United States Department of Agriculture | Forest Service | Salmon NF

Reply To: 2520
5100

Date: September 4, 1991

Subject: Burned Area Emergency Rehabilitation Report - McKim Fire

To: Regional Forester, R-4

Enclosed for your review and action is the revised Burned Area Rehabilitation Report for the McKim Fire. We are recommending watershed treatments which could appropriately be funded with FW 22 and NFFF-P 12 funding.

As shown in Part VI of the rehabilitation report, we are requesting funding of $58,054 for emergency rehabilitation measures of the high and moderate fire intensity burned areas. The amount of moderate and high intensity burn areas is of particular concern to the Forest from a watershed and channel stability.

/s/John E. Burns
JOHN E. BURNS
Forest Supervisor

Enclosure

cc:
District Ranger, D-5
TAF
RRWW

DBaird:glj:rf

FS-2500-8

USDA-FOREST SERVICE Date of Report: September 3, 1991

BURNED AREA REPORT
(Reference FSH 2509.13, Report FS-2500-A)

PART I - TYPE OF REQUEST

1. Type of Report

   [X] A. Funding (Request for estimated FFF funds)
   [ ] B. Accomplishment Report

2. Type of Action

   [X] A. Initial (estimated funding is first requested)
   [ ] B. Interim

      [ ] Updating the initial funding request.
      [ ] Supplying information for accomplishments to date on emergency work underway.

   [ ] C. Final

      [ ] Best estimate for funds needed to complete eligible rehabilitation measure.
      [ ] Following completion of funded work.

PART II - FIRE LOCATION

1. Fire Name (from Form FS-5100-29): McKim
2. Forest Supervisor's Fire No. (from Form FS-5100-29): P46058
3. State: Idaho
4. County: Lemhi
5. Region: 4
6. Forest: Salmon
7. Ranger District: Salmon
8. Date Fire Started: 8/25/91
9. Date Fire Controlled: 8/31/91
10. Estimated Suppression Costs: $1,600,000.00
11. Fire Suppression Damages Repaired with FFF 102 Funds:

    13.9 miles (firelines waterbarred)
    0 acres (firelines seeded)
    Other (identify)

12. Fire Intensity: 2 % (low) 30 % (medium) 12 % (high)
    Burned area estimates = 44 %. Unburned area as of 8/31/91 = 56 % within the indicated control fire line as of 8/31/91

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed No. 003
2. NFS Acres Burned: 4,940
3. Water Repellant Soil: 60 % of NFS acres burned
4. Vegetation Types: Grass/sagebrush, Aspen, Birch, Rose, Douglas-fir
5. Geologic Types: Volcanics, Quartzite, Valley Bottom
   Approx.% of burned landtypes: Volcanics- 55; Quartzite- 37; V. B.- 8

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY (Cont.)

6. Soil Erosion Hazard Rating:

   0 % (low) 50 % (medium) 50 % (high)

7. Erosion Potential: 7 cu. yds/sq. miles
8. Miles of Stream Channels by Regional Order or Classes:1= 9.5; 2= 9.5; 3= 1
9. Miles of Forest Service Trails: 2
10. Miles of Forest Service Roads by Maintenance Levels:

    0 miles (Level I) 8.4 miles (Level II)
    0 miles (Levels III, IV, V)

PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated Vegetative Recovery Period:Aspen= 10; Shrubs= 8; Grass= 5 years.
2. Chance of Success Desired by Management: 90 percent.
3. Equivalent Design Recurrence Period: 10 years.
4. Related Design Storm Duration: 6 hours.
5. Related Design Storm Magnitude: 0.8 inches.
6. Related Design Flow: 10.5 cfsm.
7. Estimated Reduction in Infiltration: 60 percent.
8. Adjusted Related Design Flow: 16.8 cfsm.

PART V - SUMMARY OF SURVEY AND ANALYSIS

1. Skills Represented on Burned Area Survey Team ("x" appropriate boxes):

[X] Hydrology	[X] Soils	[ ] Geology	[X] Range
[X] Timber	[X] Wildlife	[ ] Fire Mgmt.	[ ] Engineering
[ ] Contracting	[X] Local Mgmt.	[ ] Research	[ ] Other- Fisheries

2. Describe Emergency: Due to fire intensity, the landtypes involved, and the close proximity to a significant resident and anadromous stream, the need to reduce ash and sediment delivered to the North Fork and the Main McKim Creek drainage is essential.

3. Emergency Rehabilitation Objective: 1) Reduce the amount of sediment and ash delivered to North Fork and main McKim Creek, and the Salmon River. 2) Enhance the vegetate recovery on burned lands. 3)Provide for retention of woody debris and storage of ash and sediment. 4) Minimize adverse impacts on water quality in McKim Creek and the Salmon River. 5) Minimize soil erosion on the McKim Creek unit of the North Basin C&H Allotment.

4. Probability of Completing Treatment Prior to First Major Damage Producing Storm:

   Land 75 % Channel 75 % Roads _____ % Other _____ %

5. Net Environmental Quality Benefit Index:

   [X] Significant [ ] Not Significant

6. Net Social Well Being Benefit Index:

   [ ] Significant [X] Not Significant

7. Benefit/Cost Ratio: 13.60
8. Net Benefits: $ 351,202
9. Cost Effectiveness Index: [ ] I. [X] II. [ ] III. [ ] IV.

PART VI - ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS AND SOURCE OF FUNDS

NOTE: Emergency rehabilitation is work done promptly following a wildfire and is not to s watershed problems that existed prior to the wildfire.

			NFS Lands			Other Lands			A
Line Items	Units	Unit Cost	No. of Units	FFF 092 $ NFFF FW 22	Other $ NFFF PF12___ ident.	No. of Units	Federal$ ident.	Non-Federal $ identify	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
A. LAND									
a. Seeding- fire	Acres	20	2,098	41,960					
b. Handlines	Acres	50	6.8		340				
c.									
d.									
e.									
B. CHANNELS									
a. Opening water courses	Miles								
b. Stabilizing streambanks	Miles								
c.Silt Fence Barrier	Feet	2.19	6600	14,454					
d.Drop Burned Aspen	Acres	100	13	1,300					
e.									
C. ROADS AND TRAILS									
a.									
b.									
c.									
D. MAJOR STRUCTURES									
a. Preplanned - from Forest Plans									
E. TOTAL				$55,532	$		$	$	$

PART VII - APPROVALS

/s/John B. Burns
Forest Supervisor (Signature)

9/5/91
Date

/S/
Regional Forester (Signature)

Date

United States Department of Agriculture | Forest Service | Salmon NF

Reply To: 2520 Date: September 4, 1991

Subject: Burned Area Emergency Rehab. - McKim Fire

To: Forest Supervisor

Enclosed for your review and approval is the revised Burned Area Report for the McKim Fire. In addition to suppression related damages, the rehabilitation team is recommending some watershed treatments which could appropriately be funded with FW 22 funding. Following is a summary of the effects of the McKim Fire as well as the associated fire suppression damages:

The McKim Fire covered approximately 4,940 acres in the McKim Creek drainage about 25 miles south of Salmon. Major resources affected in the fire area include: watershed values, anadromous fisheries habitat, key big game winter range, and forage for domestic livestock.

Watershed Values

Major drainages involved in the McKim Fire are the North Fork of McKim Creek and Main McKim Creek and their tributaries. Soils in the fire area originate from volcanic, quartzite and valley bottoms that are moderately to highly erosive. Approximately 12 percent of the McKim Fire burned at a high intensity, and 30 percent burned at a moderate intensity. Preliminary field examination of the high and moderate intensity burn areas suggests that infiltration rates have been reduced approximately 60 percent. Until vegetation has been reestablished on these sites and infiltration rates improve, the high intensity burn sites will likely be subject to accelerated erosion and noticeable overland flow. Without rapid revegetation measures, significant surface and channel erosion is anticipated.

Fisheries

Approximately eight miles of second and third order stream channels were inside the burned area. The lower reach of McKim Creek includes an anadromous fisheries spawning area. The Salmon River is about two miles below the burned area. Preliminary sedimentation estimates suggest that fisheries habitat will be severely impacted for several years following the fire. Sedimentation will result from surface erosion from the burned area, and channel erosion from increased peak flows. Sedimentation is expected to be greater than that which can maintain a minimum viable anadromous

population for many years. No significant channel clearing needs (related to fire related debris) were identified.

Range

This fire burned approximately 1300 acres of suitable grazing land within the McKim Creek Unit of the North Basin C & H Allotment. The majority of the burned suitable acres were in sagebrush/bunchgrass types (approximately 1150 acres) with the remainder being in riparian and open growth timber types. This area produced 165 animal unit months of grazing annually. In the sage/grass areas, the predominate species were bluebunch, wheatgrass and Idaho fescue. Due to the intensity of the burn, it appears a large percentage of these plants have been killed. With or without treatment, the area will need to be closed to grazing by domestic livestock for at least two years. With the proposed seeding, it is believed that the suitable grazing areas will respond sufficiently to allow for grazing by domestic livestock at pre-burn rates by the third year. Without the proposed seeding, recovery will be much slower thus resulting in additional loss of livestock forage and extend the period of time the grazing permittee will be required to find supplemental forage.

Wildlife/Big Game

This fire burned a mixture of open, sagebrush/bunchgrass and timbered slopes ranging in elevation from 5400 feet to 8800 feet. Consequently, a large variety of habitat types and wildlife habitats were affected. The immediate and short term effects of such burns on wildlife species and habitats are universally detrimental due to loss of forage and tree cover. By the end of the first growing season after the burn, some forage regrowth will occur, and within three to five years, forage benefits may be realized on the more mesic sites. However, big game cover (i.e. trees) will take several decades to regenerate, and the lower elevation grasslands which were dominated by Idaho fescue will be slow to return to pre-burn levels of productivity. In summary, the most significant effect upon big game is the loss of forage, especially on the lower elevations which serves as winter range for elk, deer, antelope and a few bighorn sheep. However, this fire was relatively small and was confined to the McKim Creek drainage. Consequently, some room for displacement exists.

Commercial Timber

There is basically no commercial timberland within the burned area, only a few small scattered pockets.

Fire Intensity Class

Low - Only two percent of the burned area was in this low fire intensity class. Soil surface litter and humus were not destroyed. The root crowns and surface roots will resprout. The potential surface erosion was not changed by the fire. Grasses and sagebrush will resprout.
Moderate - Up to 40 percent of the area was determined to be in a moderate fire intensity. Even though 30 percent of the area burned as a moderate

fire intensity, the surface soil was crusted, hydrophopic and the root crowns and surface roots of grasses in the intensively burned area were dead and will not resprout. All sagebrush and most of the aspen within the burned area is dead.

High - More than 40 percent of the burned area, about 12 percent, was in this class. The soil surface litter and humus were completely destroyed by fire. The A horizon had a thin crust under the ash. Approximately 60 percent of the rangeland and valley bottom soils were in a hydrophopic condition, including some timberland. Root crowns and surface roots of grasses are dead and will not resprout. All sagebrush within the burned area is dead.

Seeding Mixture and Costs

Approximately 2,098 acres of National Forest lands need to be seeded to establish a vegetative cover and prevent unacceptable on-site and off-site watershed damage. On-site application will be accomplished during the fall (late September or October). Previous seeding experience on the Salmon National Forest has shown that late fall seeding produces the best establishment results.

Following are two seed mixtures recommended for this fire area:

1. High elevation above 7,000 feet

Species	Lbs/Ac	Sod/Bunch	At 85% Pls/Ft^2
1/ Potomac Orchardgrass	3	Sod	38
Annual Rye	3	-	14
2/ Manchar Smoothbrome	3	Sod	7
1/ Timothy	2	Bunch	51
Total	11 Lbs/Ac		110

2. Low elevation below 7,000 feet

Species	Lbs/Ac	Sod/Bunch	At 85% Pls/Ft^2
Fairway Crested Wheatgrass	5	Bunch	20
Paiute Orchardgrass	5	Sod	64
2/ Timothy	2	Bunch	51
Total	12 Lbs/Ac		135

1/ Timothy and Orchardgrass has proven to have grown excellent on the 1985 fires of both Lake Mountain and the Butte Fire - Long Tom Complex and is included for this reason. Intermediate Wheatgrass rarely grows good on the Salmon National Forest.

2/ Manchar Smoothbrome is not in conflict with timber, since there is no commercial timber lands within the watershed.

9/4/91

Seeding Costs

Total Seed Cost	$19,680
Helicopter Application - 24,198 lbs @ $.50/lb	12,099
Helicopter Mob/Demob - 24,198 lbs @ $.18/lb	4,356
Haul seed to site - Labor 3 PD @ $70.00 (12T or 484 50# bags)	210
Seed hauling mileage - 175 miles @ $.75	132
Labor to load copter - 16 Pd @ $70.00	1,120
Mileage for seed application	205
Seed mixing, handling, bagging & shipping (10% of seed cost)	1,968
Total Cost	$39,770

$39,770 Total Costs
2,098 Acres = $18.96/Acre

Fire Damage - Recommended Watershed Protection Measures

Approximately 780 acres of high intensity burn and 1,320 acres of moderate intensity burn sites are recommended for seeding as fire damaged watershed protection measure. The previously recommended seed mixture and rates are listed in the previous section.

Sediment generated from the acres burned will vary according to both fire intensity and burned area positioning within the watershed.

Seeding and the installation of silt fence between the high intensity and the moderate burned acres and the stream channels will greatly reduce erosion and insure the maintenance of long-term soil site productivity. In addition, felled aspen trees will act as sediment traps to reduce sediment delivery to McKim Creek. Sedimentation and the resultant influence on water quality, resident fish habitats, anadromous fish habitats, and irrigation systems will be reduced. Wildlife forage will be enhanced, both on summer and winter ranges. Domestic livestock will be returned to normal stocking rates more quickly with treatment than without treatment.

Cropland and Irrigation Systems

Forest Service personnel have observed sediment and debris from overland flow due to high water in past years from McKim Creek onto pasture land. This site is about 1-1/2 miles below the fire area. There are three separate irrigation ditches out of McKim Creek. One is within the burned area in the north fork of McKim Creek and the other two are below the burned area, 3/4 and 1-1/2 miles on the main McKim Creek.

/s/Gary L. Jackson
GARY L. JACKSON
Rehabilitation Unit Leader
McKim Fire

Enclosure

GJackson:lw

REV. DATE: 05/31/91 CRK

FIRE REHAB BENIFITS WITH & WITHOUT WORKSHEETNOTES:
*** SALMON NATIONAL FOREST ***

TITLE: McKim Fire

1. WITH TREATMENT

TREATMENT: Seed Mod./High Erosion Hazard areas and Firelines, Install Silt Fence Barrier, Cut aspen for a woody sediment trap.

Interest Rate = 8.875 %

DISCOUNTED PRESENT VALUE COSTS: -$63,400.12

DISCOUNTED PRESENT VALUE BENEFITS: $351,202.31

TOTAL ACRES TREATED for Info: 2098

NET PRESENT NET VALUE (WITH TREATMENT): $287,802.19

|------ *** ENTER THIS DATA *** ------| (USE %TOT AC OR FOR MBF OR MILES ENTER ACTUAL AMOUNT UNDER # OF UNITS)

COST / BENEFIT DESCRIPTION ($/acre unless noted)	BEG YR	END YR	UNIT	# OF UNITS	COST/BENEFIT PER UNIT PER YEAR	TOTAL COST/BENEFIT PER YEAR	DISCOUNTED COSTS	DISCOUNTED BENEFITS
Seeding Mod./High Hazard Areas	0	0	ACRE	2098.00	-$18.96	-$39,778.08	-$39,778.08	$0.00
Seeding Hand firelines	0	0	ACRE	6.80	-$50.00	-$340.00	-$340.00	$0.00
Inst. Silt Fence-Sed. Barrier	0	0	FEET	6600.00	-$2.19	-$14,454.00	-$14,454.00	$0.00
Fall Aspen - Sediment Trap	0	0	ACRE	13.00	-$100.00	-$1,300.00	-$1,300.00	$0.00
RES. FISH USER DAYS PRODUCED	1	5	WFUD	25.00	$25.00	$625.00	$0.00	$2,438.94
RES. FISH USER DAYS PRODUCED	6	10	WFUD	50.00	$25.00	$1,250.00	$0.00	$3,188.52
RES. FISH USER DAYS PRODUCED	11	30	WFUD	100.00	$25.00	$2,500.00	$0.00	$9,838.73
STEELHEAD POTENTIAL	1	5	FISH	10.00	$350.00	$3,500.00	$0.00	$13,658.05
STEELHEAD POTENTIAL	6	10	FISH	20.00	$350.00	$7,000.00	$0.00	$17,855.74
STEELHEAD POTENTIAL	11	30	FISH	50.00	$350.00	$17,500.00	$0.00	$68,871.09
SALMON POTENTIAL	1	5	FISH	2.00	$550.00	$1,100.00	$0.00	$4,292.53
SALMON POTENTIAL	6	10	FISH	4.00	$550.00	$2,200.00	$0.00	$5,611.80
SALMON POTENTIAL	11	30	FISH	10.00	$550.00	$5,500.00	$0.00	$21,645.20
WILDLIFE USER DAYS - HUNTING	1	2	WFUD	88.00	$72.59	$6,387.92	$0.00	$11,256.14
WILDLIFE USER DAYS - HUNTING	3	10	WFUD	325.00	$72.59	$23,591.75	$0.00	$110,669.40
WILDLIFE USER DAYS - HUNTING	11	20	WFUD	269.00	$72.59	$19,526.71	$0.00	$53,841.49
WILDLIFE USER DAYS - HUNTING	21	30	WFUD	188.00	$72.59	$13,646.92	$0.00	$16,078.33
AUM's PRODUCED	1	2	AUM	0.00	$8.40	$0.00	$0.00	$0.00
AUM's PRODUCED	3	30	AUM	165.00	$8.40	$1,386.00	$0.00	$11,956.35
IRRIGATION DITCH CLEANOUT	1	0	ACRE	0.00	-$265.00	$0.00	$0.00	$0.00
SEDIMENT REMOVAL COST/YEAR	1	2	TONS	110.00	-$7.29	-$801.90	-$1,413.03	$0.00
SEDIMENT REMOVAL COST/YEAR	3	5	TONS	105.00	-$7.29	-$765.45	-$1,638.22	$0.00
SEDIMENT REMOVAL COST/YEAR	6	25	TONS	102.00	-$7.29	-$743.58	-$4,476.80	$0.00
Total PVC & PVB To Base Year WITH TREATMENT:							-$63,400.12	$351,202.31
NET PRESENT NET VALUE (WITH TREATMENT):								$287,802.19

2. WITHOUT TREATMENT

Interest Rate = 8.875 %
DISCOUNTED PRESENT VALUE COSTS: -$63,400.12
DISCOUNTED PRESENT VALUE BENEFITS: $351,202.31
TOTAL ACRES TREATED: 0 NET PRESENT NET VALUE (WITHOUT TREATMENT): $287,802.19

|------ *** ENTER THIS DATA *** ------| (USE %TOT AC OR FOR MBF OR MILES ENTER ACTUAL AMOUNT UNDER # OF UNITS)

COST / BENEFIT DESCRIPTION ($/acre unless noted)	BEG YR	END YR	UNIT	# OF UNITS	COST/BENEFIT PER UNIT PER YEAR	TOTAL COST/BENEFIT PER YEAR	DISCOUNTED COSTS	DISCOUNTED BENEFITS
Treatment Costs	0	0	ACRE	0.00	$0.00	$0.00	$0.00	$0.00
RES. FISH USER DAYS PRODUCED	1	10	WFUD	25.00	$25.00	$625.00	$0.00	$4,033.20
RES. FISH USER DAYS PRODUCED	11	20	WFUD	50.00	$25.00	$1,250.00	$0.00	$3,446.66
RES. FISH USER DAYS PRODUCED	21	30	WFUD	75.00	$25.00	$1,875.00	$0.00	$2,209.06
STEELHEAD POTENTIAL	1	10	FISH	5.00	$350.00	$1,750.00	$0.00	$11,292.96
STEELHEAD POTENTIAL	11	20	FISH	10.00	$350.00	$3,500.00	$0.00	$9,650.64
STEELHEAD POTENTIAL	21	30	FISH	15.00	$350.00	$5,250.00	$0.00	$6,185.37
SALMON POTENTIAL	1	10	FISH	2.00	$550.00	$1,100.00	$0.00	$7,098.43
SALMON POTENTIAL	11	20	FISH	4.00	$550.00	$2,200.00	$0.00	$6,066.12
SALMON POTENTIAL	21	30	FISH	6.00	$550.00	$3,300.00	$0.00	$3,887.95
WILDLIFE USER DAYS - HUNTING	1	2	WFUD	31.00	$72.59	$2,250.29	$0.00	$3,965.23
WILDLIFE USER DAYS - HUNTING	3	10	WFUD	62.00	$72.59	$4,500.58	$0.00	$21,112.32
WILDLIFE USER DAYS - HUNTING	11	20	WFUD	75.00	$72.59	$5,444.25	$0.00	$15,011.57
WILDLIFE USER DAYS - HUNTING	21	30	WFUD	87.00	$72.59	$6,315.33	$0.00	$7,440.50
AUM's PRODUCED	1	2	AUM	0.00	$8.40	$0.00	$0.00	$0.00
AUM's PRODUCED	3	5	AUM	42.00	$8.40	$352.80	$0.00	$755.06
AUM's PRODUCED	6	10	AUM	52.00	$8.40	$436.80	$0.00	$1,114.20
AUM's PRODUCED	11	15	AUM	75.00	$8.40	$630.00	$0.00	$1,050.46
AUM's PRODUCED	16	20	AUM	120.00	$8.40	$1,008.00	$0.00	$1,098.65
AUM's PRODUCED	21	25	AUM	150.00	$8.40	$1,260.00	$0.00	$897.69
AUM's PRODUCED	26	30	AUM	165.00	$8.40	$1,386.00	$0.00	$645.48
IRRIGATION DITCH CLEANOUT	1	0	ACRE	15.10	-$265.00	-$4,001.50	-$3,675.32	$0.00
SEDIMENT REMOVAL COST/YEAR	1	2	TONS	838.00	-$7.29	-$6,109.02	-$10,764.69	$0.00
SEDIMENT REMOVAL COST/YEAR	3	5	TONS	754.00	-$7.29	-$5,496.66	-$11,763.96	$0.00
SEDIMENT REMOVAL COST/YEAR	6	10	TONS	603.00	-$7.29	-$4,395.87	-$11,213.07	$0.00
SEDIMENT REMOVAL COST/YEAR	11	15	TONS	453.00	-$7.29	-$3,302.37	-$5,506.36	$0.00
SEDIMENT REMOVAL COST/YEAR	16	20	TONS	250.00	-$7.29	-$1,822.50	-$1,986.40	$0.00
SEDIMENT REMOVAL COST/YEAR	21	25	TONS	102.00	-$7.29	-$743.58	-$529.77	$0.00
Total PVC & PVB To Base Year WITHOUT TREATMENT:							-$45,439.56	$106,961.53
NET PRESENT NET VALUE (WITHOUT TREATMENT):								$61,521.97

3. PRESENT NET VALUE and B/C RATIO

Present Value of COSTS and Present Value of BENEFITS: -$17,960.56 $244,240.77
PROJECT PNV: $226,280.21
BENEFIT COST RATIO: 13.60

REMARKS: Benefits are from the following sources: Salmon & Steelhead: Columbia Basin General Economic values; Wildlife WFUDS from 1990 RPA, Range AUM's from comparable state leases; Sediment Removal Cost and Fisheries WFUDS from FY 90 TSPIRS Report; Irrigation Ditch Cleanout - calculated value.