Date of Report: 07/23/2014

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

[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: Owen

B. Fire Number: WY-MBF 014087

C. State: WY

D. County: Albany

E. Region: 02

F. Forest: Medicine Bow Routt NF

G. District: Laramie Ranger District

H. Fire Incident Job Code: P2H7M3-0206

I. Date Fire Started: July 7, 2014

J. Date Fire Contained: July 17, 2014

K. Suppression Cost: $985,000 (as of 7/22/14)

L. Fire Suppression Damages Repaired with Suppression Funds
1. **Fireline waterbarred (miles):** 5.0 (planned as of 7/23/14 : 2.1 dozerline & 2.9 handline)
2. **Fireline seeded (miles):** 0.25 (planned as of 7/23/14)
3. **Other (identify):** Retardant drop in/near Strain Creek – reporting per

M. Watershed Number: 101800100204 – Strain Creek (trib to Fox, Lake Owen, Laramie)

N. Total Acres Burned: 396 acres
[396] NFS Acres **[0] Other Federal** **[0] State** **[0] Private**

O. Vegetation Types: The fire area is primarily lodgepole pine forest. Other trees such as aspen, douglas fir, and Engelmann spruce, occur in patches throughout the fire area. A large sedge and willow wetland complex exists in the headwaters of Strain Creek.

P. **Dominant Soils**: Soils are mostly alfisols (soils that have an eluviated clay layer below the topsoil) with varying depths to bedrock and amounts of rock fragments of the Ansel, Granile, Frisco and Taglake Families. The basic soil is deep with a coarser textured (sandy loam) surface layer and finer (loam, clay loam) subsurface layer. They have, depending on the slope, a low to moderate erosion potential and a low potential of mass wasting.

Q. **Geologic Types**: The fire area is located in the Medicine Bow range of the Rocky Mountains. This range has a mixed variety of geological materials including schist and quartzite and other granites to sedimentaries such as sandstone and limestone. Alluviation and glaciation have affected this area to a large degree.

R. **Miles of Stream Channels by Order or Class**: 0.75 mile perennial; 0.75 mile intermittent

S. **Transportation System**

Trails: 0.75 **miles** **Roads:** 0.25 **miles**

PART III - WATERSHED CONDITION

A. **Burn Severity (acres)**: 47 **(low)** 340 **(moderate)** 9 **(high)**

B. **Water-Repellent Soil (acres)**: 255 acres (~75% of moderate)

C. **Soil Erosion Hazard Rating (acres)**: 308 **(low)** 88 **(moderate)** 0 **(high)**

D. **Erosion Potential**: 2.36 **tons/acre**

E. **Sediment Potential**: 494 **cubic yards / square mile**

PART IV - HYDROLOGIC DESIGN FACTORS

A. **Estimated Vegetative Recovery Period, (years):**	2-3 years
B. **Design Chance of Success, (percent):**	75
C. **Equivalent Design Recurrence Interval, (years):**	2
D. **Design Storm Duration, (hours):**	6
E. **Design Storm Magnitude, (inches):**	2.16
F. **Design Flow, (cubic feet / second/ square mile):**	n/a
G. **Estimated Reduction in Infiltration, (percent):**	75
H. **Adjusted Design Flow, (cfs per square mile):**	n/a

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats (narrative): The 450 acre Owen fire burned gentle forested mountain slopes in tributaries to Strain Creek. Strain Creek is tributary to Owen Creek, then Fox Creek and the Laramie River near Woods Landing, WY. The area is managed primarily for dispersed and developed recreation associated with Lake Owen and the northeast end of the Medicine Bow Trail (Rails to Trails). The fire burned mainly forested upland areas, a short segment along Strain Creek and few spots in the wetland meadow complex in upper Strain Creek. The majority of the area burned in a quick moving, intense wind-driven crown fire. Soil burn severity, an indication of how the fire affects soil and hydrologic conditions, is a function of fire duration (time) and heating (temperature) to the soil. Fire temperatures were high in the intense wind-driven crown fire, but due to short residence time of the fire on the ground, the effects to soils were moderated. Soil burn severity was found to be moderate throughout most of the burn area. Unburned litter and live roots were found at the soil surface in most of the burn areas. Water repellent soil conditions were extensive, primarily at the surface.

A BAER Risk Assessment (FSM 2523.1 Ex 2) was completed for ***Critical Values*** in and downstream of the burn area and is summarized in the table below:

	Probability of Damage or Loss	**Magnitude of Consequence**	**Risk Level**	**Treatment Recommended**
Human Life and Safety				
Medicine Bow Trail	**Possible**	**Major**	**High**	**Yes**
NFSR 556.01	**Possible**	**Major**	**High**	**Yes**
Downstream flooding	Unlikely	Minor	Very Low	No
Property				
Medicine Bow Trail	**Likely**	**Moderate**	**High**	**Yes**
NFSR 556.01	**Likely**	**Moderate**	**High**	**Yes**
Thompson No. 1 Ditch	Possible	Minor	Low	No
Downstream property	Unlikely	Minor	Very Low	No
Natural Resources				
Noxious weeds	**Likely**	**Moderate**	**High**	**Yes**
Lake Owen: Municipal Water / Water Quality / Fish	**Likely**	**Moderate**	**High**	**Yes**
Laramie River Municipal Water Supply	Unlikely	Minor	Very Low	No
Soil Productivity / Hydrologic Function – considered, natural recovery acceptable.				
Critical habitat / TE terrestrial/aquatic/plant species - considered, not a concern.				
Cultural Resources				
None – considered, not a concern.				

Human Life and Safety:

Medicine Bow Trail (Rails to Trails): Burned snags along the trail pose the risk of falling and resulting in loss of life or injury to humans. BAER treatments are recommended to reduce this risk.

NFSR 556.01: Burned snags along this closed road, which also serves as a walking trail and popular fishing spot, pose the risk of falling and resulting in loss of life or injury to humans. BAER treatments are recommended to reduce this risk.

Downstream Flooding: Increased streamflows may result for a few years after intense summer precipitation events, but risk to human life and safety is very low due to the small portion of the watershed which burned, moderate burn severity, limited downstream floodplain development and the distance downstream where floodplain development occurs. No BAER treatments are recommended.

Property:

Medicine Bow Trail (Rails to Trails): Increased runoff from the burn area has already resulted in erosion along and across the trail, resulting in the loss of some trail surfacing material. Continued loss of trail surfacing is expected. BAER treatments are recommended to minimize the damage to the trail.

NFSR 556.01: Increased runoff from the burn area has already resulted in erosion of a section of the road surface and deposition of ash and sediment along the road surface. Continued erosion of the road and deposition on the road is expected. BAER treatments are recommended to minimize the damage to the road/trail.

Thompson No. 1 Ditch: This small irrigation ditch is located on Strain Creek just over one mile downstream of the fire, near the Forest boundary. An increase in ash and some sediment movement through Strain Creek is expected and may enter the ditch, especially over the next couple months. BAER treatments are not recommended as the consequences are minor, but providing the following notification to the ditch permittee is recommended: 1) closure of the headgate immediately following intense rain events will minimize the ash accumulation in the ditch, and 2) some increased routine maintenance may be required for a few years following the fire to remove ash and sediment accumulated in the ditch.

Downstream Property: Increased streamflows may result for a few years after intense summer precipitation events, but risk to downstream property is very low due to the small portion of the watershed which burned, moderate burn severity, limited downstream floodplain development and the distance downstream where floodplain development occurs. No BAER treatments are recommended.

Natural Resources:

Noxious Weeds: Concern for invasive species and noxious weeds is highest in grass and shrublands, which were minimally affected by the Owen fire which burned primarily forested areas. Cheatgrass (*Bromus tectorum)* is present near the burn area and is the primary threat; cheatgrass invasion could create large-scale and possibly irreversible degradation to landscape appearance and ecosystem function. Canada thistle (*Cirsium arvense)*, musk thistle (*Carduus nutans)*, and yellow toadflax (*Linaria vulgaris)* infestations have also been documented in small patches or as individual plants nearby the burn area. Thistle and toadflax population expansion have been documented after other fires in the area and

populations may increase after the Owen fire. BAER treatments are recommended to detect and if necessary contain and control invasive species and noxious weeds.

Lake Owen: Municipal Water / Water Quality / Fish: Approximately six acres of the contributing watershed draining to Lake Owen burned with moderate and low soil burn severity. While this is a very small percentage of the watershed draining to Lake Owen, the portion that burned is directly adjacent to the north edge of the reservoir. Some ash and sediment has already entered the reservoir and is expected to continue to enter the reservoir during intense summer precipitation events over the next couple years. BAER treatments are recommended to minimize erosion and sedimentation into Lake Owen.

Laramie River: Municipal Water: A City of Laramie water supply intake is located on the Laramie River over ten miles downstream from the burn area. The risk to water quality impacts at the intake is very low due to the small portion of the watershed which burned, moderate burn severity, and the distance downstream from the burn area, therefore no BAER treatments are recommended.

B. Emergency Treatment Objectives (narrative):

Human Life and Safety:

Medicine Bow Trail (Rails to Trails): Reduce the risk of loss of life or injury to humans from falling burned snags.

NFSR 556.01: Reduce the risk of loss of life or injury to humans from falling burned snags.

Property:

Medicine Bow Trail (Rails to Trails): Minimize damage to trail surface from increased runoff from the burn area.

NFSR 556.01: Minimize damage to road/trail surface from increased runoff from the burn area.

Natural Resources:

Noxious Weeds: Detect and if necessary contain and control fire related increased populations of cheatgrass (*Bromus tectorum),* canada thistle (*Cirsium arvense)*, musk thistle (*Carduus nutans)*, and yellow toadflax (*Linaria vulgaris)*.

Lake Owen: Municipal Water / Water Quality / Fish: Minimize erosion and sedimentation from the burn area entering Lake Owen.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land 50% **Channel** n/a **Roads/Trails** 50% **Protection/Safety** 50%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	60	75	80
Channel	n/a	n/a	n/a
Roads/Trails	70	80	90
Protection/Safety	90	90	90

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

HUMAN LIFE AND SAFETY: Injury and loss of life are problematic to define in economic terms. Administrative closures are a relatively low cost treatment to minimize the potential for injury of loss of human life.

PROPERTY (Roads & Trails): The costs associated with damage to roads and trails is expected to be localized and moderate, but greater than the proposed treatment costs. Primary expected costs would be associated with hauling in and replacing lost surfacing material. Additional costs would occur if portions of the road and/or trail fill material eroded due to increased runoff.

NATURAL RESOURCES:

Noxious Weeds / Invasives: The costs associated with expansion of invasive species is expected to be high, especially due to the difficulty of treatment in this inaccessible landscape. Initial treatments to detect, contain and control expansion will be the most cost effective means to address invasive species. The costs associated with expansion of invasive species into native vegetation communities can be significant, but is difficult to quantify in dollar terms.

Lake Owen: The costs associated with potential effects at Lake Owen include effects to fisheries and recreation in the reservoir, potential for increased water quality treatment effects, reduced reservoir capacity/dredging costs. The proposed treatment is a relatively low cost means to reduce erosion and sedimentation into the reservoir.

F. Cost of Selected Alternative (Including Loss): $20,000

G. Skills Represented on Burned-Area Survey Team:

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

*Contacted for information/concerns.

Team Leader: Dave Gloss

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H. Treatment Narrative:

Land Treatments:

Lake Owen: Municipal Water / Water Quality / Fish: Hand application (or chipping from road) of straw or wood mulch and straw wattle installation in portion of 6 acre contributing drainage areas of Lake Owen. Mulch would be applied throughout small drainage areas currently contributing ash and sediment to reservoir. Wattle application would be used in same locations as mulch (except where too rocky) and along base of slope near road. Mulch is intended to promote infiltration, reduce erosion, increase rate of vegetative recovery.

Wattles are intended to contain a portion of the eroded material until it can stabilize with vegetation.

Noxious Weeds: Inspect the burn area during Fall 2014 to determine the presence of cheatgrass (*Bromus tectorum),* canada thistle (*Cirsium arvense),* musk thistle (*Carduus nutans),* and yellow toadflax (*Linaria vulgaris)* as a result of the fire. Treat to contain and control noxious weeds or cheatgrass during Fall 2014 and/or Spring/Summer 2015.

Channel Treatments: None recommended.

Roads and Trail Treatments:

Medicine Bow Trail (Rails to Trails): Erosion control and drainage work to maintain/increase capacity of ditch along trail and/or provide drainage dips to accommodate increased runoff from burn area.

NFSR 556.01: Erosion control and drainage work to maintain/increase capacity of ditch, clean sediment basins, clean culvert, repair damage to road surface along road/trail to mitigate increased runoff from burn area.

Protection/Safety Treatments:

Medicine Bow Trail (Rails to Trails): Continue fire related administrative closure (restrict access) on the portion of the trail through the burn area (BAER Treatment) until hazard trees along the trail have fallen naturally or are felled by crews. Closure may require preparation of a special order, signing on the ground and enforcement. District has the option to have crews fall hazard trees along the trail to expedite re-opening access to the trail, but this would not be part of the BAER treatment/funding.

NFSR 556.01: Administratively close (restrict access) the portion of the road/trail along the north edge of Lake Owen (BAER Treatment) until hazard trees along the road/trail have fallen naturally or are felled by crews. Closure may require preparation of a special order, signing on the ground and enforcement. Provisions would need to be made to ensure Cheyenne Board of Public Utilities personnel have access necessary to maintain their water facilities. District has the option to have crews fall hazard trees along the road/trail to expedite re-opening access to the road/trail, but this would not be part of the BAER treatment/funding, unless the felled material was chipped and used as mulch as described above.

I. Monitoring Narrative: Implementation monitoring will be accomplished during implementation of BAER treatments and is included in treatment cost estimates. Level 1 (FSM 2523.3) effectiveness monitoring is proposed for land treatments and road and trail treatments.

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											
Noxious/Invasive	LS	3000	1	$3,000	$0			$0		$0	$3,000
Lake Owen Mulch	AC	1500	6	$9,000	$0			$0		$0	$9,000
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$12,000	$0			$0		$0	$12,000
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											
Road Erosion/Drain.	EA	1000	6	$6,000	$0			$0		$0	$6,000
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road & Trails				$6,000	$0			$0		$0	$6,000
D. Protection/Safety											
Admin. Closures	LS	500	2	$1,000	$0			$0		$0	$1,000
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Structures				$1,000	$0			$0		$0	$1,000
E. BAER Evaluation											
	LS			---			1	$2,500		$0	$2,500
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				---	$0			$2,500		$0	$2,500
F. Monitoring											
	LS	1000	1	$1,000	$0			$0		$0	$1,000
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$1,000	$0			$0		$0	$1,000
G. Totals				$20,000	$0			**$2,500**		**$0**	**$22,500**
Previously approved											
Total for this request				**$20,000**							

PART VII - APPROVALS

1. _____ 7/23/14
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date