MEADOW CREEK

I. PURPOSE

Purpose of this Burned Area Report, Form 2500-8, is to determine needs, analyze alternatives and request funds for emergency rehabilitation of the area burned by the Meadow Creek Fire. It is a combined summary to meet requirements for a burned area survey report, environmental analysis report, rehabilitation plan, request for funds and accomplishment report.

The fire began Friday, July 29, 1977, on the Rifle Ranger District, White River National Forest. It was detected Sunday, July 31, 1977, and was controlled on August 5, 1977, after burning 1,069 acres. Lightning was determined to have started the fire.

Section 2523 of the Forest Service Manual requires that rehabilitation efforts begin immediately following destruction of vegetative cover by a wildfire to minimize the loss of soil and on-site productivity, water control and quality and threats to life and property.

II. PROCEDURE

An interdisciplinary team surveyed the burn area August 4, 1977, to:

1. Assess on-the-ground conditions.
2. Identify and define the emergency.

3. Locate geographically potential treatment measures in relation to observed conditions and the existing emergency.

The team mapped the burned area into homogeneous vegetation and burn intensity areas. Long-range objectives were then determined for each area which would best complement the key values of wildlife habitat, fish habitat and domestic livestock grazing. Short-range objectives will be to protect the soil and water resource by establishing a good ground cover of 30 percent to 50 percent density by the end of three years where sedimentation is expected to be excessive.

The Surface Component Map shows the location of the types. Analyses for each of the six types was done by the I.D. team. The description of the types is summarized in Table I. Three alternatives emerged as being feasible for each of the types.

A. Do Nothing - This alternative implies that natural regeneration and reinvasion will meet rehabilitation needs.

B. Seed Annuals - This alternative implies that rapid cover is needed but for a short period of time. Perennial grasses, forbs, browse or trees would be needed in the future to maintain soil and watershed values.

C. Seed Perennials - This alternative implies that seeding is needed to accelerate natural processes. Perennials are expected to be long-lasting and have semi-permanent soil holding properties.

Evaluation of the responses expected from each treatment for each type were analyzed by the I.D. team. Table II summarizes this analysis. Quantitive estimates of economic, environmental and social results anticipated from the alternatives were developed (Exhibit I of the Burned Area Report). Cost/benefit analyses were run for each of the three treatments. Explanation of the rationale used in filling out Form 2500-8 is attached.

III. RECOMMENDATIONS

Alternative C was selected, because with benefit/cost ratio of 5.4/1, it best meets the short-range objectives of protecting soil and water values. In addition, by application of 033 Forest project funds and contributed money from the Colorado Division of Wildlife, both erosion control and long-term wildlife habitat objectives can be met. The funds needed to accomplish this alternative are summarized below:

Emergency Rehabilitation Funds (094)	$16,980
White River National Forest Funds (033)	3,260
Cooperation from Colorado Division of Wildlife	1,090
Total	$21,330

TABLE I

Description of Types Within Burn Area As Delineated on the Meadow Creek Map

Type	Area (Acres)	Vegetation	Average Slope (Percent)	Aspect	Intensity of Burn	Expected Response Without Treatment
I	36	Spruce-Fir with Intermixed Aspen	30	West	Moderate	Aspen is expected to readily reestablish itself. Sedimentation is not expected to be critical to downstream uses and fish habitat.
II	80	Mixed Conifer with Scattered Aspen	50	East	Extreme	Revegetation is expected to proceed at a slow rate. Stream sedimentation is critical due to the intensity of the burn, steep slopes and close proximity of the area to the stream.
III	312	Douglas-Fir and Engelmann	70	East Southwest	Moderate	Revegetation is expected to proceed at a slow rate. Predominance of rock and minimal surface area. Suggests minimal erosion potential.
IV	188	Spruce-Fir	60	West	Extreme	Revegetation is expected to proceed at a slow rate. Some stream sedimentation will take place because of steep slopes and close proximity to the stream. Erosion rates will not be so critical as Type II due to the rock ground cover.
V	456	Spruce-Fir with Low Density Aspen	50	West East	Extreme	Revegetation is expected to proceed at a slow rate. Stream sedimentation is critical due to the large area of intense burn.
VI	304	Aspen, Snowberry, Forbs and Grasses	30	East West	None to Spotty	The lack of significant burned area in this type will produce little sediment above natural rate.

TABLE II - ALTERNATIVES

Objectives	Alternative A	Alternative B	Alternative C
Short Term	Allow natural processes to occur.	Erosion control.	Erosion control and protect fishery.
Long Term	Allow natural processes to occur.	Provide big game cover.	Protect fishery and provide some big game cover and browse.
Action - General	No action after FFF 102.	Revegetate with lodgepole pine and annual grasses.	Revegetate with perennial grasses. Lodgepole and Douglas fir tublings planted in critical big game areas.
Areas			
I Spruce-Aspen 33 Acres	Allow natural succession.	Allow natural succession. This was a moderate patchy burn area. Aspen, grasses and forbs will re-establish themselves.	Allow natural succession. This was a moderate patchy burn area. Aspen, grasses and forbs will re-establish themselves.
II Mixed Conifer 80 Acres	Allow natural succession.	Seed annual grasses and lodgepole pine.	Seed native perennial grasses.
III Douglas Fir and Spruce 312 Acres	Allow natural succession.	Allow natural succession. Steep canyons make seeding difficult. Large amount of rock will keep sediment rates low.	Allow natural succession. Steep canyons make seeding difficult. Large amount of rock will keep sediment rates low. The C.D.O.W. will provide browse seed for elk and bighorn sheep in this area. (Approximately 100 acres will be seeded.)
IV Spruce 188 Acres	Allow natural succession	Seed annual grasses and lodgepole pine.	Seed native perennial grass and lodgepole pine.
V Spruce 456 Acres	Allow natural succession.	Seed annual grasses and lodgepole pine.	Seed perennial grass. Plant 80 acres of lodgepole pine tublings.
VI Aspen-Snowberry 304 Acres	Allow natural succession.	Allow natural succession.	Allow natural succession.

41-2
USDA Forest Service

Exhibit 1 - Selected Alternative C

BURNED AREA REPORT

Specific instructions for use of this form are attached. Overall instructions are in FSM 2523 and FSH 2509.13, Burned-Area Emergency Rehabilitation Handbook.

1. Fire name	2. Request [X] Initial [ ] Interim [ ] Final Accomplishment report [ ] FFF [ ] Other	3. Date of report
Meadow Creek		August 5, 1977

4. State	5. County	6. Congressional District	7. Region	8. Forest	9. Ranger District
CO	Garfield	4	02	White River	Rifle

10. Supervisor fire no.	11. Date fire started	12. Date controlled	13. Estimated suppression cost
0053	July 31, 1977	August 5, 1977	$ 300,000.00

14. Fire suppression damages repaired with FFF 102 funds
4 mi. firelines waterbarred 3 acres firelines seeded 3 acres campground

15. Fuel type fire intensity
0% light 40% moderate 60% extreme

NATIONAL FOREST SYSTEM PROBLEM INVENTORY

16. Watershed no.	17. NFS acres burned	18. Water repellant soil
59	1,069	-0-% of NFS area burned

19. Vegetation types Spruce: Spruce-Fir, Aspen, Aspen-Snowberry, Snowberry, Spruce-Aspen

20. Geologic types
Limestone and Sandstone

21. Soil erosion hazard rating	22. Erosion potential	23. Storm peak potential
.47 Inches High	13,459 cu. yds./sq. mi.	10 cu. ft./sec./sq. mi.

24. Miles of stream channels by Regional order or classes
Meadow Creek 1.6 Miles (First Order Stream) - Intermittent Streams 1.8 Miles

25. Miles of Forest Service roads by maintenance levels
-- mi. level I -- mi. level II --mi. levels III, IV, V

CLIMATIC DATA

26. Annual precipitation	27. Design storm rainfall during 6 hour period	
30-35 inches	1.1 inches 2 yr. frequency	1.9 inches 10 yr. frequency
28. Annual runoff	29. Maximum 30 minute intensity storm	
14 inches	.5 inches 2 yr. frequency	1.0 inches 10 yr. frequency

SUMMARY OF SURVEY AND ANALYSIS

30. Skills represented on burned area survey team (check)
[X] Hydrology [X] Soils [ ] Geology [X] Range [X] Timber [X] Wildlife [X] Fire Management
[ ] Engineering [X] Contracting [ ] Local Management [ ] Research

31. Describe emergency This fire burned 1,069 acres in a valuable and highly erodible watershed. Failure to immediately revegetate this area would result in severe losses to watershed, fisheries, downstream diversion structures and agricultural land.

32. Emergency rehabilitation objective To maintain soil stability which will minimize degradation of water quality in Meadow Creek, Deep Creek and Main Elk Creek. Such reduction will reduce sediment for fisheries and impairment of downstream irrigation systems, key values are wildlife and range.

33. Personnel needs for rehabilitation project on NFS lands
man-years reassigned for $ 2,400.00 man-years new hires for $ --

34. Probability of completing treatment prior to first major damage-producing storm
Land 60 % Channel 60% Roads -- % Other --%

35. Net environmental quality benefit index	36. Net social wellbeing benefit index
[X] Significant [ ] Not Significant	[ ] Significant [X] Not Significant
37. Benefit/cost ratio	38. Cost effectiveness index (check one)
5.4/1	[ ] I [ ] II [X] III [ ] IV

39. Forest Supervisor approval & date	Regional Forester approval & date	Date funding approved in WO

2500-8 (5/76)

ON-SITE AND OFF-SITE DEVELOPMENTS SUBJECT TO HAZARDS FROM FLOODS, FLOATING DEBRIS, EROSION, OR SEDIMENT BECAUSE A WATERSHED IS IMPAIRED BY WILDFIRE. (Do not include value of resources damaged or destroyed by the fire as reported on Form 5100-29.)

	No. of units	Estimated value (dollars)
40. Community and urban development	people -0-	-0-
41. Municipal water supply	people served	-0-
42. Transportation systems	miles 1.1	$650.00
43. Water distribution systems (irrigation)	miles 6	$10,375
44. Agricultural development (crops, facilities)	acres 200	$40,000
45. Industrial development (dams, power, manufacturing)	number -0-	-0-
46. Power and communication lines	miles -0-	-0-
47. Recreation development	PAOT -0-	-0-
48. Fish habitat	miles 22	$19,000
49. Other (specify)	-0-	-0-
TOTAL HAZARD POTENTIAL		$90,025

SUMMARY OF EMERGENCY REHABILITATION NEEDS BY LAND OWNERSHIP

Land ownership	50. Acres burned	51. Emergency rehab needs				Source of emergency rehabilitation funds for needed work (dollars)					
		Land acres	Channel miles	Road miles	Other	52 FFP 094	53 216	54 FR&T	55 Other Fed. (Name)	56 Non-Fed. (Name)	57 Total
FEDERAL NFS	1069	724	-0-	-0-	--	16980			(FFF) 102 370 (P&M 033) 3260	CO Division of Wildlife 1090	
Other (name)											
Subtotal	1069	724				16980			3630	1090	21700
NON-FEDERAL State and county											
Private											
Indian											
Subtotal											
TOTAL	1069	724	-0-	-0-	--	16980			3630	1090	21700

ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS AND SOURCE OF FUNDS
(Emergency rehabilitation is work done promptly following a wildfire and is not to solve watershed problems that existed prior to the wildfire.)

	Units	Unit cost	NFS Lands: No. of units NFS	NFS Lands: FFF 094 dollars	NFS Lands: Other dollars (Name)	Other Lands: No. of units other	Other Lands: Federal dollars (Name)	Other Lands: Non-Fed. dollars (Name)	Total dollars all lands
58. LAND									
Fire Area * Seeding (Grass)	Acres	24.50	724	16980	D.O.W. 1090				18070
Rehabilitation Camp and Fireline	Acres	74	5		(FFF 102) 370				370
Lodgepole Pine Seed and Tublings	Acres	21.7	150		(P&M 033) 3260				3260
59. CHANNELS - None									
Opening water courses	Miles								
Stabilizing streambanks	Miles								
60. ROADS - None									
Ditch cleaning	Miles								
61. MAJOR STRUCTURES None									
Preplanned structures from Unit Plans	Each								
		TOTAL		16980	4720				21700

*Fire will be seeded with the following grass mix:

Slender Wheat Grass	6	lbs./acre
Perennial Rye	6	lbs./acre
Smooth Brome (Manchar)	6	lbs./acre
Orchard Grass	1.5	lbs./acre
Hard Fescue	1.5	lbs./acre
Timothy	.5	lbs./acre
Dutch White Clover	.5	lbs./acre
Total	22	lbs./acre

The use of native versus introduced grass species was considered. Since much of the area is a Candidate Study Area, it was decided that native species should be used provided that they were available and would produce the desired result. However, since native species are not available in the quantities needed and immediate revegetation is paramount for the protection of soil water and private property, non-native grass will be used.

ALTERNATIVE C *Benefit Cost Ratio 5.4/1

USDA-Forest Service
Fire Name

Exhibit 1 -- Continued
BURNED AREA REPORT
Date of Report

41-5
Page 4

EXAMINING IMPACTS OF MANAGEMENT ALTERNATIVES FOR AN EMERGENCY PROGRAM

62. ECONOMIC BENEFITS SUMMARY WITH ____ PERCENT INTEREST RATE

ECONOMIC CRITERIA	Units of measure	Without treatment		With treatment		Difference in present value $
		No. of units	Present value $	No. of units	Present value $	
SEDIMENTATION IMPACTS						
Downstream storage	Acre Feet	9.9	3113	3.6	1176	$ 1937
Sediment removal	Tons	19404	87168	7056	32294	54874
Fish habitat	Years of Fishing Loss	5	42137	3	26774	15363
Water quality	Incorporated in fish habitat and sediment above.					
FLOOD WATER DAMAGE						
Land	Acres	200	48000	25	5000	43000
Property	Headgate Damage	7	1400	1	200	1200
OTHER						
TOTAL DOLLARS						116374

63. ENVIRONMENTAL QUALITY BENEFIT INDEX

ENVIRONMENTAL CRITERIA	Weight Factor	Without treatment		With treatment		Difference	
		Actual	Weighted	Actual	Weighted	Actual	Weighted
Erosion and sediment	10	3	30	1	10	2	20
Aesthetic land quality	2	1	2	1	2	0	0
Water quality	7	3	21	2	14	1	7
Ecological benefits	3	2	6	1	3	1	3
Fish & wildlife habitat	8	3	24	1	8	2	16
Other							
TOTAL	30		83		37		46
Average weighted index			2.8		1.2		1.5
Net environmental quality benefit index							1.6

64. SOCIAL WELLBEING BENEFIT INDEX

SOCIAL CRITERIA	Weight Factor	Without treatment		With treatment		Difference	
		Actual	Weighted	Actual	Weighted	Actual	Weighted
Life, health, safety	1	1	1	1	1	0	0
Employment	1	1	1	1	1	0	0
Recreational opportunity	1	1	1	1	1	0	0
Economic stability	10	2	20	1	10	1	10
Income distribution	1	1	1	1	1	0	0
Preserve special sites	1	1	1	1	1	0	0
Other							
TOTAL	15		25		15		10
Average weighted index			1.7		1.0		.7
Net social wellbeing benefit index							.7

2500-3 (5/76)

ALTERNATIVE B *Benefit Cost Ratio 4.0/1

Exhibit 1 -- Continued

USDA-Forest Service
Fire Name

BURNED AREA REPORT

Date of Report

41-5
Page 4

EXAMINING IMPACTS OF MANAGEMENT ALTERNATIVES FOR AN EMERGENCY PROGRAM

62. ECONOMIC BENEFITS SUMMARY WITH ____ PERCENT INTEREST RATE

ECONOMIC CRITERIA	Units of measure	Without treatment		With treatment		Difference in present value $
		No. of units	Present value $	No. of units	Present value $	
SEDIMENTATION IMPACTS						
Downstream storage	Acre Feet	9.9	3113	54	1664	$ 1449
Sediment removal	Tons	19404	87168	10584	46572	40596
Fish habitat	Years of Fishing Loss	5	42137	4	34689	7448
Water quality	Incorporated in fish habitat and sediment above.					
FLOOD WATER DAMAGE						
Land	Acres	200	48000	50	10000	38000
Property	Headgate Damage	7	1400	2	400	1000
OTHER						
TOTAL DOLLARS						88493

63. ENVIRONMENTAL QUALITY BENEFIT INDEX

ENVIRONMENTAL CRITERIA	Weight Factor	Without treatment		With treatment		Difference	
		Actual	Weighted	Actual	Weighted	Actual	Weighted
Erosion and sediment	10	3	30	2	20	1	10
Aesthetic land quality	2	1	2	1	2	0	0
Water quality	7	3	21	2	14	1	7
Ecological benefits	3	2	6	1	3	1	3
Fish & wildlife habitat	8	3	24	2	16	1	8
Other							
TOTAL	30		83		55		28
Average weighted index			2.8		1.8		.9
Net environmental quality benefit index							1.0

64. SOCIAL WELLBEING BENEFIT INDEX

SOCIAL CRITERIA	Weight Factor	Without treatment		With treatment		Difference	
		Actual	Weighted	Actual	Weighted	Actual	Weighted
Life, health, safety	1	1	1	1	1	0	0
Employment	1	1	1	1	1	0	0
Recreational opportunity	1	1	1	1	1	0	0
Economic stability	10	2	20	1	10	1	10
Income distribution	1	1	1	1	1	0	0
Preserve special sites	1		1	1	1	0	0
Other							
TOTAL	15		25		15		10
Average weighted index			1.7		1.0		.7
Net social wellbeing benefit index							.7

2500-3 (5/75)

*Cost to implement this alternative is approximately the same as Alternative C, $21,700.

USDA-FOREST SERVICE

PROJECT WORK PLAN

1. UNIT: White River National Forest

SUB-UNIT: Rifle Ranger District

PROJECT NO.: Rehabilitation

FISCAL YEAR: 1977

PROJECT NAME, LOCATION & DESCRIPTION:

Meadow Creek Fire Rehabilitation

Townships 3 and 4 South, Range 91 West, Sections 34, 35, 2, 3, 11.

Protection and restoration of approximately 800 acres of burned areas and to protect associated on-site and downstream values.

2. MANPOWER (List by Name)	DAYS	DAILY RATE	PLANNED COSTS TO BE FINANCED	PLANNED COSTS CONTRIBUTED
PROJECT LEADER OR FOREMAN: Project Leader	3	60 00	180	
3 Man Crew	2	120 00	240	
Heliport Manager	2	50 00	100	
Colorado D.O.W.	2	80 00	-0-	160
Interdisplinary Planning Team	4	320 00	1280	
Fence Crew (2)	2	80 00	160	
2 Man Evaluation Team	2	120 00	240	
PER DIEM, TRAVEL AND MEALS				

EQUIPMENT (F.S. and Rental)	MONTHS F.O.R.	HOURS OR MILES	F.O.R. OR USE RATE		
5892 3/4-Ton Pick-Up		200	19	40	
4408 1-Ton Stake Truck		400	15	60	
5685 1/2-Ton Pick-Up		200	11	30	

MATERIALS AND SUPPLIES	QUANTITY TO BUY	QUANTITY ON HAND	UNIT PRICE		
Browse Seed C.D.O.W.					930
Grass Seed Mix	1600		.70	1150	
Tree Seed			24./lbs.	960	
Tree Tublings				2300	
Electric Fence				500	
Miscellaneous Other				500	
CONTRACT: Helicopter and Hopper				2500	
TOTAL PLANNED COST	FINANCED + CONTRIBUTED 21,330			20240	1090

BEGIN WORK:

COMPLETE WORK:

SPECIAL SKILLS NEEDED	DAYS	WHEN

4. PROPOSED BY: DATE:

STAFF REVIEW BY:

APPROVED BY:

FUNDS ALLOCATED BY:

3. FINANCE AND ACCOUNTING DATA

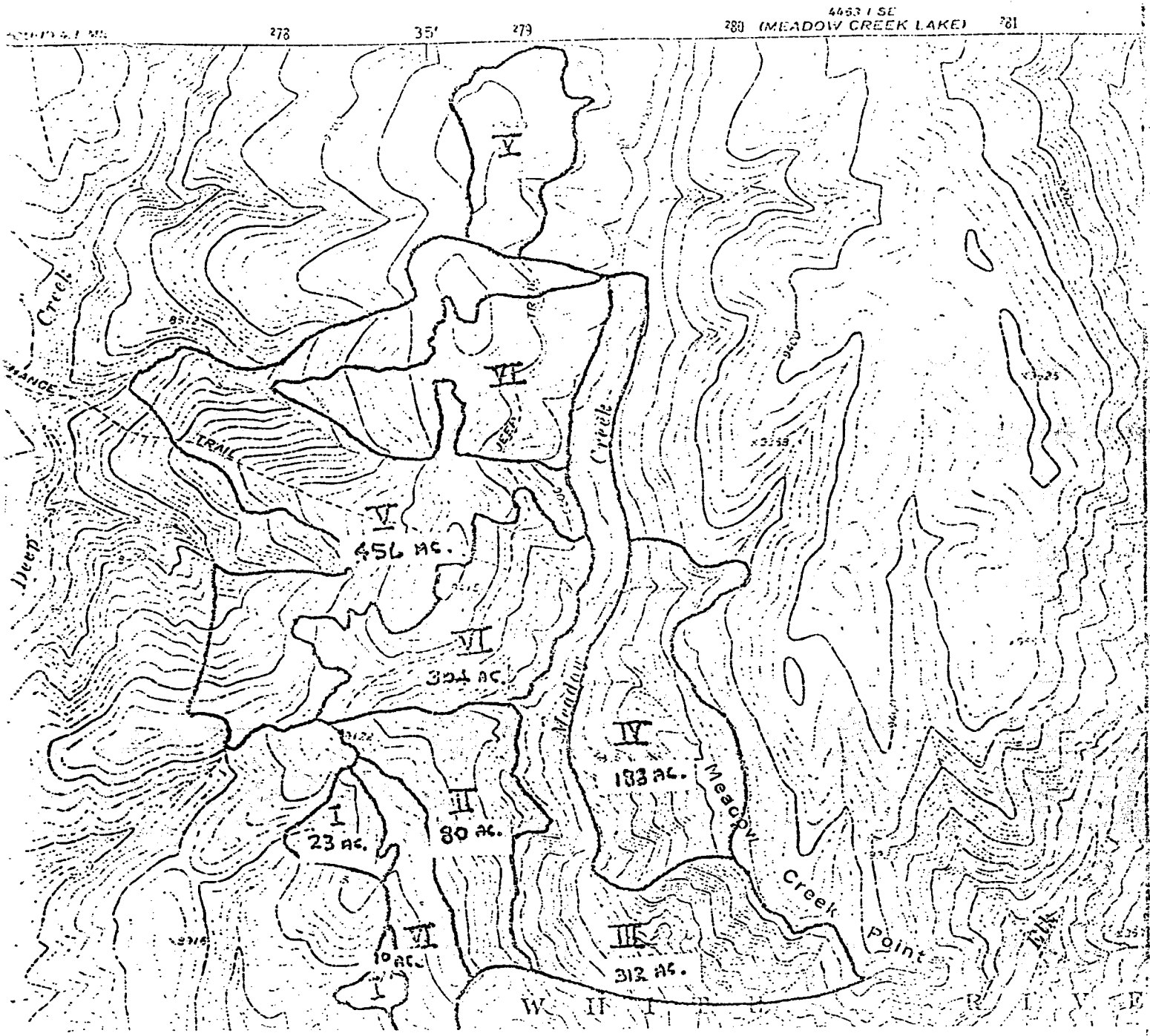
APPROPRIATION	STAT CODE	ACCOUNT OR ACTIVITY	FUNCTION MAJOR	FUNCTION SUB	SUB-UNIT	DOLLARS PLANNED AND ALLOCATED
702			094			16980
702			033	01	08	3260
TOTAL ALLOCATED						

5. ACCOMPLISHMENT RECORD

ACCOMPLISHMENT RECORD	DATE	INITIAL

1300-4 (1/73)

MAP I

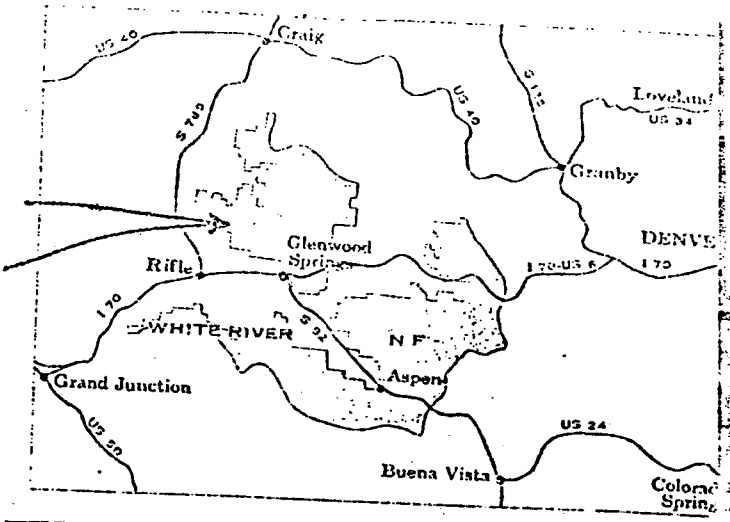


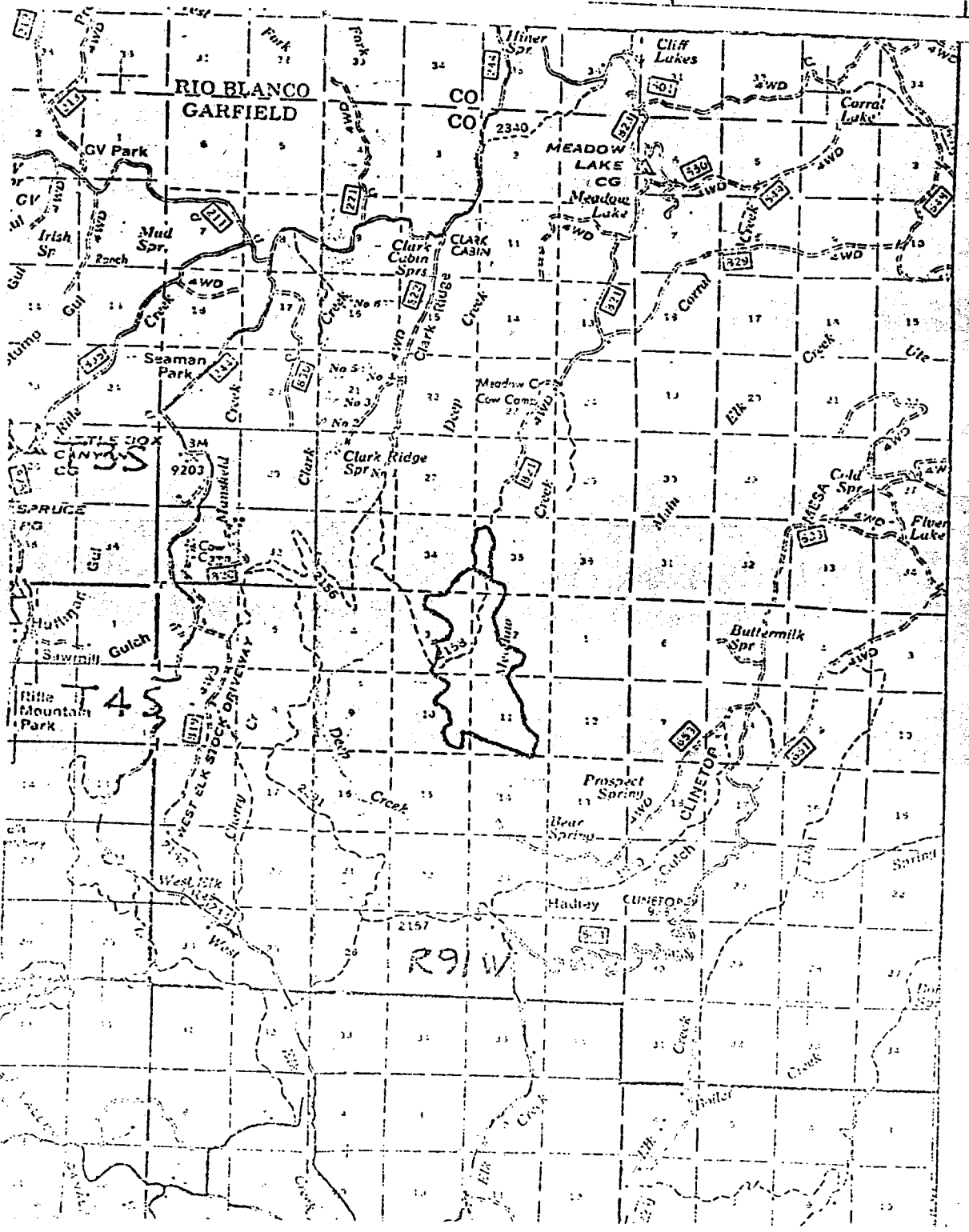
LEGEND

Type	Acres	Burn Intensity	Pre-Fire Vegetation Type	Topography
I	33	Moderate	Spruce-aspen	Moderately steep sideslope
II	80	Extreme	Mixed conifer	Very steep sideslopes
III	312	Moderate	Douglas fir and spruce	Canyon lands
IV	133	Extreme	Spruce	Steep sideslopes
V	456	Extreme	Spruce	Steep sideslopes
VI	324	None or spots	Aspen-Spruce	Gently sloping to Steep

MAP II

MEADOW CK.
FIRE





PLANT SPECIES LIST FOR MEADOW CREEK FIRE

Trees

POP	Aspen
FS	Engelmann Spruce
AF	Subalpine Fir
DF	Douglas-Fir

Shrubs

SYM	Snowberry
PRU	Chokecherry
COR	Dogwood
CRY	Rabbitbrush
POT	Shrubby Cinquefoil
SAM	Elderberry
RIB	Currant
QUE	Oakbrush
SAL	Willow
	Ceonothus
Acgl	Rocky Mountain Maple

Grasses

STI	Needlegrass
POA	Bluegrass
AGR	Wheatgrass
PHL	Timothy
BRO	Brome
ELY	Wildrye
FES	Fescue
Kocr	Junegrass
DES	Tufted Hairgrass
CAR	Sedge
	Alpine Foxtail
Cihy	Bottlebrush Squirreltail
	Redtop

Forbs

Acla	Western Yarrow
ASR	Aster
LIG	Loveroot (Osha)
EPI	Fireweed
CIR	Thistle
SEN	Senecio
LUP	Lupine
	Meadowrue
HEL	Little Sunflower
GIL	Scarlet Gilia
VIC	Vetch
POT	Herbaceous Cinquefoil
PEN	Penstemon
	Horsemint
RUD	Western Coneflower
CAS	Paintbrush
DEL	Tall Larkspur
BID	Beggarsticks
	Sneezeweed
	Bedstraw
GER	Geranium
Taof	Dandelion
WYE	Wyethia
	Monkshood
	Dock
	Monument Plant
	Salsify
ERG	Sulfur Flower
	Lamb's Quarters
RED	Bracted Lousewort
LAT	Aspen Peavine
ROS	Rose
	Elkweed
	Toadflax
Arco	Heartleaf Ornica
FRA	Strawberry
VIO	Violet
	Sweet Anise
	Lily-of-the-Valley
Mare	Oregon-Grape

MEADOW CREEK INTERDISCIPLINARY

Rehabilitation Team

Gary Brunk - Forester, F. S.
Scott Fifer - Hydrologist, F. S.
Stu Herkenhoff - Range and Wildlife, F. S.
Skip Kowalski - Wildlife, F. S.
Tony Svatos - Soils, F. S.

Don Crane - Wildlife, D. O. W.