANF monitoring (see enclosed supporting documentation). The effects while localized will be indefinite. In addition, because many areas burned are immediately adjacent to as of yet unburned stands of P-J allowing the establishment of cheatgrass to occur in these burned areas will facilitate the spread of cheatgrass to other areas on forest. This would be particularly true after disturbances such as the Goslin fire.

F. Cost of Selected Alternative (Including Loss): Costs for implementing the recommended action including aerial applciation by helicopter estimated at $103.67/acre. The IMV for non-market VAR benefit/cost ratio tool was used to aid in determining whether the recommended action should or should not be implemented (see RMRS-GTR-2005). Results from the non-market VAR benefit/cost approach are given below. The Ashley National Forest feels the value of these lands including their associated critical values greatly exceed the monetary values shown.

$$\text{IMV (cool exposures)} = \frac{\text{treatment cost (10,182.20)}}{\text{Prob. of loss with no trt. (100\%) – Prob. of loss with trt. (5\%)}} = \mathbf{\$10,718.10}$$

$$\text{IMV (warm exposures)} = \frac{\text{treatment cost (\$15,925.88)}}{\text{Prob. of loss with no trt. (100\%) – Prob. of loss with trt. (25\%)}} = \mathbf{\$21,234.50}$$

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: R. Aaron Zobell

Email: azobell@fs.fed.us **Phone**: 435-781-5279 **FAX**: 435-781-5293

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:
November 14, 2013: Interim 1 request is for approval of an additional $1086 for the aerial seeding treatment. Actual seed costs are lower than the initial estimate. Actual seed application costs are more than the original estimate. The difference being an additional $1086 needed to complete the land treatment.
Seed mix recommend for seeding is shown in Table 1.0. This seed mix contains a variety of plants ANF monitoring strongly indicates is capable of occupying the vast majority of niches with the ecological setting of the burn. Removal of any species from this mix is expected to reduce the overall success rate of the seeding (e.g. various plants including appar blue flax and crested wheatgrass while not dominating south facing slopes tend to perform better in these areas while other plants on the list tend to perform better in other niches).

Seed estimate provided by Stevenson Intermountain Seed (Ron Stevenson @435-283-6639). Seed mix to be purchased at earliest opportunity with seeding occurring just prior to first snowfall. Aerial application by helicopter is recommended due to the terrain of the area as well as the actual areas recommended for seeding. Aerial application by fixed wing may also occur but is not recommended due to the terrain of the area and areas to be seeded. Estimated costs for aerial application of seed mix provided by Sky Hawk Helicopter Services (Robin Vinuti @ 435-674-0524). Efficacy monitoring to be completed at the Forest's cost (Range Mgt. Specialist/Hydrologist and/or Forest Ecologist). Any new information obtained will be used to adjust future seed mixes as needed for this ecological type.

Table 1.0 Recommended Seed Mix and Associated Costs[1]

Plant Species	Rate (lbs./acre)	Cost PLS/lb.	Total Lbs. (Quantity)	Cost/Acre	Total Cost
Secar Snake River Wheatgrass	1.25	8.25	225		
Anatone Bluebunch Wheatgrass	1.5	8.00	270		
Goldar Bluebunch Wheatgrass	1.5	7.50	270		
P-7 Bluebunch Wheatgrass	1.0	7.50	180		
Paiute Orchardgrass	0.5	1.70	90		
Sherman Big bluegrass	1.5	7.5	270		
Appar Blue Flax	0.75	6.00	135		
New Zealand Western White Yarrow	0.1	21.00	18		
Nordan Crested Wheatgrass	0.5	2.50	90		
Palmer Penstemon	0.1	23.00	18		
Critana Thickspike Wheatgrass	1.0	5.50	180		
Ladak Alfalfa	0.5	3.90	90		
Spreador 4 Alfalfa	0.5	4.75	80		
Delar Small Burnet	1.5	1.90	270		
Total	12.45			$63.79/acre	$11,482

[1]Estimate provided by Stevenson Intermountain Seed – Ron Stevenson @ 435-283-6639. A total of 180 acres proposed for seeding – modified from the 200 original acres quoted from Stevenson Intermountain Seed.

Seed Mix including shipping …….....$11,482
Aerial Application of Seed Mix via Helicopter……..…...$8,286
Total Estimated Cost ……$19,768

Channel Treatments: NA

Roads and Trail Treatments: NA

Protection/Safety Treatments: NA

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.)

Monitoring to occur at approximately 1, 3, and 5 growing seasons post-disturbance to verify the efficacy of areas seeded. This monitoring will be completed by ANF personnel as previously indicated with no additional requests made for BEAR funding. Efficacy will be determined using monitoring protocols established by the Ashley National Forest including among others repeat photography, ocular estimates of species composition and/or ground cover, line intercept, and/or line-point intercept. Particular emphasis will be placed on revisiting monitoring sites either reread and/or established during this BAER assessment. Monitoring to be completed by the District's Hydrologist/Range Specialist and/or Forest Ecologist. Monitoring information obtained to be used to continue to improve the efficacy of future seedings within this ecological setting.

Monitoring will also occur at areas previously burned in the 2002 Mustang Fire and subsequently in the Goslin Fire. Information obtained from monitoring at these areas will be used to aid in determining when seeding may or may not be required to maintain watershed condition and integrity of the area after disturbances such as fire. Monitoring protocols used in these areas will be similar to those used in areas seeded.

Table 1.0 ANF MonitoringCosts[1]

Description	Days	Cost/Day	Cost
District Hydrologist/Range Specialist	5	346.00	$1,730
Forest Ecologist	5	380	$1,900
		Total Monitoring Cost	**$3,630**

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

			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											
seeding (cool exp)	70	63.79	70	$4,465	$0			$0		$0	$4,465
seeding (warm exp)	110	63.79	110	$7,017	$0			$0		$0	$7,017
aerial seeding	180	46.03	180	$8,285	$0			$0		$0	$8,285
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$19,768	$0			$0		$0	$19,768
B. Channel Treatments											
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treat.				$0	$0			$0		$0	$0
C. Road and Trails											
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road & Trails				$0	$0			$0		$0	$0
D. Protection/Safety											
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Structures				$0	$0			$0		$0	$0
E. BAER Evaluation											
				---				$0		$0	$0
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				---	$0			$0		$0	$0
F. Monitoring											
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$0	$0			$0		$0	$0
G. Totals				$19,768	$0			**$0**		**$0**	**$19,768**
Previously approved				$18,682							
Total for this request				**$1,086**							

PART VII - APPROVALS

/s/ /s/ John R. Erickson
JOHN R. ERICKSON November 14, 2013 ,
Forest Supervisor (signature) Date

/s/ Chris Iverson (for) 11/20/13
Regional Forester (signature) Date

Figure 2.0 General Area and Location Map showing various Critical Values – Goslin Fire

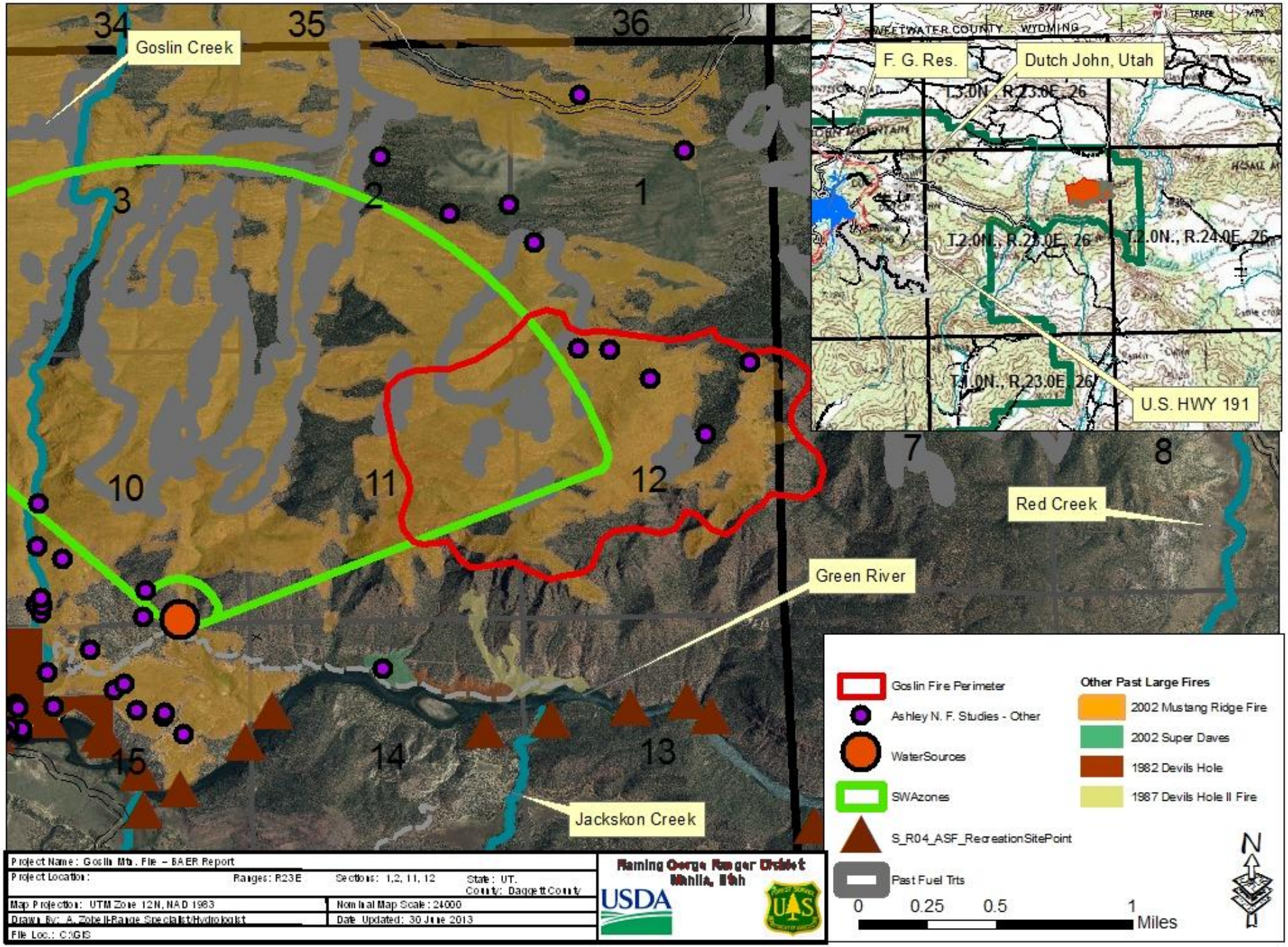


Figure 3.0 Detailed Analysis Map and Recommended Seed Areas- Goslin Fire[1]