United States Department of Agriculture | **Forest Service** | **Intermountain Region** | **324 25th Street Ogden, UT 84401-2310**

File Code: 2523 **Date:** August 21, 2000
Route To: National BAER Coordinator

Subject: Clear Creek Initial BAER Request

To: Chief

Enclosed for your review and approval is a copy of the Initial Burned Area Report (FS 2500-8) for the Clear Creek Fire on the Salmon National Forest. This request for $463,958 exceeds our Regional approval.

As per policy our Regional BAER coordinator has reviewed this request in conjunction with the Regional BAER coordinator from the Southwest Region. As a result of that review the Forest has made several modifications to this request. The interregional review also highlighted some areas that may be of concern for appropriate BAER charges which the Forest requests National Review. These areas are highlighted in yellow within the request.

Please be advised that this is an initial request to cover the first wave of proposed treatments. This request will definitely be updated as the BAER watershed team gains access to more areas of the fire. Please contact Jeff Bruggink at (801) 625-5357 if you have any questions.

/s/ Jack Blackwell

Enclosure

Cc Jeff Bruggink

Ken Heffner

Bill Burbridge

Gary Jackson Salmon-Challis

Greg Bevenger Shoshone NF SO

Date of Report: August 17, 2000
Edited J.Bruggink 8/24/00

BURNED-AREA REPORT
(Reference FSH 2509.13)

The information in this initial burned-area report is based upon limited field reviews to date. The BAER Team has only been able to assess a small percentage (20%) of the burned area due to an ever expanding fire, continuing suppression activities and thick smoke conditions. The Forest Supervisor has decided to submit this report now in order to initiate desired emergency watershed rehabilitation efforts.

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[X] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation 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: Clear Creek

B. Fire Number: ID-SCF-021

C. State: Idaho

D. County: Lemhi

E. Region: 04

F. Forest: Salmon-Challis

G. District: Salmon

H. Date Fire Started: July 10, 2000

I. Date Fire Controlled: Unknown

J. Suppression Cost: Unknown

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): None at this time
2. Fireline seeded (miles): None at this time
3. Other (identify): None at this time

L. Watershed Number: 170602031101 170602031102 170602031103 170602031104
170602031105 170602031106 170602031201 170602031202
170602031203 170602031204 170602031205 170602031206

M. Total Acres Burned: 103,000[i]
NFS Acres (101,000) Other Federal ( ) State ( ) Private (2,000)

N. Vegetation Types: ARTTSV/AGRSPI PINPON//PSEMEN/AGRSPI
ABILAS/VACCES CERLED

O. Dominant Soils: Typic Cryorthent, loamy-skeletal, mixed
Typic Cryoborolls, loamy-skeletal, mixed
Typic Cryochrept, loamy-skeletal, mixed

P. Geologic Types: Granitics, Quartzites

Q. Miles of Stream Channels by Order or Class: Perennial = 104 Intermittent = 50

R. Transportation System (miles): Trails (CFF features) = 164 Roads = 35

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 72,100 (low) 25,750 (moderate) 5150 (high)

B. Water-Repellent Soil (acres): 92,700[ii]

C. Soil Erosion Hazard Rating (acres): 10,300 (low) 41,200 (moderate) 51,500 (high)

D. Erosion Potential: 20 tons/acre (high severity acreage)

E. Sediment Potential: 2560 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):
2 - range lands
5 - forest lands
20 - streams

B. Design Chance of Success, (percent): 80

C. Equivalent Design Recurrence Interval, (years):
10 - rangelands
25 - forest lands
100 - streams

D. Design Storm Duration, (hours):
6 - range lands
24 - forest lands
snowmelt peak - streams

E. Design Storm Magnitude, (inches):
1.5 - range lands
2.0 - forest lands
snowmelt peak - streams

F. Design Flow, (cubic feet / second/ square mile): 8 to 19 depending on location

G. Estimated Reduction in Infiltration, (percent): 10[iii]

H. Adjusted Design Flow, (cfs per square mile): 8.8 to 20.9 depending on location

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The following description is based upon limited field reviews to date. The BAER Team has only been able to assess a small percentage (20%) of the total area burned due to an ever expanding fire, suppression activities, and smoke conditions. The Forest Supervisor has decided to submit this initial report now in order to initiate desired emergency watershed rehabilitation efforts, and demobilize the BAER Team until the fire is closer to containment. The team will reconvene at a later date to finish the burned area review and evaluation.

Threats to Life and Property

Field reviews within and downstream of the burn confirm there is property, but not life[iv], threatened by effects of the fire. The properties at risk are:

- A barn, shed, storage trailer and bridge crossing (property owner unknown) within the Garden Creek floodprone area[v] - These structures are, and have been, at risk from flooding during infrequent events (50 to 100 year recurrence interval floods)[vi]. The barn sets approximately two feet above bankfull[vii], which is within flood height elevations reached by these infrequent events. The shed and trailer are located further from the creek but in a topographic low that could be flooded if a suppression related fireline that crosses Garden Creek upstream of the structures is not adequately rehabilitated[viii]. The bridge crossing severely encroaches the active channel and flood prone area, resulting in a constriction that increases flood elevations.

- A home (Bevan property) along Panther Creek below the Beaver Creek confluence - This home is, and has been, at risk from flooding during infrequent events (50 to 100 year recurrence interval floods). It sets on the low terrace, at the outside edge of a large meander bend, and is within flood height elevations reached by these infrequent events.

- Small cabins (Big Horn Outfitters property), used mostly during the fall hunting season, located along Panther Creek - These cabins are, and have been, at risk from flooding during infrequent events (50 to 100 year recurrence interval floods). They set on the low terrace, which is within flood height elevations reached by these infrequent events.

- Forest Development Road 60101 (Deep Creek Road) - Several inside ditch relief pipes are presently blocked and one pipe is crushed. Failure of these pipes could result in the loss of road prism and subsequent sediment delivery to Deep and Panther Creeks.

- Forest Development Road 60055 (Panther Creek Road) - This road runs parallel to Panther Creek along much of its length. There are five culverted crossings where burned brush could mobilize and block the pipes. Failure could result in the loss of road prism and subsequent sediment delivery to Panther Creek.

There is a need to provide for cross drains where the Panther Creek Road crosses the alluvial fans at the mouths of Trapper and Fritzer Gulches. Currently there are no pipes at Trapper Gulch and an eighteen inch pipe at Fritzer Gulch. Because of the amount of burned area in these watersheds an increase in water yield is anticipated. Currently a small flow is appearing in the alluvial fan below the mouth of the canyon at Trapper Gulch where recently the stream has only flowed in response to precipitation events. This streamflow is related to the reduction in transpiration in the watershed. Without the installation of culverts at this location water will flow across the road or down the inside ditch until it reaches a low spot on the Panther Creek Road where it will cross and erode the road surface. Numerous channels exist on these alluvial fans. It is recommended to install a 30 inch pipe on the main channels (at Fritzer Gulch replace the existing 18 inch pipe with a 30 inch pipe) and 18 to 24 inch pipes on the secondary channels.

There are also numerous burned trees that have fallen into Panther Creek that have the potential to create debris jams and cause flooding onto or failure of this road. Failure of parts of the road prism could result in sediment delivery to Panther Creek.

- Forest Development Road 60060 (Panther Hot Springs Road) - This road, which switchbacks and traverses steep slopes, crosses several ephemeral drainages. These crossings consist of large through-fills with undersized culverts, many of which are plugged - Failure of these fills could result in sediment delivery to Hot Springs and Panther Creeks.

- Blackbird Mine Sediment Basins - Two large sediment basins on Bucktail Creek, constructed as part of CERCLA remedial cleanup operations at the Blackbird Mine, are at risk. Much of the forested acreage above these basins has burned, presenting an increased risk for additional sediment delivery and possible failure of the dams during a large debris flow event.

- Forest Development Trails 172 (Garden Creek and Garden Creek Connector), 173 (Sagebrush L.O. Connector), 209 (Rancherio Connector), 021 (Dry Gulch), 022 (Clear Creek), 023 (Gant Ridge), and 026 (Birch Creek) - Approximately 30 miles of trail are within the assessed area, with about 10 miles occurring in high intensity burn areas. Grades on these trails range from 5% to 20%. Drainage before the fire was inadequate resulting in trail treads that serve to channel runoff rather than disperse it. Failure of these trails due to accelerated erosion could result in a need for reconstruction or relocation, considerable gully formation, and sediment delivery to streams.

Threats to Water Quality

Field reviews within and downstream of the burn confirm there are significant threats to water quality. The concern is that sediment may bury spawning gravels and fill pool habitat in Clear Creek and Panther Creek, two streams critical to the recovery of chinook salmon, steelhead, and bull trout[ix]. This concern is related to anticipated increases in sediment delivery to streams from high severity burn acreage, and potential increases in sediment delivery to streams if the threats to roads and trails previously described occurs.

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. These threats are related to past management decisions of allowing fire exclusion, heavy grazing, and invasion of exotic plants. These decisions have resulted in a burn area where biogeochemical and vegetation succession processes have been interrupted. The effect could be an increase in noxious weeds[x], primarily spotted knapweed (*Centaurea maculosa*), on areas that experienced high burn intensity[xi], and a decrease in soil quality[xii] within areas that experienced high burn severity[xiii].

The noxious weed spread is expected to occur on a large acreage of high intensity burn, principally along roads and trails within winter range. The spread could become epidemic, with resultant impacts to long-term soil productivity and ecosystem integrity.

"The Panther Creek area has been designated by the State of Idaho Department of Agriculture as a Special Weed Management Area. The Forest Service in partnership with the Rocky Mountain Elk Foundation and Lemhi County has been working on an integrated weed control strategy in this area. Within the Clear Creek Fire there is a very high potential for an explosion of Spotted knapweed into the burned areas. Spotted knapweed is highly invasive and will readily out compete native plant communities and take over any disturbed site. Knapweed is also very resistant to fire and the plant roots are not killed by fire. Resprouting of knapweed is prevalent in the burned areas. Treatment this fall of knapweed would be highly effective since the plants are already weakened from the burn. A failure to treat for noxious weeds would result in type conversion in many areas as knapweed would outcompete the native species.

Soil quality within high severity burn areas is expected to decrease. Approximately 60 percent of this acreage occurs on steep slopes, much of which is well over 60 percent continuous grade. Erosion rates are expected to increase significantly, with a resultant long-term impact to soil productivity, and water quality and fisheries as previously described.

Pre-fire sediment yield for the predominate landtypes in the burned areas is approximately 16 cubic yards/square mile/year (assuming an average delivery ratio of 0.25). The first year following the fire sediment yield is estimated at 3200 cubic yards/square mile/year. The erosion rates are significantly reduced after the first year following the fire. Sediment delivery to streams is expected to exceed the stream's capacity for sediment transport resulting in stream sedimentation and adverse impacts to anadromous fish spawning habitat. Sediment delivery and habitat impacts are expected to occur until ground cover recovers to near pre-fire conditions.

Coniferous forested cover, an important component of big game winter ranges, will take decades to regenerate and reach heights that offer thermal protection or benefits to wintering ungulates. Loss of wintering herds of big game or any significant decrease in numbers of animals available to the resident wolf packs will have a profound effect on the packs ability to produce and raise pups or even persist within the sub-basin, thus affecting the overall recovery process for this species in central Idaho. Rehabilitation of this key winter range is essential to both short and long-term maintenance of wintering ungulates thus decreasing the severity of fire induced impacts on wolf recovery, local, state and national recreational opportunities (primarily big game hunting) and both local and state economies. Plantings should greatly decrease the time required to regenerate thermal cover and thus full recovery of the key winter range. Planting of 31 acres from local seed sources will be done in both wilderness and non-wilderness portions of the burn.

Threats to Heritage Resources

Emergency watershed threats to heritage resources have not been assessed. The Forest heritage resource staff decided at the time the BAER team was established to focus its limited resources on providing consultation and assistance to the suppression effort. Once the fire is contained, heritage resources will be evaluated.

B. Emergency Treatment Goals and Objectives:

- Temper fire effects on threatened species (chinook salmon, steelhead and bull trout) by reducing the amount of sediment delivered to streams.
- Lessen fire effects on the transportation system by restoring and improving drainage on trails and roads, removing dry ravel and debris flow sediments that accumulate on roads, and removing large woody debris jams that could divert flows into or on roads.
- Reduce sediment delivery to detention basins within the Blackbird Mine facility.
- Mitigate effects on long-term soil productivity and ecosystem function by seeding targeted areas and by spraying noxious weeds.

C. Probability of Completing Treatments Prior to First Major Damage-Producing Storms:

Land 90 % Channel 90 % Roads/Trails 90 % Other _ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Seeding	80	85	90

Spraying	80	50	10
Felling/Wattles	80	85	90
Channel			
LWD	95	95	95
Roads	80	90	90
Trails	80	80	80
Other			

E. Cost of No-Action (Including Loss): $19,206,314

F. Cost of Selected Alternative (Including Loss): $7,289,216

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Greg Bevenger, Hydrologist
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H. **Treatment Narrative:**

Land Treatments:

Aerial seed 2,211 acres of high severity burn (slopes less than 40 percent) with non-invasive, non-competitive winter wheat (*Triticum aestivum*) to stabilize soil and reduce the amount of sediment delivered to streams. Soil stabilization is needed to protect long-term productivity. Reductions in the amount of delivered sediment is needed to temper fire effects on chinook salmon, steelhead, and bull trout. ***Apply the seed during early to mid-September, 2000 in an effort to establish ground cover over the course of the fall and winter so it is in place as snowmelt begins.*** *(placement on the first snow fall should be considered to remove chances of dessication of seed during a dry fall period)* Areas to be seeded include alluvial fans along Panther Creek, draws adjacent to the Hot Springs Creek Road, selected areas within the Gant/Birch, Dry Gulch, Wire Gulch, Clear Creek, Garden Creek, Big Deer/Lick, and Pretty Gulch watersheds, and 730 acres above the sediment basins in Bucktail Creek.

In determining a recommended seed mix for the Clear Creek Fire Area the following factors were evaluated: 1) Need for rapid establishment of plant cover to reduce soil erosion and sediment delivery to anadromous fish spawning stream reaches. 2) Select species with low persistence in the environment to reduce competition with native species. 3) Select species that would not be likely to cross-pollinate with native species to reduce impacts on native plant communities.

The recommended species for seeding the burned area is Soft White Winter Wheat. The benefits of seeding a sterile cereal grain, such as Winter Wheat are: 1) Fall germination and growth that would provide for rapid ground cover prior to the first damage producing storm (snowmelt runoff for most of the

area). 2) This species would perform as a nursery crop providing soil stabilization until the native species can be reestablished. Without immediate revegetation irretrievable soil loss will occur. 3) Sterile cereal grains have a low persistence in the environment. Revegetation experts have stated that survival and persistence of this species is very low in a dry climate like the areas proposed for treatment in the Clear Creek Fire with approximately 10% survival the second year with very little remaining the third year (personal communication with Wind River Seed Co., Wyoming and Comstock Seed Co., Nevada). 4) Cereal grains are not native to the area and would not cross-pollinate with native species contaminating the native gene pool.

The second choice for seeding the burned areas is Annual Rye Grass. This species would provide ground cover in the burned areas by next summer, but would not provide ground cover prior to spring runoff. This species would perform as a nursery crop for the native species, but it is more persistent in the environment than a cereal grain, such as winter wheat. It is anticipated that annual rye would set back reestablishment of native species at least several years longer than winter wheat.

Because of the concern with the introduction of non-local native species into the Frank Church River of No Return Wilderness area native species have not been recommended in the seed mix. Instead sterile cereal grains with low persistence and low risk of cross-pollinating with native species are recommended for seeding.

Annual ryegrass (*Lolium multiflorum*) is recommended per RO review. The initial seed mix included the use of winter wheat exclusively. However, cost for seeding would have been 10 times the cost for annual ryegrass. The seed cost for annual ryegrass is $9,286[xiv]. Application cost $133,000. Total cost is estimated at $142,286. However, concerns with longevity and aggressiveness with natives exist with the use of the annual ryegrass.

Spray 46 acres of noxious weeds, located within close proximity to open water, using Telar DF. Spray 1,326 acres of noxious weeds, located well away from open water, using a Tordon/2,4-D mixture. ***Begin the spraying as soon as possible and continue it through the fall and spring.*** Apply the chemicals by boom sprayer, hose, or backpack sprayer in a spot treatment fashion.

Contour fall burned trees on 80 acres of high severity burn above the Bucktail Creek sediment basins to reduce the amount of sediment delivered to them. ***Ideally, conduct the falling directly after the September 2000 aerial seeding operation, to achieve better site scarification.***

Install 4,000 linear feet of rice straw wattles along the inner gorge region of Bucktail Creek above and between the two sediment basins to reduce the amount of sediment delivered to them. ***Conduct the installation before snowfall.***

Reforest 31 acres of high severity burn area with ponderosa pine seedlings to facilitate ecosystem integrity recovery. Rehabilitation of this key winter range is essential to both short and long-term maintenance of wintering ungulates thus decreasing the severity of fire induced impacts on wolf recovery. ***Conduct the planting next spring when soil moisture is adequate.***

Channel Treatments:

Remove nine of the 43 recently fallen trees from Panther Creek to minimize the risk of high flows being diverted into road fills that encroach the active channel area. ***Conduct the tree removal before spring runoff.*** Leave the remaining 34 trees in the creek to provide sediment traps and habitat for fisheries. Install two interpretative signs, one at each end of the Panther Creek Road, to inform the public of the benefits of large woody debris and its role in fire recovery, with an objective of teaching fuelwood gatherers to not remove trees from the creek for firewood. ***Install the signs as soon as possible.***

Roads and Trail Treatments:

Conduct the following road work before spring runoff:

- Deep Creek Road (FDR 60101) – Clean three culverts, repair one crushed culvert inlet, and extend one culvert outlet.

- Panther-Hot Springs Road (FDR 60060) – Clean forty-three culverts and repair two crushed culvert inlets.

- Panther Creek Road (FDR 60055) – Clean woody debris and brush at the Trail, Beaver, Hot Springs, Cliff, Big Jureano, and Little Jureano Creek crossings. At Trapper Gulch, construct 900 linear feet of inside ditch, install two culverts with inlet end sections, haul and place 575 cubic yards of pit run base material, and blade/shape 1/4 mile of the road surface. At Fritzer Gulch, construct 1,475 linear feet of inside ditch, install four culverts with inlet end sections, haul and place 350 cubic yards of pit run base material, and blade/shape 3/8 mile of road surface.

Conduct the following trail work before snowfall or spring runoff, depending upon specific trail location:

- Priority 1 – Construct 42 drains[xv] in the Garden Creek Connector (FDT 172), 108 drains in the Sagebrush L.O. Connector (FDT 173), and 108 drains in the Rancherio Connector (FDT 209). Along all three trails, breach berms along the outsloped side to better facilitate drainage.

- Priority 2 – Construct 108 drains in the Garden Creek Trail (FDT 172), 162 drains in the Dry Gulch Trail (FDT 021), 162 drains in the Clear Creek Trail (FDT 022), 162 drains in the Gant Ridge Trail (FDT 023), and 108 drains in the Birch Creek Trail (FDT 026). Along all five trails, breach berms along the outsloped side to better facilitate drainage.

Structures:

No emergency structures are proposed at this time.

I. **Monitoring Narrative:**

The following is a brief synopsis of proposed monitoring. Detailed monitoring plans will be developed after the entire fire is assessed. Copies of the monitoring plan will be forwarded to the Regional BAER coordinator at that time.

Seed Application Implementation and Effectiveness Monitoring

Monitor seed application to ensure desired rates of PLS/ft^2 are being applied. Establish random monitoring sites within areas proposed for seeding. Set up plots using cardboard boxes (pizza) overlain with square foot pieces of sticky paper.

Monitor growth of the seed to ensure objectives are being met. Establish photoplots for documentation.

Large Woody Debris Implementation and Effectiveness Monitoring

Monitor removal of targeted large woody debris to ensure objectives are being met. Conduct survey and risk assessment during the fall of 2000 and early spring of 2001 to assess removal needs for additional burned trees that fall into Panther Creek. Utilize the same process used for the initial survey, including completion of field forms and photo documentation.

Visually monitor Panther Creek during the 2001 spring runoff period to determine if the treatment is effective. Retake photos for documentation.

Trail Drainage Implementation and Effectiveness Monitoring

Monitor construction of drains and breaches to ensure objectives are being met.

Conduct two visual assessments in 2001, one during spring runoff and one during the summer. Establish photoplots for documentation.

Noxious Weed Spraying Implementation and Effectiveness Monitoring

Monitor spraying to ensure objectives are being met.

During 2001, monitor effectiveness of the spraying and establishment of new weed populations. Accurately map new populations using GPS and GIS. Establish photo plots for documentation.

Stream Stability Monitoring

During the spring and summer of 2001 visually monitor stream stability and sedimentation to determine if additional emergency watershed treatments are needed.

Bucktail Creek Sediment Basin Implementation and Effectiveness Monitoring

Monitor implementation of the contour falling and rice straw wattles to ensure objectives are being met. Visually monitor the effectiveness of these treatments in conjunction with existing reviews of the Blackbird Mine remedial clean up action plan. Establish photo plots for documentation. Notify owners of the Blackbird Mine facility they may need to increase the number of times per year they clean the sediment basins.

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

			NFS Lands				Other Lands			All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$	units	$	Units	$	$
A. Land Treatments										
Seed	Acres	4.2	2,211	$9,286			$0		$0	$9,286
Seed application	Acres	60	2,211	$132,992			$0		$0	$132,992
Weed spraying	Acres	108	1,372	$151,176			$0		$0	$151,176
Contour felling	Acres	143	80	$12,640			$0		$0	$12,640
Straw wattles	Feet	1.96	4,000	$9,040			$0		$0	$9,040
Reforestation	Acres	800	31	$24,800			$0		$0	$24,800
Subtotal Land Treatments				$339,934			$0		$0	$339,934
B. Channel Treatments										
LWD removal	Days	331	3	$1,693			$0		$0	$1,693
LWD signing	Each	350	2		$700		$0		$0	$0
Subtotal Channel Treat.				$1,693			$0		$0	$1,693
C. Road and Trails										
FDR 60101	Each	332	1	$365			$0		$0	$365
FDR 60060	Each	2678	1	$2,946			$0		$0	$2,946
FDR 60055	Each	37768	1	$41,545			$0		$0	$41,545
Trail drains and breaching	Miles	2397.5	10	$30,275			$0		$0	$30,275
Subtotal Road & Trails				$75,131			$0		$0	$75,131
D. BAER Evaluation										
Salary				$36,300			$0		$0	$36,300
Travel, supplies				$3,700			$0		$0	$3,700
E. Monitoring Cost				$7,200			$0		$0	$7,200
F. Totals				**$463,958**			**$0**		**$0**	**$463,958**

PART VII - APPROVALS

1. /s/George Matejko 8-17-00
Forest Supervisor (signature) Date

2. _____
Regional Forester (signature) Date

3. _____
Chief (signature) Date

Endnotes

[1] As of the date of this report, fire size is approximately 130,000 acres. Information in Parts II and III was gathered over the course of several days, when the fire size was continuously increasing, and thus does not correlate with the present size. This information will be updated when the fire is closer to containment and the team has a better opportunity to complete the assessment for the entire burn.
Information in Part V and VI is based on acreage the team has been able to adequately assess. This acreage is approximately 20% of the fire size to date and only includes the area around the Blackbird Mine, a corridor along the Panther Creek Road from Deep Creek to the Salmon River, the Hot Springs Creek drainage, and the lower portions of the Garden and Clear Creek drainages. This acreage may need to be revisited if significant re-burn occurs.
[1] Two types of water repellency can exist. The first type is due to high surface tension in very dry fine soil pores. This condition commonly develops during drought conditions. The second type, more commonly known as hydrophobicity, is due to waxes released from volatilized organic matter that moves downward into the soil and condenses around individual soil particles to form a water repellent layer that restricts water movement. Site conditions favorable for this type include high burn severity, long fire residence time, deep leaf-litter layers consumed by the fire, and coarse grained soils.
[1] Much of the area assessed to date has water repellent soils, even in unburned areas. This condition is believed to be a result of high surface tension due to extremely dry soils. Very little hydrophobic soil has been found so far. This condition is believed to be a result of fast moving fire with limited residence time. Water repellent and hydrophobic conditions are expected to break down as these areas receive higher fall humidity's, rains, and snow. Conditions are expected to mitigate early in next spring's snowmelt.
[1] Formal burn intensity/severity mapping has not yet been conducted due to an ever expanding fire, limited to non-existent available helicopter time, and heavy smoke conditions. Therefore, this report only reflects an estimate of the amount and degree of potential flood source areas. Potential threats to life may materialize after an assessment of the entire burn area.
[1] Flood prone area is equivalent to twice the maximum bankfull depth extended laterally to terrace deposits or the valley walls.
[1] The 50-year flood as a 2% chance of occurring in any given year, while the 100-year flood has a 1% chance.
[1] Bankfull is the height the creek reaches, on average once every 2 to 3 years and is approximately equivalent to the 1.5-year flood.
[1] The suppression rehabilitation team has been notified of this situation.

[1] Native and introduced rainbow trout are found throughout most of the Panther Creek drainage, as are federally threatened bull trout and USDA Forest Service Region 4 regionally sensitive westslope trout. The main stem of Panther Creek and several of its larger tributaries support annual runs of federally threatened Snake River steelhead. The National Marine Fisheries Service has designated the entire Panther Creek drainage as critical habitat for federally threatened Snake River spring/summer chinook salmon. The drainage is designated as an independent Consultation Subbasin, per Section 7 of the Endangered Species Act.

[1] The Panther Creek drainage is highly infested with spotted knapweed. There are also isolated areas of yellow toadflax and rush skeleton weed infestation. These three plants are classified as noxious weeds by the State of Idaho. The Idaho Department of Agriculture has designated the drainage as a special weed management area. For the past five years, the Forest Service, private landowners, Rocky Mountain Elk Foundation, and Lemhi County have invested considerable money and time to treat these weeds, in an attempt to eradicate then from this area. Of particular concern is the spread of spotted knapweed across crucial big game winter range that has burned. This winter range is very important to management of area big game populations that generate millions of dollars for the State of Idaho and the local economy. This range is also important to the recovery of wolves that were recently introduced to the area (listed as an experimental, non-essential population under the Endangered Species Act).

[1] Burn intensity relates to consumption of vegetation by the fire. Intensity is dependent upon rate of spread, heat of combustion, and total amount of fuel consumed. Areas mapped as light burn intensity include all grasslands and those forested lands that have mixed ground burn or scorched canopy but no crown burn. Areas mapped as moderate burn intensity include forested areas where most 1-hour fuels have been consumed but most 100-hour fuels remain (i.e. - needles are burned but most of the limbs remain). Areas mapped as high burn intensity include forested areas where most 100-hour fuels have been consumed (i.e. - tree limbs are gone such that the trees look like charred telephone poles).

[1] Maintaining soil quality relates to long-term soil productivity and ecosystem integrity. Soil quality factors include percolation and infiltration, water holding capacity, hydraulic conductivity, structure, ion exchange capacity, nutrient status, carbon and nitrogen cycling, biochemistry, soil organism habitat condition, and soil food web status.

[1] Burn severity relates to the degree or amount of heat from the fire that has been transferred to the soil. Severity is dependent upon moisture content of duff and large fuels lying on the ground, and the amount of conductive and radiant heat transferred in a downward direction into the soil. Classes of low, moderate and high are used and are defined in FSH 2509.13. Generally speaking, areas mapped as low burn severity have black ashes, intact grass, forb and shrub root systems, and no soil crusting. Areas mapped as moderate burn severity have gray or mixed ash color, partially compromised root systems, and some soil crusting. Areas mapped as high burn severity have white or red ashes, completely compromised root systems, and significant amounts of soil crusting.

[1] Alternative seed application rates and cost are:

Plant	Seeding Rate (lb PLS/ac)	PLS/lb	Cost/lb	PLS/ft^2	Total Cost ($)
Lolium multiflorum	6	227,000	0.70	30	9,286

Application cost is $133,000. Total cost to purchase and apply this seed is $142,286.

[1] Drains will be constructed with hand tools. These structures will be the minimum necessary to drain the trail tread.

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[i] As of the date of this report, fire size is approximately 130,000 acres. Information in Parts II and III was gathered over the course of several days, when the fire size was continuously increasing, and thus does not correlate with the present size. This information will be updated when the fire is closer to containment and the team has a better opportunity to complete the assessment for the entire burn.

Information in Part V and VI is based on acreage the team has been able to adequately assess. This acreage is approximately 20% of the fire size to date and only includes the area around the Blackbird Mine, a corridor along the Panther Creek Road from Deep Creek to the Salmon River, the Hot Springs Creek drainage, and the lower portions of the Garden and Clear Creek drainages. This acreage may need to be revisited if significant re-burn occurs.

[ii] Two types of water repellency can exist. The first type is due to high surface tension in very dry fine soil pores. This condition commonly develops during drought conditions. The second type, more commonly known as hydrophobicity, is due to waxes released from volatilized organic matter that moves downward into the soil and condenses around individual soil particles to form a water repellent layer that restricts water movement. Site conditions favorable for this type include high burn severity, long fire residence time, deep leaf-litter layers consumed by the fire, and coarse grained soils.

[iii] Much of the area assessed to date has water repellent soils, even in unburned areas. This condition is believed to be a result of high surface tension due to extremely dry soils. Very little hydrophobic soil has been found so far. This condition is believed to be a result of fast moving fire with limited residence time. Water repellent and hydrophobic conditions are expected to break down as these areas receive higher fall humidity's, rains, and snow. Conditions are expected to mitigate early in next spring's snowmelt.

[iv] Formal burn intensity/severity mapping has not yet been conducted due to an ever expanding fire, limited to non-existent available helicopter time, and heavy smoke conditions. Therefore, this report only reflects an estimate of the amount and degree of potential flood source areas. Potential threats to life may materialize after an assessment of the entire burn area.

[v] Flood prone area is equivalent to twice the maximum bankfull depth extended laterally to terrace deposits or the valley walls.

[vi] The 50-year flood as a 2% chance of occurring in any given year, while the 100-year flood has a 1% chance.

[vii] Bankfull is the height the creek reaches, on average once every 2 to 3 years and is approximately equivalent to the 1.5-year flood.

[viii] The suppression rehabilitation team has been notified of this situation.

[ix] Native and introduced rainbow trout are found throughout most of the Panther Creek drainage, as are federally threatened bull trout and USDA Forest Service Region 4 regionally sensitive westslope trout. The main stem of Panther Creek and several of its larger tributaries support annual runs of federally threatened Snake River steelhead. The National Marine Fisheries Service has designated the entire Panther Creek drainage as critical habitat for federally threatened Snake River spring/summer chinook salmon. The drainage is designated as an independent Consultation Subbasin, per Section 7 of the Endangered Species Act.

[x] The Panther Creek drainage is highly infested with spotted knapweed. There are also isolated areas of yellow toadflax and rush skeleton weed infestation. These three plants are classified as noxious weeds by the State of Idaho. The Idaho Department of Agriculture has designated the drainage as a special weed management area. For the past five years, the Forest Service, private landowners, Rocky Mountain Elk Foundation, and Lemhi County have invested considerable money and time to treat these weeds, in an attempt to eradicate then from this area. Of particular concern is the spread of spotted knapweed across crucial big game winter range that has burned. This winter range is very important to management of area big game populations that generate millions of dollars for the State of Idaho and the local economy. This range is also important to the recovery of wolves that were recently introduced to the area (listed as an experimental, non-essential population under the Endangered Species Act).

[xi] Burn intensity relates to consumption of vegetation by the fire. Intensity is dependent upon rate of spread, heat of combustion, and total amount of fuel consumed. Areas mapped as light burn intensity include all grasslands and those forested lands that have mixed ground burn or scorched canopy but no crown burn. Areas mapped as moderate burn intensity include forested areas where most 1-hour fuels have been consumed but most 100-hour fuels remain (i.e. - needles are burned but most of the limbs remain). Areas mapped as high burn intensity include forested areas where most 100-hour fuels have been consumed (i.e. - tree limbs are gone such that the trees look like charred telephone poles).

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