Date of Report: 09/11/2023

BURNED-AREA REPORT

Thompson Ridge Fire - Fishlake National Forest Beaver Ranger District

Figure 1: Burned hillslopes in the Pine Creek watershed

PART I - TYPE OF REQUEST

A. Type of Report

☒ 1. Funding request for estimated emergency stabilization funds
☐ 2. No Treatment Recommendation

B. Type of Action

☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

☐ 2. Interim Request #___

☐ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Thompson Ridge

B. Fire Number: UT-SCS-230252

C. State: Utah

D. County: Beaver

E. Region: R4 Intermountain

F. Forest: Fishlake NF

G. District: Beaver RD

H. Fire Incident Job Code: P4QH1U (0408)

I. Date Fire Started: 08/04/2023

J. Date Fire Contained: 85% on 8/24/2023

K. Suppression Cost: $6,791,044 on 8/20/2023

L. Fire Suppression Damages Repaired with Suppression Funds (estimates):

1. **Fireline repaired (miles):** 5 miles of mechanically repaired dozer line.
2. **Other (identify):**

M. Watershed Numbers:

Table 1. Soil Burn Severity of the Analysis Watersheds.

Analysis Watershed (AWS)	Acres	Soil burn severity at the Analysis Watershed Scale									
		Unburned/ Very Low		Low		Moderate		High		Total Burned	
		Area (acres)	% of AWS	Area (acres)	% of AWS	Area (acres)	% of AWS	Area (acres)	% of AWS	Area (acres)	% of AWS
Pine Creek-1603000106 02	2,779.4	295.99	10.65%	382.11	13.75%	1,134.2	40.81%	350.78	12.62%	2,163.1	77.83%
South Fork Trailhead-1603000702 05	7,634.1	239.77	3.14%	391.03	5.12%	497.22	6.51%	233.47	3.06%	1,361.5	17.83%

N. Total Acres Burned:

Table 1: Total Acres within the BAER analysis perimeter by Ownership

OWNERSHIP	ACRES
NFS	7,200
BLM	52
STATE	0
PRIVATE	1.38
TOTAL	7,253

O. Vegetation Types: Seral Aspen (38%), Mountain Big Sagebrush (18%), Stable Aspen (17%), Mountain Mahogany (8%), Mixed conifer (7%), and Spruce-Fir (5%),

P. Dominant Soils:

147-Loamy-skeletal, mixed, superactive, Typic Argicyrolls/Lithic Argiustolls (Mountain Sage) (17%)
131-Loamy-skeletal, mixed, Xeric Glossocryalfs (mixed conifer/seral aspen) (16%)
108-Loamy-skeletal, mixed, Pachic Haplocryolls (seral aspen/mixed conifer) (16%)

132-Loamy-skeletal, mixed, Xeric Glossocryalfs (mixed conifer/seral aspen) (14%)
138-Clayey-skeletal, frigid Pachic Argiustolls (mountain shrub) (8%)
112-Loamy-skeletal, mixed, Pachic Argicryolls (Mixed Conifer) (8%)

O. Geologic Types: Q2-Miocene volcanic rocks, undivided (93%) Qa- Alluvium and Colluvium (5%), and QT-Mixed Alluvium (3%)

P. Miles of Stream Channels by Order or Class:

Table 2: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	4.4
INTERMITTENT/EPHEMERAL	10.33

Q. Transportation System within the 7,253 acre BAER analysis fire perimeter:
Trails: *National Forest (miles):* 16.42 *Other (miles):* Not reported
Roads: *National Forest (miles):* 3.2 *Other (miles):* Not reported

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Table 3: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	BLM	Private	Total	% within the Fire Perimeter
Unburned	1,568	25	1.00	1,594	22%
Low	1,985	24	0.63	2,009	28%
Moderate	2,828	4	0	2,832	39%
High	819.9	0	0	820	11%
Total	7,201	53	1.63	7,255	100%

C. Water-Repellent Soil (acres): Water-repellency is highly variable within the burned area. Because the fire was still active, and the terrain is extremely rugged only a small portion of the fire was sampled for hydrophobicity. Due to recent rains in some locations soil hydrophobicity was tested but soil burn severity was determined largely due to other parameters as described in Parsons et al (2010), which also includes ground cover, ash depth and color, and condition of roots in the soil. Therefore, it is estimated that some locations within the fire that were not sampled may have had more organic matter or have high hydrophobicity rating. In accordance with the scope and values at risk the BARC map was assumed to be accurate for the purposes of this assessment**.**

D. Soil Erosion Hazard Rating: In the ambient Erosion Hazard Rating (EHR) analysis for the Halfway Hill fire, the Fishlake NF Soil Resource Inventory (SRI) was utilized to provide information on soils and land type characteristics. Erosion hazard in the post-fire environment was determined by modifying ambient pre-fire EHR as impacted by soil burn severity. A relative change in post-fire erosion hazard is generally a function of moderate and high burn severity as significant forest floor consumption and reductions in overstory and understory canopy expose the soil surface to erosive processes. To quantify the degree of change on the post-fire environment, pre-fire erosion hazard was scored (Low:1, Moderate: 2), and spatially intersected with SBS values (Low: 1, Mod: 2, High: 3), producing cells ranging from 1-5. Cells with scores ranging 1-2 were rated low, 3 rated moderate, and 4-5 rated high. The analysis concludes that the fire elevated EHR over 49% of the burn area, with 18% of the burn area likely to result in considerable erosion potential.

Table 4: Pre-fire Erosion Hazard

Erosion Hazard	Acres	Percent of NFS
Low	3552	49%

Moderate	2826	39%
High	820	11%
Total NFS	7198	100%

E. Erosion Potential: ERMiT Batch was used to model average hillslope erosion from hillslopes identified as "High" by the post-fire erosion hazard rating (see above). ERMiT produces erosion rates for the 1st year post-fire and is reported with a 20% probability that sediment yield will be exceeded. Year one erosion rates are displayed as a percent loss of A-horizon depth (Table 7.) The nature of the area is that lots of rock fragments and rock outcrop are present within the area, protecting soil surface even in areas with high soil burn severity.

Table 6: Abbreviated ERMiT results for hill slope erosion hazard

Soil Type	Soil Texture	Rock Content	Vegetation Type	Hillslope Gradient Middle %	Hillslope Horizontal Length	Soil Burn Severity Class	Untreated 1st Year Event Sediment Delivery (tons/acre)	Untreated 2nd Year Event Sediment Delivery (tons/acre)	Untreated 3rd Year Event Sediment Delivery (tons/acre)	Soil Loss Tolerance (tons/acre/year)
108	Very Gravelly Loam	35	Forest	50	600	High	0.36	0.19	0	2
112	Very Gravelly Loam	30	Forest	47	675	High	0	0	0	4
122	cbx L	50	Chapparal	35	900	High	0	0	0	1
131	stv Silt Loam	50	Forest	50	400	High	0	0	0	5
132	stv Silt Loam	50	Forest	60	1000	High	0	0	0	5
138	cb Loam	30	Chapparal	30	1000	High	0	0	0	3
147	grv Loam	30	Range	50	500	Mod	0	0	0	2
195	cbx Loam	50	Forest	45	750	High	0	0	0	1

Because effective groundcover was marginally decreased within the fire burn perimeter, measured and predicted hydrophobicity was not spatially extensive, and soil tolerance erosion values are not likely to be exceeded as rock cover and a low percentage of high burn severity, it was determined that there is no emergency regarding soil productivity for the Thompson Ridge fire. The mosaic nature of the burn severities and relatively small proportion of high burn severity was factored into this determination.

F. Sediment Potential: Estimated value derived from WEPPCloud (PEP). Value represents total sediment discharge modified by sediment delivery ratios from pour points of the fire-affected watersheds.

Table 7. Potential erosion by analysis watershed from WEPP-PEP.

Analysis Watershed	Hillslope Soil Loss (tons/year)		Channel Soil Loss (tons/year)		Outlet Sediment Discharge (tons/year)	
	Pre-Fire	Post-Fire	Pre-Fire	Post-Fire	Pre-Fire	Post-Fire
Pine Creek	0.11	37	15	18	15	55
South Fork Trailhead	0	29	48	50	48	79

G. Estimated Vegetative Recovery Period (years): Portions of the Thompson Ridge fire area have had fires in the past two decades. The grasses, oakbrush, and sagebrush will recover relatively quickly, resprouting within the first year and achieve stable communities within 3-5 years. The conifer will take longer to recover: 3-5 years to stabilize and 20-25 years for forest species to take hold.

H. Estimated Hydrologic Response (brief description): The primary watershed responses of the Thompson Ridge fire are expected to include: 1) an initial flush of ash and small debris, 2) some rill and gully erosion on steep slopes within the burned area, and 3) potential flash floods and debris flows during summer monsoonal

precipitation events (July – September). In steep areas with high soil burn severity, storms will likely create increased surface flow that could trigger floods or debris flows. In the areas that could produce some flooding, it is expected to be most pronounced during the first 1- 3 years after the fire and will become less evident as vegetation and soil-hydrologic function recover.

Post-fire runoff modeling was conducted on two analysis watersheds across the Thompson Ridge fire. Pine Creek and South Fork Trailhead watersheds were analyzed due to having the highest threat to BAER critical values like roads, trails, and campgrounds. The Wildcat5 model was used to predict post-fire flows for 2, 5, 10, and 25-year precipitation events of a 30-minute duration. These increases in peak-flows are expected to occur in response to short duration, high intensity thunderstorms. Both of the analysis watersheds show large increases in post-fire peak-flows during likely precipitation events in the 2-year Wildcat5 model, especially with hydrophobic soils and loss of vegetative cover. Analysis watersheds show flow increases of 3 to 380 times in the 2-year model. Analysis watershed increases are greater than 4X in the 5-year, 10-year, and 25-year models.

Although this model only predicts water runoff, some degree of flow bulking is likely to occur in the watersheds affected by the Thompson Ridge Fire over the next few years. These elevated post-fire flows and bulking could lead to plugged culverts, erosion of road infrastructure, short term decreased soil productivity and hydrologic function, as well as threats to human life and safety. Due to the expected recovery of hydrophobic soils and vegetative conditions, hydrologic function will likely not experience long-term negative impacts on Forest Service lands.

Analysis of post-fire debris-flows threats in response to a range of rainfall intensities was conducted by the USGS. Highest concern is where basins have high susceptibility for occurrence and high hazard associated with estimated volume of material (Maps 3 and 4). Slightly lower concern would be basins having a combination of either relatively low susceptibility and moderate to high volume hazard or high susceptibility and moderate volume hazard.

The USGS model estimated moderate level debris-flow hazard for the majority of basins within the burned area of the Thompson Ridge fire perimeter, with certain stream segments at a higher hazard risk. The probability of debris flows initiating in the burned areas is typically between 20-60%. A design storm with a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/hr) (0.95 inch per hour) was used in modeling debris flows, which is representative of less than a 1-year precipitation event in this area. Additional information and Debris Flow Hazard modeling predictions are available at https://landslides.usgs.gov/hazards/postfire_debrisflow/

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The lightning caused Thompson Ridge Fire started on the afternoon of August 4th, southeast of Beaver, Utah on Forest Service owned land. It eventually spread to the east, burning over 7,250 acres in the Tushar Range during the first five burn periods. Since Tuesday, August 8th, no growth with only interior burning has continued to occur.

The USFS BAER team began its assessment of the burn scar on August 22nd. Soil Burn Severity (SBS) mapping was accomplished by ground truthing and adjusting an initial Burned Area Reflectance Classification (BARC) map using the methods outlined in RMRS-GTR-24. This resulted in a final field validated soil burn severity map (Figure 2). Additional field review and identification of threats to human life and safety, the NFS transportation system, campground, soils, water quality, native vegetation communities, and cultural resources was assessed by the BAER survey team.

The remainder of this report will focus on threats to Forest Service Critical BAER values identified in FSM 2523 – Emergency Stabilization – Burned Area Emergency Response. These risks resulting from these threats was calculated using the BAER Critical Value Matrix (Table 11).

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

Table 5: Critical Value Matrix

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	RISK		
Very Likely	**Very High**	**Very High**	**Low**
Likely	**Very High**	**High**	**Low**
Possible	**High**	**Intermediate**	**Low**
Unlikely	**Intermediate**	**Low**	**Very Low**

1. Human Life and Safety (HLS):

a. Human life and safety of forest visitors at the Birch Creek campground are threatened by flash flooding from Birch Creek that could impact the lower lying sites adjacent to the floodplain. The probability of damage or loss is **possible** due to the total area of upstream watershed burned area above the campground in North Fork that is expected to contribute to elevated postfire runoff events. The magnitude of consequence is **major** because flooding would result in serious injury or loss of life. The risk rating is **high**. Posting warning signs is recommended. See treatment P1b.

b. Human life and safety of forest visitors at dispersed sites along South Creek are threatened by flash flooding that could impact the lower lying sites adjacent to the floodplain. The probability of damage or loss **likely** due to the moderate and high severity fire impacts to the watershed above the dispersed sites. The magnitude of consequence is **major** because flooding would result in serious injury or loss of life. The risk rating is **very high**. Posting warning signs, an administrative closure of some dispersed sites, and BAER treatments are recommended. See treatment P1b.

c. Human life and safety of forest visitors on the motorized Paiute Side Trail 068 segment above the South Creek Trail Head to the confluence of Middle Fork with South Creek is threatened by flash flooding following short duration high intensity rainfall events in the burned portions of the upper watershed. The probability of damage or loss is **likely** because the trail is near the drainage bottom. The magnitude of consequence is **major** because entrapment could result in serious injury or loss of life. The risk rating is **very high**. BAER treatments are recommended. See treatments P1b and P2b.

d. Human life and safety of forest visitors utilizing the National Forest System roads is threatened by rockfall, hazard trees, fallen trees, debris flow, and flash floods. Specifically, on FS Road 008 from the confluence with South Creek and at the trail head of PST 008 through Rocky Canyon and then to the southern Forest boundary on the southwest portion of the fire. Additionally, FS Road 121 from Birch Creek Campground to Wildcat Creek and Trail 247 that also includes spur road FS 587; and FS Road 1011 from Battle Mountain and Trail 165 to the Forest Boundary is also threatening to human life and safety to the forest visitors. The probability of damage or loss **likely**. The magnitude of consequence is **major** because a tree strike could result in serious injury or loss of life. The risk rating is **very high**. BAER treatments are recommended. See treatments RT1a, RT2, RT13b, P1a, and P1b. See treatment P3a.

e. Human life and safety of forest visitors utilizing the National Forest System trails throughout the burned area is threatened by rockfall, hazard trees, fallen trees, debris flow, and flash floods. Trails within the burn permitter include 066, 066A, 165, 241, 243, 247, 285, and 287. The probability of damage or loss is **likely** given the prevalence of burned hillslopes, fire damaged trees, and the rate of speed at which users travel on the transportation system components. The magnitude of consequence is **major** because rockfall, tree strikes, or

entrapment could result in serious injury or loss of life. The risk rating is **very high**. BAER treatments are recommended. See treatments RT1a, RT2, RT13b, P1a, and P1b. See treatment P3a.

2. **Property (P):**Campground infrastructure at the Birch Creek Campground is threatened by flash flooding from Birch Creek that could impact the lower lying sites adjacent to the floodplain from the burned North Fork drainage directly above the developed campsite. The probability of damage or loss is **possible** given the potential for flooding to hit the improvements. The magnitude of consequence is **major** because of the potential loss in economic value of the fire rings, tables, and benches should a damaging event occur. The risk rating is **high**. Posting warning signs and BAER treatments are recommended. See treatment P1b.

    b. Boundary Fence on South Creek is threatened by flash flooding. The probability of damage or loss is **very likely** given the potential for floodwaters to impact improvements following a storm event in the upper watershed and that the fence crosses a stream. The magnitude of consequence is **moderate** because of the limited scope of the damage that may occur during a probable flood event. The risk rating is **very high.** See treatment RT2.

    c. Road prisms, drainage control structures, and other road infrastructure within the burn perimeter and in drainages immediately downstream of the burned area are threatened by expected increases in runoff from moderate and high SBS areas. These runoff events are likely to result in road surface erosion and overwhelm existing road drainage control structures (ditches and culverts) on the threatened segments of NFS roads. The probability of damage or loss is **likely** because soil resource, and watershed response has been observed on or above the identified road segments. The magnitude of consequence is **major** because there is a potential for substantial damage to the ML2 and ML3 NFS roads. The risk rating is **very high**. BAER treatments are recommended. See treatments RT1a and RT2.

    d. Numerous segments of the non-motorized trail system within and downslope of the burned area are threatened by expected increases in post fire runoff that will overwhelm the existing drainage features on the trail prisms. The probability of damage or loss was found to be **likely** because these segments are in or directly below moderate and high SBS that have slopes steep enough to generate overland flow and excessive runoff in the channel network. The magnitude of consequence is **moderate** due to potential for modest damage to these segments of the affected trail system. The risk rating is **high**. BAER treatments are recommended. See treatment RT13b.

3. **Natural Resources (NR):**There is an increased risk to native or naturalized plant communities on NFS lands from invasive species and other weeds. Specialists have identified leafy spurge, nodding plumeless thistle, whitetop as possible weed species that will likely take root in suppression activity disturbed areas. The probability of damage to native or naturalized plant communities is **likely** because suppression activities caused soil disturbances in areas where invasion of noxious plants is expected to occur. Multiple years of growth of invasives, if unchecked, can lead to more robust seedbanks for these species, which make future control much more time consuming and difficult. The lack of a weed washing station during initial fire suppression activities will likely facilitate the introduction of invasive species into these disturbed areas. The magnitude of consequence from this damage is **moderate** because there will be long-term effects of weed invasion to existing intact native plan communities. The risk is **high**. BAER treatments are recommended. See treatments L1b.

    b. Soil productivity and hydrologic function in the post fire environment are threatened by the loss of organic soil cover, elevated inherent erosion hazard, and moderate potential for debris flows from steep slopes having high and moderate SBS. The probability of damage or loss is **likely** based on erosion modeling, which indicates there is a potential for an average soil loss of 29 – 37 tons/acre on high erosion hazard hillslopes. This represents a

potential 20% loss of the A horizon in the first year after the fire. Inherent erosion hazard rates have been elevated from moderate to high on soils that experienced moderate and high SBS. The magnitude of consequence is **moderate**. The impacts to the soil resource from increased post fire erosion are considerable and will persist in the long term. However modeled losses are within acceptable soil loss tolerance for dominant soil types and are not expected to result in an irreversible damage to the soil resource. The risk rating is **high**. BAER treatments are not recommended due to the acceptable level of risk.

c. Agricultural supply water in South Creek is threatened by high intensity rainfall events that will result in accelerated erosion, increased sediment delivery to the channel network, and potential debris flows impacting water quality. The probability of damage or loss is **likely** given the increased likelihood of flood flows, erosion, and sedimentation from areas of moderate and high SBS in the South Creek watershed. The magnitude of consequence is **minor** because the water quality degradation will be a short term, recoverable and only persists for minimal amounts of time immediately following high intensity precipitation events. The risk rating is **low**. BAER treatments are not recommended. Downstream irrigators are encouraged to monitor runoff conditions to ensure that appropriate response actions can be taken when sediment laden flows pass through the stream system.

   A private ditch on the south end of the fire will likely be impacted by increased flooding and sedimentation following the fire. The ditch could blow out near the actual stream diversions as well where USGS predicted a 40-60% probability of having debris flows. It appears that the ditch has had maintenance completed on it recently. Despite the maintenance it is still expected to be impacted from increase flows and sedimentation of the drainages that burned above the ditch. A private reservoir is located on South Creek below the fire. It is storing water currently and will act a sediment basin as ash and sedimentation increases from the fire burn area. BAER treatments are not recommended. Downstream irrigators are encouraged to monitor runoff conditions to ensure that appropriate response actions can be taken when sediment laden flows pass through the stream system.

4. **Cultural and Heritage Resources:**No NRHP eligible or potentially eligible cultural resource sites are threatened by the loss of site characteristics from erosion or unauthorized removal of artifacts. BAER treatments are not recommended.

B. Emergency Treatment Objectives: Limit loss of life or injury to forest visitors, raise awareness of postfire hazards throughout the burned area, minimize postfire damage to the NFS transportation system, minimize the establishment of invasive plants and noxious weeds.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land: 80%
Channel: N/A
Roads/Trails: 80%
Protection/Safety: 95%

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land	85%	90%	90%
Channel	N/A	N/A	N/A
Roads/Trails	80%	90%	90%
Protection/Safety	90%	80%	70%

E. Cost of No-Action (Including Loss): $205,492. Assumes the following: 80% chance of loss of the threatened segments of the NFS transportation system which includes 2 miles of motorized trails valued at

$30,000/mile, 5.5 miles of non-motorized trails valued at $4,000/mile, 1.5 of ML 2 road valued at $75,000/mile; 3 years weed management activities at suppression disturbed areas costing an estimated $34,932.

F. Cost of Selected Alternative (Including Loss): $71,923. Assumes the following: 20% chance of loss of the threatened segments of the NFS transportation system and 3 years of weed management activities at suppression disturbed areas costing an estimated $17,466.

G. Skills Represented on Burned-Area Survey Team:

☒ Soils ☒ Hydrology ☒ Engineering ☒ GIS ☒ Archaeology
☒ Weeds ☒ Recreation ☒ Fisheries ☒ Wildlife
☒ Other:

Team Leader: Adam Solt
Email: Adam.Solt@usda.gov **Phone(s)**: 435-201-0856

Forest BAER Coordinator: Stan Andersen
Email: stan.andersen@usda.gov **Phone(s):** 435-896-1050

Team Members: *Table 7: BAER Team Members by Skill*

Skill	Team Member Name
Team Lead	Adam Solt
Soils	Vaugh Thacker
Hydrology	Mark Muir, Rachel Nichols
Engineering	Garon Sandall & Steve Rodriguez-Consulted
GIS	Russ Reading
Archaeology	Marcel Corbeil-Consulted
Weeds	Dave Tait
Recreation	Nyk Farrer-Consulted
Other	Jim Whelan and Steve Flinders-Consulted

H. Treatment Narrative:

The following narratives summarize the response actions recommended to decrease risks to BAER Critical Values. It is important to note that these treatments are not designed to eliminate risk. They are designed to reduce risk to an acceptable level, per FSM 2523.1 - Exhibit 02. Detailed specifications, cost estimates, and maps identifying the spatial location for the treatments are in the BAER Assessment project record. The documents can be obtained by contacting the Forest BAER Coordinator.

All treatment costs were estimated based on the assumption that off-forest Agency personnel or contract crews would be implementing the authorized treatments without the use of local unit NFSE salary funding. If personnel from the local unit are identified for implementation, current BAER salary and expense guidance regarding the use of H-codes would be adhered to. Project budgets represent the best estimate of the BAER assessment team and may be adjusted with interim funding authorization requests to reflect current market values at the time of contracting and implementation.

Land Treatments:

L1b. Early Detection Rapid Response (EDRR) Suppression: Surveys and treatment for new or expanding invasive plant and noxious weed infestations associated with fire suppression activities will be conducted as needed during 2023 and Spring 2024. EDRR activities that extend beyond the first year will be accomplished through non-BAER funding sources. EDRR Suppression efforts will only occur on NFS lands, along areas that were disturbed by unmitigated suppression activities and suppression rehab, including areas of hand line, dozer line, mixed method (dozer except for individual arch sites), and safety zone construction. These

areas were delineated by the BAER Weeds Specialist using suppression disturbance lines and points provided by the IMT GISS. If an effort to accurately capture the actual size of the on the ground disturbance including any side-cast material, the points and lines were buffered into polygons that most accurately represent the newly disturbed area. The buffer assigned to the GIS line and point features varied by feature type. The dozer lines are assumed to have a 30' total disturbance width, and handlines are assumed to have a 5' total disturbance width. Treatment is not proposed beyond the extent of the soil disturbance associated within the control features.

EDRR Suppression activities will be accomplished by a crew of 2 individuals on foot. The invasive species of concern in these suppression areas are Leafy Spurge, Nodding Plumeless Thistle, and Whitetop. The EDRR suppression surveys will be focused on disturbed areas that were free of weeds or only contained small, discrete populations that were disturbed during control line construction.

Item	UOM	Unit Cost	# of Units Treated	Total Treatment Cost
L1b EDRR – Suppression	acre	$152	38.3	$5,822

Roads and Trail Treatments:

RT1a. Road Drainage (storm proofing existing drainage features): Increased post-fire runoff and erosion from burned hillslopes above the Roads (NFSR 121, 1011, and 068) within and below the burnscar is expected to overwhelm the existing road drainage features and result in culvert plugging, culvert over-topping, ditch failure, erosion of fill slopes, and deposition of debris on the NFS road. These routes are critical for USFS administrative access, forest recreation, and private inholding access. This route represents a significant financial investment of NFS funds.

Under the pre-fire runoff regime, the current condition and previous maintenance for the drainage structures on this road was adequate to accommodate pre-fire runoff. Ongoing maintenance has not been deferred. An emergency funding authorization is needed to support the immediate mobilization of equipment and operators who will prepare the drainage structures for the increased runoff that is a direct result of the burned watershed conditions and the increased response to precipitation events. Emergency storm proofing of high-value drainage features in combination with post-storm inspection and response are appropriate BAER treatments are recommended in lieu of more costly structural modification to the NFS road system.

Item	Units	Unit Cost	# of Units	Total Cost
RT1a. Road drainage/storm proofing	Job	$57,270	1	$57,270

RT2. Storm Inspection and Response: Storm inspection and response on roads (NFSR 121 1011 and 068) keeps drainage features treated under RT1 and RT11 functional by removing accumulated sediment and debris between or during storm events. Following heavy rains, the inspection will involve identification of drainage hazards such as accumulated debris, sediment, and plugged culverts that are limiting functionality of the road drainage features. The response will use equipment to remove obstructions from culvert inlets, catch basins, dips, lead-off ditches, riprap armor, and other drainage features. Excess material and debris removed from

the drainage features will be placed where it cannot re-enter the stream. Problems will be corrected before they worsen or jeopardize the road drainage features. This treatment is used in lieu of more costly structural upgrades, such as culvert upsizing.

Item	Units	Unit Cost	# of Units	Total Cost
RT2 Road storm inspection and response	Job	$29,950	1	$29,950

RT13. Trail Drainage: The existing trail system drainage features are insufficient to handle the anticipated increase in post-fire runoff from areas burned at moderate to high severity. Of the 16.4 miles of trails within the perimeter, approximately 10.52 miles are expected to have varying intensity of impacts from runoff, debris, and erosion from upslope/upstream burned hillslopes. Predicted increased runoff due to steep slopes and lack of effective ground cover will be intercepted and captured by trails, leading to severe trail tread erosion that will render the trails unusable and/or dangerous to use. Additional hazards caused by the fire such as hazard trees and rockfall will create unsafe conditions at trail access points and worksites along the trails to workers. Accelerated erosion that is channelized on trail features and into streams may further impair water quality.

Implementing this treatment will decrease the risk of unacceptable loss of trail prism, providing for continued recreation opportunities with reduced risk to human life and safety. Proper and adequate drainage for post-fire runoff will reduce flow interception and prevent the trail prism and tread from significantly eroding. Preventing the loss of trail prism is much more cost effective than rebuilding destroyed trial prisms.

The managed use for these systems is both motorized and non-motorized. Priority trails to be worked on include those that are within or below moderate to high soil burn severity slopes, have sustained steep grades, and lack inadequate drainage to effectively maintain control of the post-fire runoff originating from areas of moderate and high SBS.

The system trails are valuable resources for visitors and recreationists in the area. Large storm events will deteriorate and compromise the trail system’s integrity, eventually destroying large sections if no actions are taken.

Item	Units	Unit Cost	# of Units	Total Cost
RT13a Motorized Trail Drainage	Mile	$1,571	0	$0

Item	Units	Unit Cost	# of Units	Total Cost
RT13b Non-motorized Trail Drainage	Mile	$1,546	10.5	$16,233

Protection/Safety Treatments:

P1. Burned Area Warning Signs: The purpose of the Burned Area Warning signs is to reduce risks to human life and safety by informing forest visitors of potential dangers and/or hazards when entering burned watersheds on NFS lands. Entering burned areas presents an intermediate to very high risk to human and life and safety, with increased threats from post-fire effects such as falling trees, rolling rocks, flash floods, and debris flows. It is necessary to inform the public of burned-area hazards that are a direct result of wildfire; hazards which are substantially different compared to unburned forest setting and with which many forest visitors may be unfamiliar. Burned area warning signs will be installed to inform the public of the possible dangers associated with the burned area along roadways at major entry points into the

burned area, at trailheads, and at developed recreation sites. Lump sum costs include signs, posts, hardware, and installation.

Item	Units	Unit Cost	# of Units	Total Cost
P1a. Road Burned Area Warning Signs	Each	$750	4	$3,000

Item	Units	Unit Cost	# of Units	Total Cost
P1b. Trail/Rec Site Burned Area Warning Signs	Each	$375	11	$4,125

I. Monitoring Narrative: Forest personnel will periodically review safety signs and closure devices to ensure they are not being vandalized. Road and trail drainage stabilization treatments will be monitored through implementation of the storm inspection and response plan. EDRR treatments will be monitored during follow up early detection surveys to ensure new weed infestation or expansion of existing infestations is minimized.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

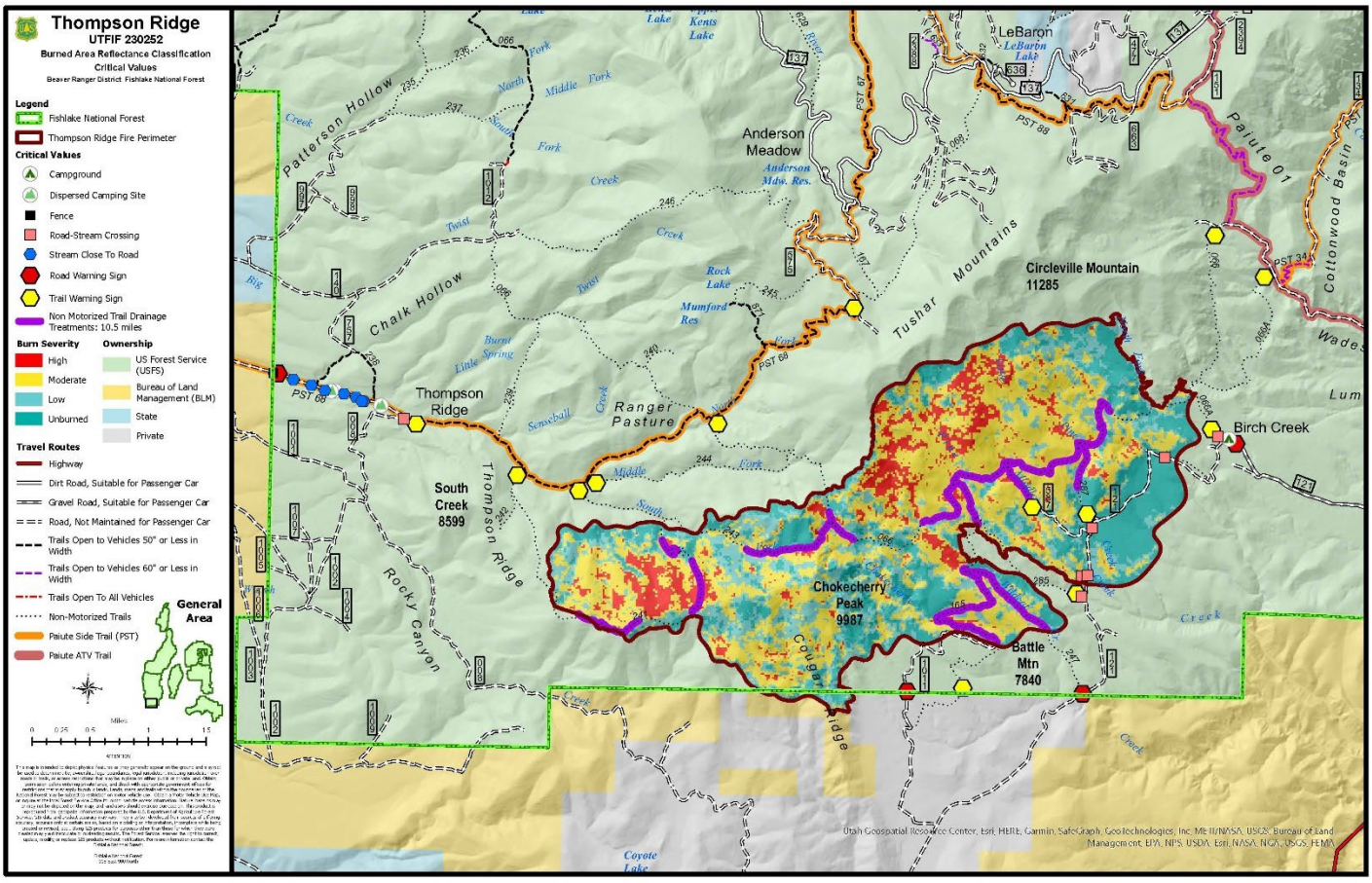
L1b EDRR – Suppression	Acre	152	38.3	$5,822	$0			$0		$0	$5,822
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$5,822	$0			$0		$0	$5,822
B. Channel Treatments											
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treatments				$0	$0			$0		$0	$0
C. Road and Trails											
RT1a. Road drainage/storm	job	57,270	1	$57,270	$0			$0		$0	$57,270
RT2 Road storm inspection a	job	29,950	1	$29,950	$0			$0		$0	$29,950
				$0	$0			$0		$0	
				$0	$0			$0		$0	
				$0	$0			$0		$0	$0
RT13b Non-motorized Trail D	Miles	1,546	11	$16,235	$0			$0		$0	$16,235
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road and Trails				$103,455	$0			$0		$0	$103,455
D. Protection/Safety											
P1a. Road Safety Signs	Site	750	4	$3,000	$0			$0		$0	$3,000
P1b. Trail/Rec Site Signs	Site	375	12	$4,500	$0			$0		$0	$4,500
P2b. Motorized Trail Closure	job			$0	$0			$0		$0	$0
P3b. Hazard Trees Develope	job			$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Protection/Safety				$7,500	$0			$0		$0	$7,500
E. BAER Evaluation											
Initial Assessment	Report	$23,000		---	$0			$0		$0	$0
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				$0	$0			$0		$0	$0
F. Monitoring											
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$0	$0			$0		$0	$0
G. Totals				$116,776	$0			**$0**		**$0**	**$116,776**
Previously approved											
Total for this request				**$116,776**							

PART VII - APPROVALS

1._____

Forest Supervisor Date

Thomson Ridge Treatment Map



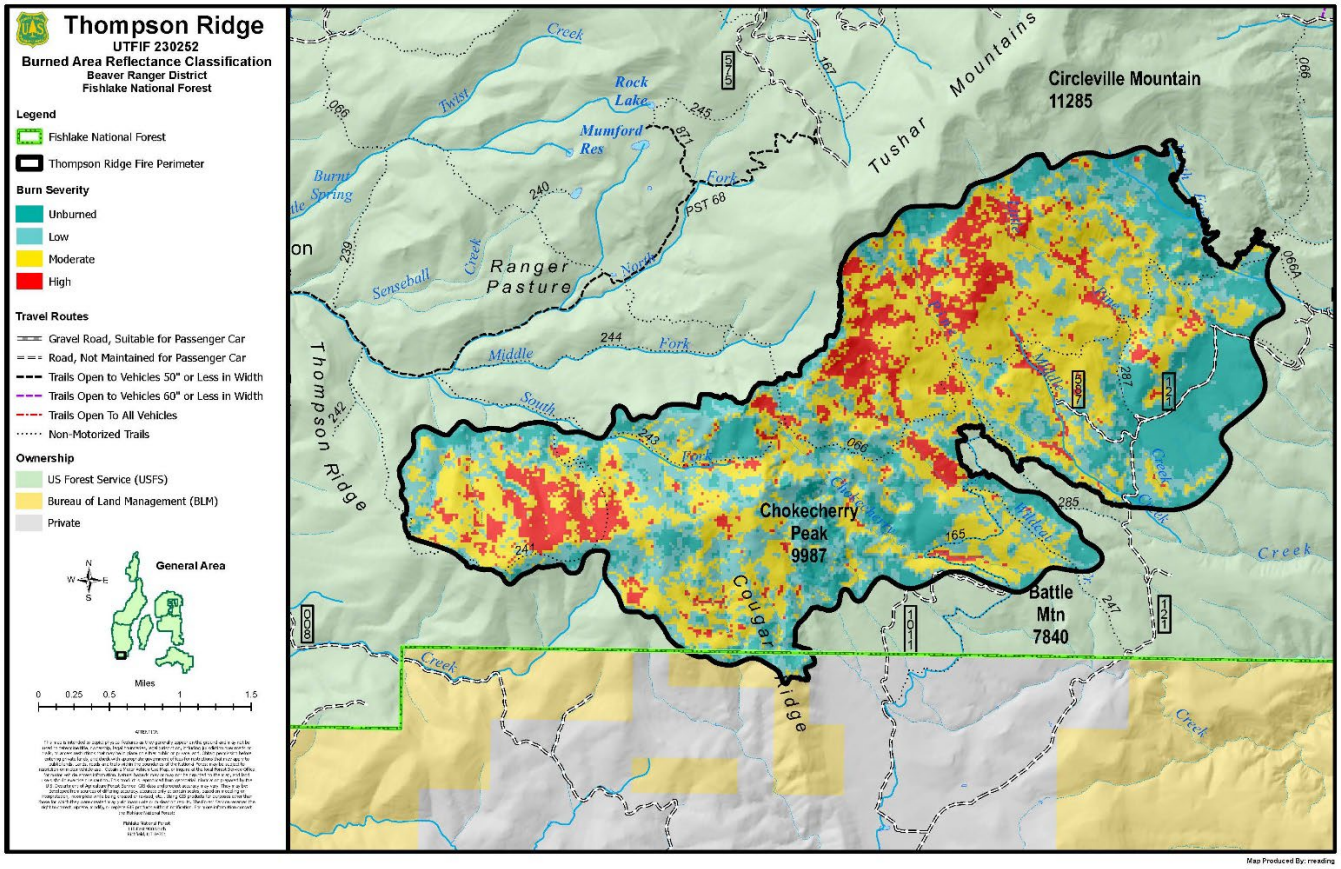


Figure 2: Thompson Ridge Soil Burn Severity

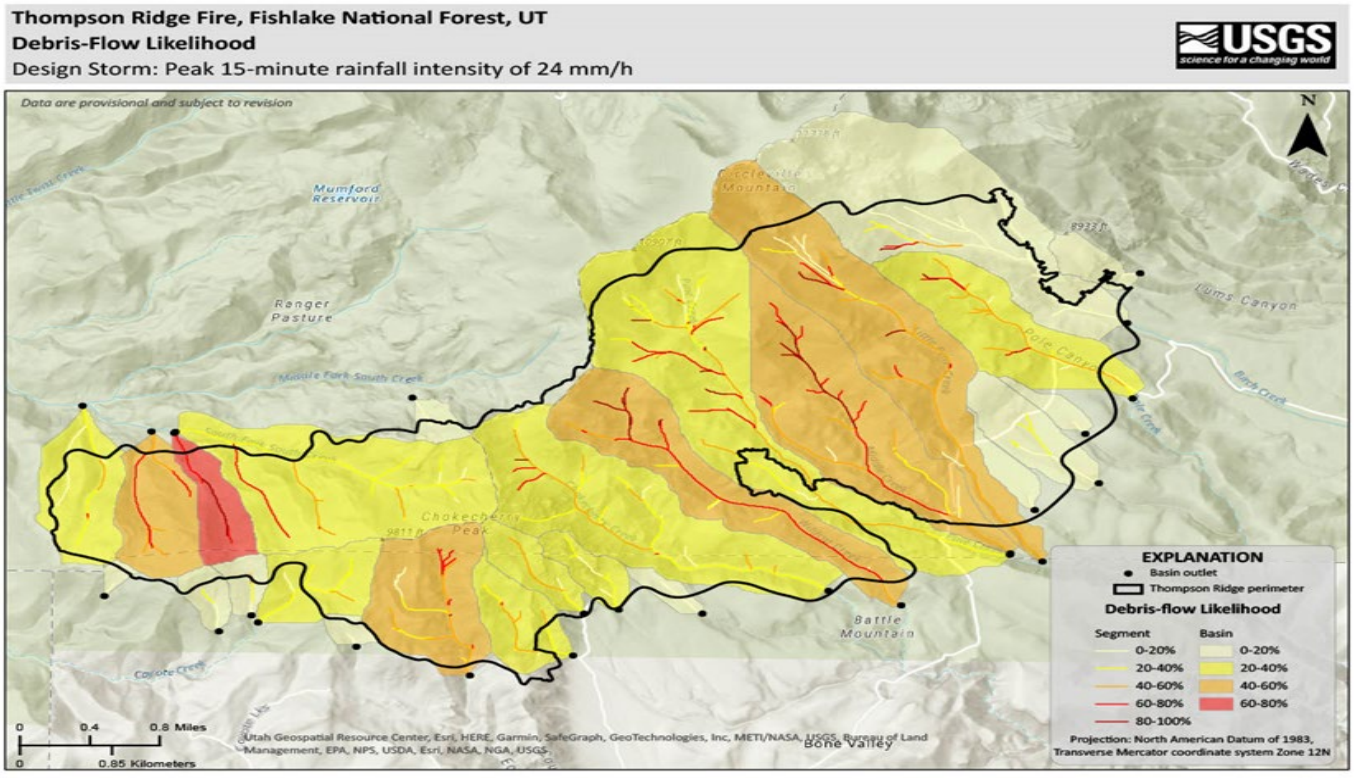


Figure 3: Thompson Ridge Debris Flow Probability