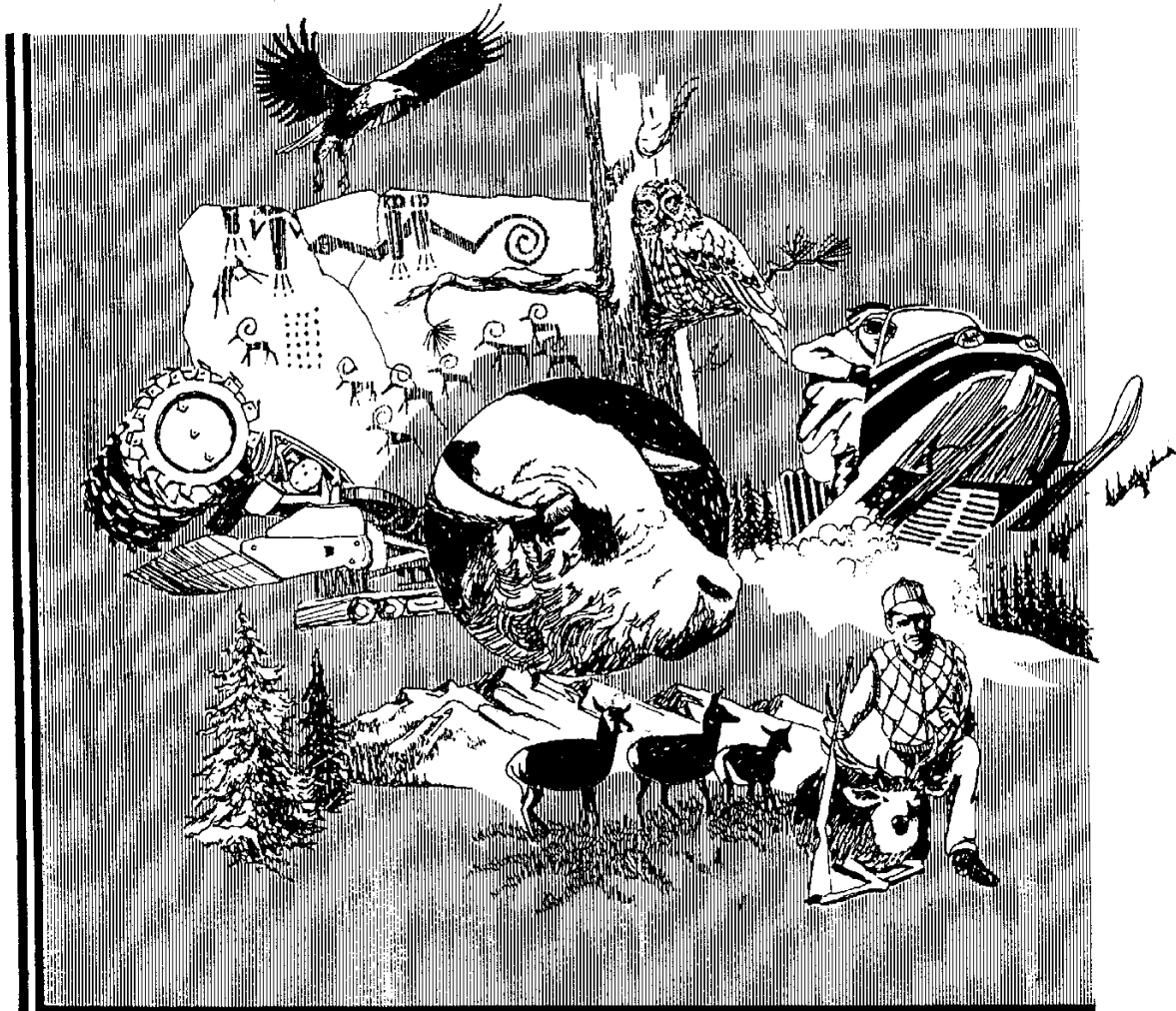


# LAND AND RESOURCE MANAGEMENT PLAN



## MANTI-LASAL NATIONAL FOREST



United States  
Department of  
Agriculture



Forest  
Service

# **PREFACE**

This Land and Resource Management Plan has been developed for the Manti-LaSal National Forest. For information pertaining to the development of this Forest Plan, details can be provided by :

Forest Supervisor  
Manti-LaSal National Forest  
599 West Price River Drive  
Price, Utah 84501

## **Applicable Laws and Regulations**

The principal acts providing direction in developing this Land and Resource Management Plan are:

1. Multiple Use and Sustained Yield Act of 1960
2. National Environmental Policy Act (NEPA) of 1969
3. Forest Rangeland Resources Planning Act (RPA) of 1974
4. National Forest Management Act (NFMA) of 1976

RPA requires the Forest Service to conduct an assessment or inventory of the Nation's renewable resources and develop a program for use of the resources. The assessment includes the determination of the capability of all National Forest System lands to provide various goods and services. It also includes an estimation of future demands for those goods and services.

## **Public Review and Appeal**

If any particular provision of this proposed action, or the application thereof to any person or circumstances, is held invalid, the remainder of the proposed action and the application of such provision to other persons or circumstances shall not be affected thereby.

The right to request an administrative appeal of the Regional decision to approve a forest plan is contained in 36 CFR 211.18 (d), which describes the appeal process. The appeal is limited to the issues raised during the planning process. Intermediate decisions made during the planning process prior to the approval or disapproval decisions are not reviewed.

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# KEY TO ABBREVIATIONS

Many of the terms used in Forest Planning are often abbreviated in tables and text to conserve space. Those abbreviations are listed below. Terms with an asterisk have a complete definition in the Glossary.

Ac.Ft.*	-Acre-feet	MVP	-Minimum Viable Population
AF	-Alpine fir	NA	-No Action Alternative
AMS	-Analysis of the Management	NEPA	-National Environmental Policy Act
ATV	Situation	NFS	-National Forest System
AUM*	-All Terrain Vehicle	NFMA	-National Forest Management Act
BACT*	-Animal Unit Month	NPB*	-Net Public Benefit
Bd. Ft.*	-Best Available Control Technology	ORV's*	-Off-Road Vehicles
BCI*	-Board Foot	PA	-Preferred Alternative
BCR*	-Biological Condition Index	PAI	-Periodic Annual Increment
BMP*	-Benefit Cost Ratio	PAOT*	-Persons at One Time
BTU	-Best Management Practice	PNV*	-Present Net Value
CFR*	-British Thermal Unit	PP	-Ponderosa Pine
Cu. Ft.*	-Code of Federal Regulations	PVB*	-Present Value of Benefits
DAT*	-Cubic Foot	PVC*	-Present Value of Costs
DBH*	-Diversity Index	RARE II*	-Roadless Area Review and Evaluation No. Two
DF	-Diameter at Breast Height	RIM*	-Recreation Information Management
DIB	-Douglas Fir	RPA*	-Forest and Rangeland Renewable Resource Planning Act
EIS	-Diameter Inside Bark	RNA*	-Research Natural Area
FIL*	-Environmental Impact Statement	ROS*	-Recreation Opportunity Spectrum
FSH	-Fire Intensity Level	ROW	-Rights-of-Way
FSM	-Forest Service Handbook	RSM*	-Reduced Service Management
G.A.	-Forest Service Manual	RVD's*	-Recreation Visitor Days
GAWS	-General Administration	SDI	-Stand Density Index
HCI*	-General Aquatic Wildlife Systems	SP	-Spruce
HRU*	-Habitat Condition Index	S&W	-Soil and Water
ID*	-Human Resource Unit	SPM*	-Semiprimitive Motorized
lb(s)	-Interdisciplinary Team	SPNM*	-Semiprimitive Nonmotorized
M	-Pounds	SRU*	-Social Resource Unit
Max	-Thousand	TEP*	-Trade-off Evaluation Process
MBF*	-Maximum	TSI*	-Timber Stand Improvement
MC	-Thousand Board Feet	UDWR	-Utah Division of Wildlife Resource
MCF	-Mixed Conifer	VQO*	-Visual Quality Objective
MIS*	-Thousand Cubic Feet	WF	-White Fir
MKT	-Management Indicator Species	WFUD's	-Wildlife and Fish User Days
MM	-Market	ZOI*	-Zone of Influence
MMBF	-Million		
MMCF	-Million Board Feet		
MRVD	-Million Cubic Feet		
	-Thousand Recreation Visitor Days		



# CHAPTER I

## INTRODUCTION



# CHAPTER I INTRODUCTION

## Purpose of the Forest Plan

The Manti-LaSal National Forest Land and Resource Management Plan (Forest Plan) guides all natural resource management activities and establishes management Standards and Guidelines for the Manti-LaSal National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

The Forest Plan embodies the provisions of the National Forest Management Act (NFMA), the Regulations, and other guiding documents. The General Direction and Standards and Guidelines are a statement of the Forest Plan's Management Requirements; however, the project outputs, services, and rates of implementation are dependent on the annual budgeting process.

## Relationship of the Forest Plan to Other Documents

Development of the Forest Plan takes place within the framework of Forest Service Regional and National planning. The relationship among the different planning levels is shown as follows:

Congressional Acts

National level

Forest Service planning through the  
Renewable Resource Assessment and Program (RPA)

Regional planning level through the  
Regional Guide for the Intermountain Region

Forest level planning through the  
Manti-LaSal National Forest  
Land and Resource Management Plan

The RPA Program sets the National direction and output levels for the National Forest System lands. It is based on suitability and comparability information from each Forest Service Region.

Each Forest Service Region Distributes its share of national production targets to each of its Forests. The share each National Forest receives is based on detailed information gathered at the Forest level.

The Forest Plan validates or provides a basis for changing production levels assigned by the Intermountain Region. Activities and projects are planned and implemented by the Forest to carry out the direction developed in the Forest Plan. Information from all the National Forests in the Intermountain Region was used in developing the Intermountain Regional Guide.

This Forest Plan is the selected alternative of the Environmental Impact Statement (EIS) and is based on the various considerations which have been addressed in the EIS. The planning process and the analysis procedure which were used in developing this Forest Plan, as well as the other alternatives that were considered, are described or referenced in the EIS. Activities and projects will be tied to the accompanying EIS as provided for in 40 CFR 1502.20. The local project environmental analysis will use the data and evaluations in the Forest Plan and EIS as its basis.

Analyses of environmental consequences of local projects are done in conformance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations (40 CFR 1500-1508).

Resource management direction contained in the Forest Service Manual and Handbooks provides Direction, Standards, and Guidelines for the implementation of this Forest Plan.

## **Organization of the Forest Plan Document**

This Forest Plan establishes the long-term direction for managing the Manti-LaSal National Forest. It also serves to inform prospective users, as well as other interested publics, that any occupancy or use of the National Forest System lands must be consistent with the management requirements listed in Chapter III of the Forest Plan.

The Forest Plan consists of this document, Management Unit Maps, and the accompanying Record of Decision. Maps illustrating the location of Management Units is in an envelope inside the back cover of this document. The Forest Plan contains the overall management direction and describes the activities necessary to achieve the desired future condition of the Forest. The Management Unit Maps indicate specific areas of the Forest where activities are scheduled.

This chapter of the Forest Plan (Chapter I) describes the organization of the document and the location of the Forest.

Chapter II describes the present condition of the land and resources, how they are expected to change with the implementation of the Forest Plan, and identifies research needs. Research needs will be analyzed by the Intermountain Region and, when appropriate, will be recommended for inclusion in the next update of the Forest Service Research Program.

Chapter III contains Management Requirements and is divided into three sections. Section one explains how the Forest Plan is to be implemented. Section two specifies the goals and objectives for managing the National Forest System lands and resources. This section also contains Forest-wide Direction which details overall Management Requirements that must be maintained during implementation of the Forest Plan. Section three includes Management Requirements detailing General Direction, Standards, and Guidelines for specific land areas of the Forest called Management Units. The Management Requirements listed in Forest-wide Direction apply to all National Forest System lands unless specifically amended or superseded by Management Unit Requirements. Individual Management Units are identified on the Management Unit Maps located inside the back cover of this Forest Plan.

Chapter IV provides implementation direction, lists and describes the activities and techniques used to monitor the effects of implementing the direction in the Forest Plan, and provides instructions for revisions or amendments. Following chapter IV is an index and the appendixes. A glossary to aid in interpreting the Forest Plan is included in the appendixes.

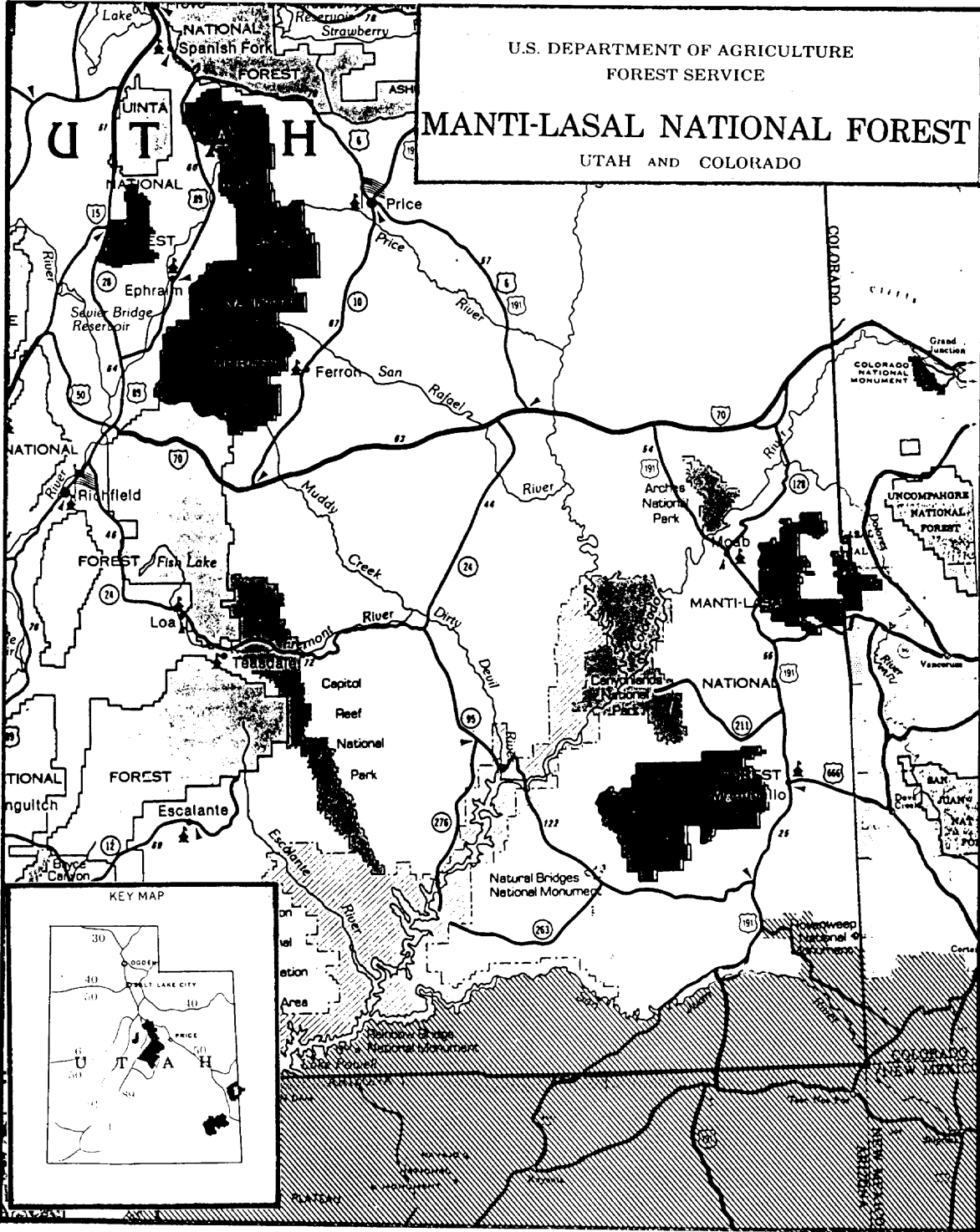
The predicted environmental consequences of the Forest Plan and the various alternatives are disclosed in the accompanying final Environmental Impact Statement. The Forest Plan and the Environmental Impact Statement are companion documents in the decision process. The Environmental Impact Statement describes the alternatives considered in arriving at the Forest Plan and discloses the environmental consequences of implementing the Forest Plan and the alternatives considered. Once the decision is made to adopt this Forest Plan, it can stand alone.

The Environmental Impact Statement prepared for the Forest Plan and/or the Forest Plan itself will be used in tiering (40 CFR 1502.20 and 1508.28) for future Environmental Assessment and Environmental Impact Statements. Tiering means that environmental documents prepared for projects implementing the Forest Plan can incorporate the decision of the Environmental Impact Statement and the Forest Plan by reference rather than repeating information. Environmental documents prepared for individual projects associated with implementing this Forest Plan can, therefore, be site-specific only.

## **Location of the Forest**

The area covered by this Forest Plan is the Manti-LaSal and a portion of the Uinta National Forests, known as the Manti-LaSal National Forest. The Forest is an administrative unit of the Intermountain Region of the Forest Service, United States Department of Agriculture. Its 1,414,153 acres of National Forest System land are in Central and Southeastern Utah and Western Colorado. (See Figure I-1 and Chapter II, Table II-1.)

FIGURE I-1



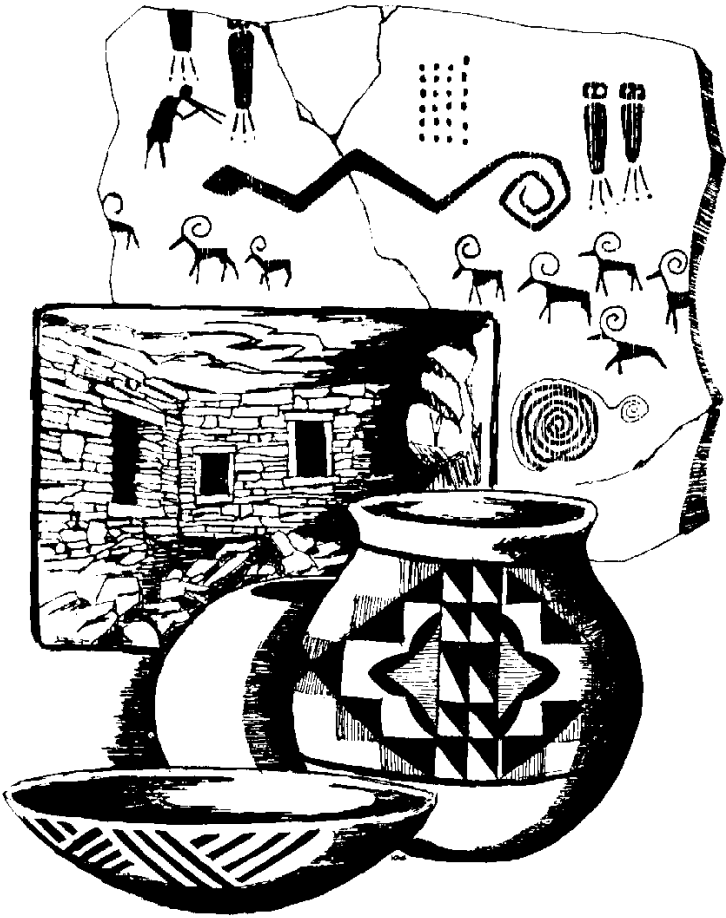




# CHAPTER II

## MANAGEMENT SITUATION

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# CHAPTER II

## MANAGEMENT SITUATION

### Introduction

Chapter II the Management Situation is a condensation of the Analysis of the Management Situation, prepared originally in 1980 and updated through 1985 as additional information was validated. It provides a reference to the conditions that existed when the Forest Plan was prepared. It is included to provide future plan users an understanding of the emphasis given in the Forest Plan.

The Forest is made up of three divisions (see Figure I-1). It is managed by five Ranger Districts. The San Pitch Division and the west slope of the Manti Division forms the Sanpete Ranger District. The east side of the Manti Division is divided on the Huntington Canyon - Cottonwood Creek water divide, with the southern portion forming the Ferron Ranger District and the northern portion forming the Price Ranger District. The LaSal Mountain portion of the LaSal Division forms the Moab Ranger District. The Abajo (Blue Mountain) and Elk Ridge portion of the LaSal Division is the Monticello Ranger District.

Table II-1 shows landownership within the Forest's boundaries and the acreage by political subdivision.

Lands adjacent to the Forest in Sanpete Valley, the west slope of the San Pitch Division, the northern portion of Castle Valley, and east of the Abajo Mountains, are generally in private or State ownership. The Moab District surrounds a township that is in about half private and half State ownership. The balance of the lands adjoining the Forest are generally in public ownership.

### Physical and Biological Setting

#### Physiography

The Forest is within the Dry Physiological Domain where, in general, the potential for annual losses of water through evaporation at the earth's surface exceed the annual water gains from precipitation. Major portions of the Forest are anomalies where precipitation generally exceeds the potential for evaporation.

The Manti and San Pitch Divisions are in the central portions of the Rocky Mountains Forest Province and are further divided into six land type associations including Lakes, High Plateaus, Ridges and Valleys, Eastern Clifflands, Monoclines and Rolling Basins. These surface features are the result of faulting, glaciation, and erosion. The LaSal Division is in the Colorado Plateau Province and is further subdivided into four land type associations, including High Mountains, Deep Canyons, Mountain Outsoles, and Mesas and Shallow Canyons. These surface features are a result of faulting, igneous intrusion, glaciation, and erosion.

Manti-LaSal National Forest

Acres	Net NFS	Non-Fed	Gross
<b>INSIDE BOUNDARY</b>			
<u>Sanpete Ranger District</u>			
Sanpete County		6,716	172,802
Utah County	166,086	110	11,944
Sevier County	11,834	0	51
Manti Division	51	6,826	184,797
	<u>177,971</u>		
Juab County		5,250	56,285
Sanpete County	51,035	1,872	19,875
San Pitch Division	18,003	7,122	76,160
	<u>69,038</u>		
DISTRICT TOTAL		13,948	260,957
	247,011		
<u>Ferron Ranger District</u>			
Emery County		11,811	159,689
Sanpete County	147,878	2,464	153,543
Sevier County	151,079	478	30,150
	<u>29,672</u>		
DISTRICT TOTAL		14,753	343,382
	378,629		
<u>Price Ranger District</u>			
Carbon County		8,507	38,709
Emery County	30,202	19,698	88,211
Sanpete County	68,513	12,469	57,937
Utah County	45,468	1,680	81,136
	<u>79,456</u>		
DISTRICT TOTAL		42,354	265,993
	223,639		
<u>Moab Ranger District</u>			
Grand County		2,691	60,221
San Juan County	57,530	3,384	87,292
Mesa County	83,908	40	4,582
Montrose County	4,542	0	22,563
	<u>22,563</u>		
DISTRICT TOTAL		6,115	174,658
	168,543		
<u>Monticello Ranger District</u>			
San Juan county		2,490	369,131
	<u>366,641</u>		
DISTRICT TOTAL		2,490	369,131
	366,641		
<u>Division Summary</u>			
San Pitch Division		7,122	76,160
Manti Division	69,038	63,933	794,172
LaSal Division	730,239	8,605	543,789
	<u>535,184</u>		
FOREST TOTAL (Inside Boundary)		79,660	1,414,121
	1,334,461		
<b>OUTSIDE BOUNDARY</b>			
Ferron R.D., Emery County	6	0	6
Moab R.D., Grand County	1	0	1
Sanpete R.D., Sanpete County	21	0	21
Juab County	2	0	2
	<u>2</u>		
GRAND TOTAL	1,334,491	79,660	1,414,153

# Geology

## MANTI DIVISION

The boundary of the Manti Division roughly corresponds with the structural limits of the Wasatch Plateau. This plateau is the northernmost portion of the High Plateaus of Utah. The eastern margin of the plateau is formed by an abrupt wall of barren cliffs and steep slopes, broken only by the V-shaped mouths of large canyons. It forms the great highland rim of the Colorado Plateau Region. This great escarpment is formed entirely by erosion, except for a small part near the town of Emery where some faulting is evident.

On the west, the margin of the plateau is hardly less abrupt than on the east, although the character is entirely different. The rock layers of the western margin bend downward toward the Sanpete and Sevier Valleys forming a monoclinical fold. The slope of the plateau front corresponds with the dip of the rock layers.

Major faulting falls into three separate zones or groups which have been described by Spieker as the North Gordon, Pleasant Valley, and Joe's Valley Fault zones. The rock layers between the major faults of each zone have dropped relative to the surrounding areas forming "grabens". The remainder of the plateau has experienced more minor faulting. The faults are considered normal in that beds on one side of the fault have down-dropped in relation to the other side. The fault planes that have been observed are vertical or nearly vertical.

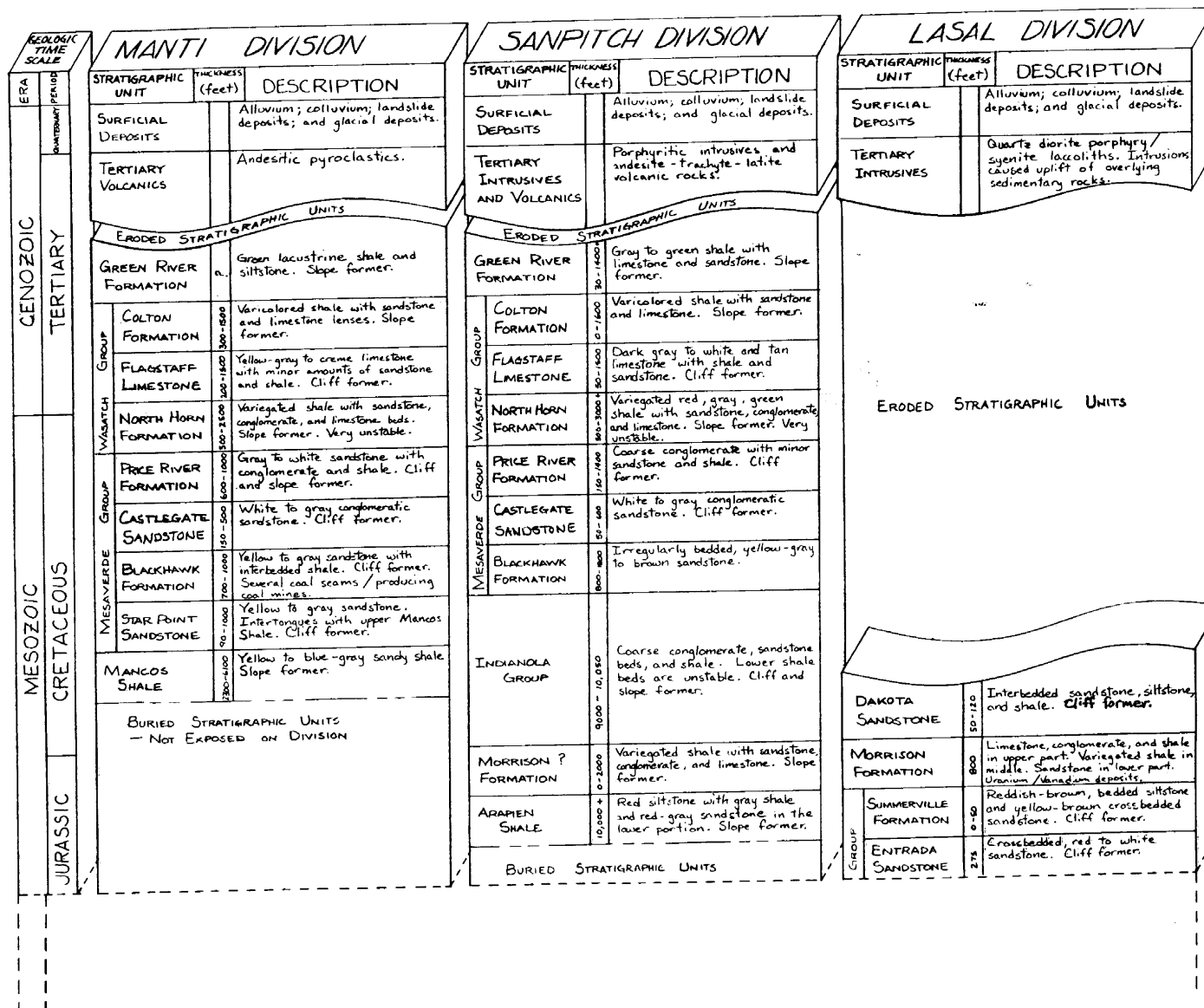
The plateau surface ranges from 9,000 to 11,300 feet above sea level and 3,000 to 6,500 feet above the valley floors to the east and west. The higher levels present a striking contrast to the barren cliffs and rugged canyons of the east front.

Rock formations of the Wasatch Plateau are dominantly sedimentary in origin and range in age from upper Cretaceous to lower Eocene. They consist mostly of sandstone and shale, but also include beds of conglomerate, limestone, and siltstone. Their combined thickness in the plateau exceeds 10,000 feet. Generally, the rock strata are tilted at slight angles with a few locations lying nearly flat. However, some locations have been subjected to more disturbance and strata dip between 10 to 20 degrees. The stratigraphic units include the Mancos Shale through the Green River Formation. Figure II-1 presents the stratigraphic sequence of the formations, shows a brief description of their lithologies, and displays their relative ages. This figure also shows the relationship of the coal seams of the Wasatch Plateau Coal Field to the stratigraphy. The North Horn and Green River Formations generally tend to be naturally unstable due to their composition and structure. The coal bearing Blackhawk Formation also tends to be unstable, but to a lesser degree. Nearly all of the formations and soils of the plateau are susceptible to failures given the right conditions, such as steep slopes, water saturation and faulting.

## SAN PITCH DIVISION

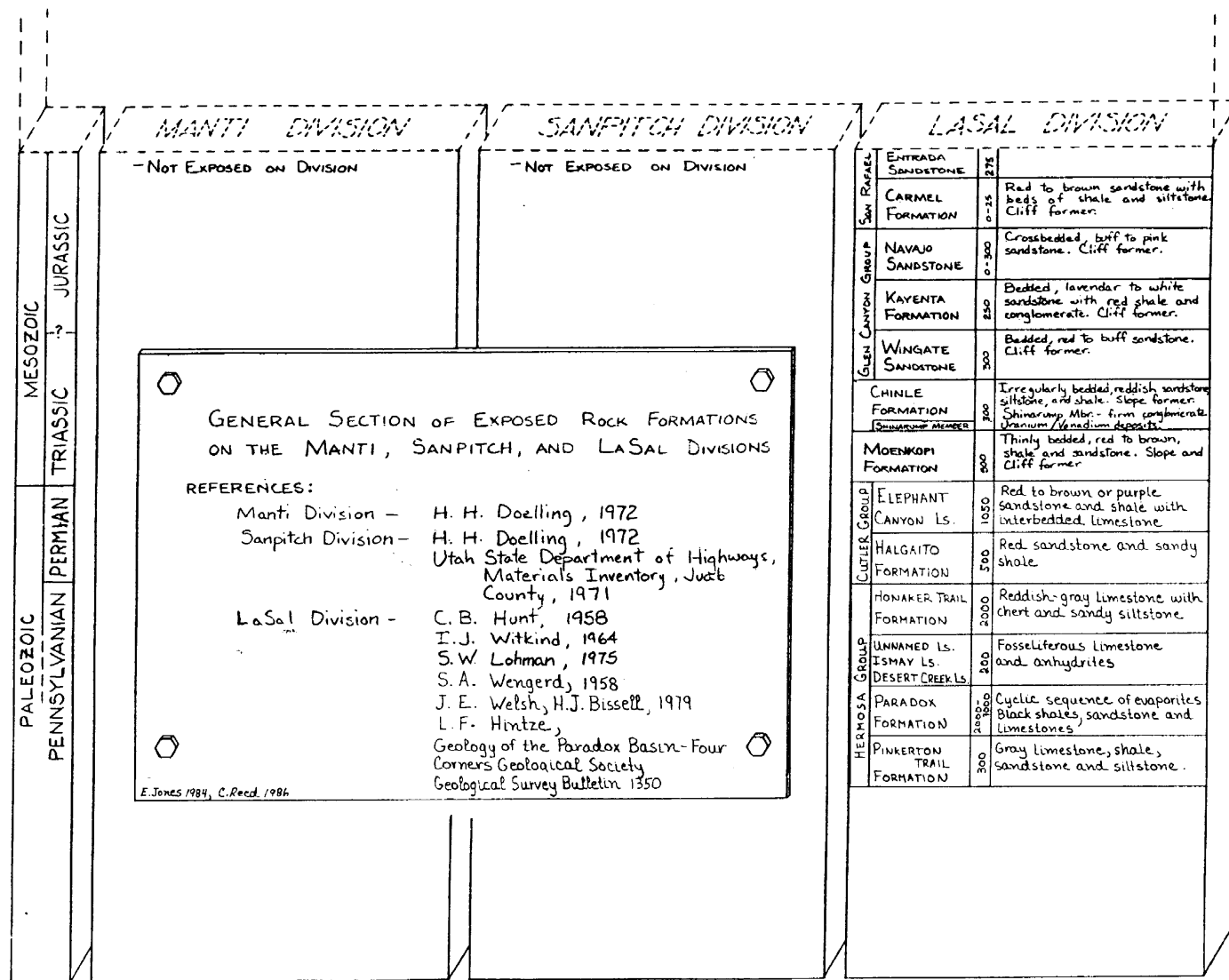
The San Pitch Division includes the northern portion of the Gunnison Plateau also known as the San Pitch Mountains. The Gunnison Plateau is part of the eastern margin of the Great Basin. Along the eastern bank of the Gunnison Plateau, rock layers are complexly folded. Faulting in the area is common and most faults tend to be normal faults. The Sevier-Sanpete Fault Zone (graben) trends north and south along the east bank of the Gunnison Plateau. Elevations range from approximately 5,600 feet in Sanpete Valley to 9,000 feet at the top of the plateau.

FIGURE II-1  
 GENERAL SECTION OF EXPOSED ROCK FORMATIONS  
 ON THE MANTI, SAN PITCH, AND LASAL DIVISIONS



II-4

FIGURE II-1 (Continued)



Sedimentary strata exposed in the area ranges from Jurassic to Tertiary in age. A brief description of each rock unit is presented in Figure II-1. The Green River and North Horn Formations tend to be naturally unstable. This is also true of the Blackhawk Formation, but to a



lesser degree. Nearly all of the other exposed formations have potential for some degree of instability.

## LASAL DIVISION

The Moab and Monticello Ranger Districts have very similar structures and stratigraphs though distinctly different from the Manti and San Pitch Divisions. Both Districts contain four distinct geographical features; high mountain areas, pediment slopes, mesa table lands and canyons. Elevations range from approximately 6,000 feet to nearly 13,000 feet.

Sedimentary strata exposed on the LaSal Division ranges from Pennsylvanian to Quarternary in age, having a thickness of about 5,000 feet. These rock layers overlie approximately 4,000 feet of unexposed sedimentary strata, Paleozoic in age, which rest upon Precambrian crystalline rocks (Figure II-1).

The local structural geology of both Districts is influenced by the intrusive LaSal (Moab) and Abajo (Monticello) Mountains. Regional structure of the Moab Ranger District area is controlled by the Uncompahgre Uplift (a high uplift located 25 miles north of the LaSal Mountains). Regional structure of the Monticello Ranger District area is mainly controlled by the Monument Upwarp, a broad low arch, and to a lesser degree by the Comb Monocline. The north ends of both structures are within the Elk Ridge area of the Monticello District.

The geology of the LaSal Division is also influenced by deformation caused by flowing of salt and gypsum deposits. High angel, normal faults are common on the LaSal Division. Faulting is associated with the igneous intrusives which formed the mountains, salt flowage, and regional structure. major faulting has formed well-defined grabens.

The sedimentary rock formations exposed on the LaSal Division are generally stable. The igneous rocks which formed the mountains have been exposed by erosion. Rock glaciers on steep slopes are commonly unstable.

## **Climate**

Precipitation, 10 inches at lower elevations to nearly 35 inches at higher elevations, comes from Gulf Stream air masses during the summer and from Pacific air masses during the winter.

The average annual temperatures are 35 to 55 degrees Fahrenheit. The average annual frost-free period (the growing period) ranges from 120 to 20 days, decreasing with elevation. Some years, there is no definable frost free period at high elevations.

The prevailing wind pattern is from the southwest. Surface winds and velocities are influenced by topography, storm frontal activity, and diurnal temperature fluctuations, and may come from any direction

## **Soils**

Soils on the Manti-LaSal National Forest vary considerably in relationship to the geologic, climatic, and topographic characteristics for the area. Most of the soils have formed from sedimentary rocks including sandstone, shale, and limestone. On the LaSal Division, quartz diorite porphyry is also a major rock type from which the soils have formed.

Most of the soils are well drained. The texture may range from loamy sand to clay. However, sandy loam to clay loam is the most common textural range. Soil depths are typically shallow to moderately deep (12 to 40 inches) with the exception of those soils developed on transported materials such as alluvium, colluvium, and glacial deposits. Stony or cobbly soils are common on most of the steep mountain slopes.

Most of the soils, except for those on some pinyon-juniper and spruce-fir sites, have dark colored surface horizons of eight inches or more in thickness (Mollisols). In addition to the good topsoil development, there is commonly an increase in clay content in the subsoil compared to the surface texture (Argillic horizon). The soils are moderately productive, but are being limited by short growing seasons due to cold temperatures at the high elevations and limited available moisture at the lower elevations. Between these extremes is a zone typified by the aspen vegetative type, which generally has the most productive soils.

High elevation rangelands have experienced significant losses of soil by erosion. The Manti Division is renowned for land instability and flooding. Landslides, debris avalanches, and mudflows are most prevalent on soils of the North Horn Geologic Formation, particularly where the land and bedrock slopes in the same direction.

Soil erodibility is moderate to high. The soils typically have textures of very fine sandy loam to silty clay and loam at the surface. The subsoils are generally finer textured and less permeable. The abundance of steep slopes and occurrence of intense summer thunderstorms are prime factors which relate to high erosion potentials when surface cover is removed.

The soil is recognized as a basic resource necessary for land productivity. Current management has concentrated on increasing vegetative cover and rapidly revegetating disturbed sites. Watershed rehabilitation, improved range management and reclamation stipulations relating to resource development activities have been key methods of improving and minimizing adverse effects on the soil. Watershed restoration projects cover approximately 32,500 acres, while approximately 45,000 additional acres have been identified as needing improvement.

An order 4 intensity level general soil inventory has been conducted on the entire Forest. A more detailed order 3 soil inventory has been completed on the Moab District and San Pitch Division with plans to have the Forest completed by 1992.

The continuing demand for Forest products requires an increase in the intensity of soil management in order to increase productivity. Also, the increase in demand for high quality water resources places additional emphasis on good soil management.

## **Landslide and Flood Events**

The moisture year 1981 through 1984 were above normal in terms of snowpack and total precipitation. The 1983-1984 year broke all records for the Manti and San Pitch Divisions of the Forest.

Record moisture conditions combined with unstable soils and geologic conditions led to mass land

movements, mudflows, abnormally high runoff and flooding. Mass land movements and mudflows have impacted and seriously altered vegetation on 5,700 acres. About 167 miles of stream channels were scoured and widened so that existing sediment traps were lost. Some aquatic and riparian habitats within or adjacent to these channels were lost as a result of the scouring and stream channel widening. Surface instability has rendered about 1,200 acres temporarily unsuitable for livestock use and limited wildlife use. Most fisheries were destroyed in 70 miles of stream channel and severely damaged in 87 miles of stream channel. Damage to Forest facilities has also been extensive, including a loss of 113 miles of road on 50 different roads, 40 miles of trail on 24 separate trails, 8 bridges, 15 units in three campgrounds, and 22 miles of range fence. In addition, one lake and one reservoir were destroyed and two dams were breached to protect down stream values.

As authorized by Section 403 of the Agriculture Credit Act, considerable Emergency Watershed Protection (EWP) work has been completed. Through this program, many miles of stream channel clearing and riprapping, willow planting, and other revegetation has been done to provide some level of protection. Forest Service funds have supplemented the EWP program for vast seeding projects on disturbed land and additional erosion control projects for watershed protection.

Emergency Relief of Federally Operated (ERFO) roads repair funds from the Federal Highway Administration have provided funding to initiate repairs of portions of the damaged transportation system. However, actions taken to date, and expected activities under emergency programs will not totally repair the damage. Long-term repairs and rehabilitation needs have been summarized by Forest-wide Flood Damage Disaster Reports for 1983 and 1984.

Restoration of damaged areas or facilities can be locally important. Failure to restore campgrounds, roads, fisheries and range can severely impact those who use and depend upon these facilities or resources.

## EXISTING SITUATION

Recreation - Recreation facilities have been damaged at Pinchot, Chicken Creek, Forks of Huntington, Oowah Lake and Ferron Canyon.

Fish and Wildlife - Riparian habitat, stream channels, and flood plains have been severely impacted along miles of stream. Landslides have and continue to deliver large amounts of sediment to streams. Stream channels and banks continue to erode, contributing large amounts of sediment to the streams and destroying fisheries.

Range - Damaged fences and lost access have increased the cost of operations to the permittees and the cost of management to the Forest Service. Control of livestock is more difficult. Customary livestock movement patterns have been altered.

Timber - The landslides and flooding have damaged over 5,000 acres of National Forest System lands. A portion of these acres contain conifer timber. Early surveys indicate a potential for insect build up which could further damage the timber resource.

Water - Several thousand acres of landslides and 70 miles of stream channel damage have created new and changing watershed conditions. New erosion areas have high sediment deliveries into the streams. Riparian areas have been denuded of vegetation destroying the capacity of these areas to trap and retain pollutants from upslope and destroying the shade that kept the waters cool enough

for trout. The riparian areas, instead of being a protection and buffer zone, have become a sediment source. Gravelly stream channels have been filled with silt. Downstream municipal and irrigation systems must contend with new and higher sediment loads until a level of stability is obtained.

Soils - Denuded soils are subject to severe surface erosion. Meandering streams have and continue to erode highly productive alluvial soils. Stream downcutting has lowered the water table and reduced the productivity of the riparian soils that remain.

Facilities (Roads and Trails) - The landslide and flood disasters of 1983 and 1984 have damaged arterial, collector, and local roads and trails. The associated high water has softened the road and trail prisms so that normal traffic does more damage and normal maintenance is far less effective. These conditions will continue until the area dries out, which is expected to take several years after the precipitation returns to normal levels.

Historic and Cultural Resources - Historical and cultural resources could have been destroyed by landslides and the rapid erosion of stream beds. However, no known historical and cultural sites were identified in the impacted areas.

Protection - The damaged access has made the protection job difficult. Slower initial attack for fires may mean that fires will do more damage before they are controlled.

Minerals - Loss of access increased some exploration and development costs. Greater costs could be incurred if active landslides need to be crossed to access lease areas.

## **Vegetation**

Forest managers have controlled activities and uses that affect vegetation and growing conditions, since the Forest was established during the first decade of the 1900's. The objective of this management has been to provide and maintain a healthy, vigorous environment, capable of producing a range of outputs and conditions. Some vegetative types have been managed in a seral stage that allows for more diversity and higher productivity. In many cases, natural succession has occurred. There are consequences associated with managing vegetation, as well as with allowing natural succession to occur. Natural succession often leads to climax vegetative types that allow for less diversity, and lower productivity.

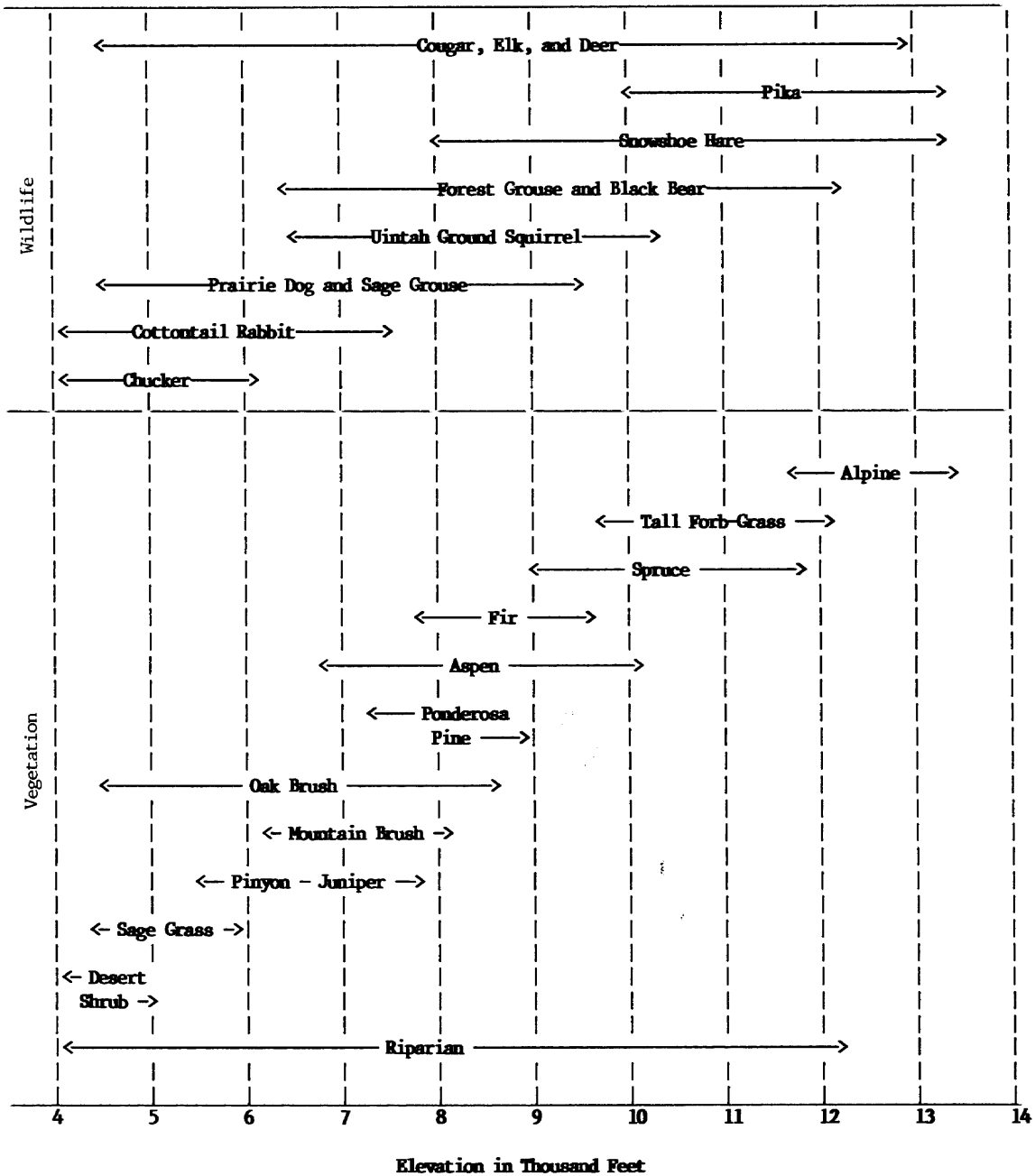
The hundreds of individual plant species which occur on the Forest may be classified into less than a dozen vegetation types. Each type lends unique character to the landscape and has an associated utility to society. Some vegetative types like those shown on Figure II-2 have narrow elevational ranges. Other types are more tolerant and have a wide elevational range. There are 11 major vegetative types on the Forest. They include: aspen, ponderosa pine, Douglas-fir, mountain brush, pinyon-juniper, sagebrush, and oak brush. The following is a discussion of the current condition and management needs of these types.

### **ALPINE**

The alpine vegetation type occupies less than one percent of the Forest, and grows above native tree elevation limits. It is characterized by grasses, grasslike forbs, low shrubs, and poorly formed trees. Alpine vegetation provides a unique opportunity for scenic viewing particularly during the early summer when wildflowers are in bloom. The most important factors controlling the distribution and growth of alpine plants are available soil moisture and the production of viable seed. Wildlife habitat provided by this type supports elk and mule deer. Pika are unique to the alpine and subalpine types.

Figure II-2

TYPICAL VEGETATION AND WILDLIFE DISTRIBUTION CHANGES WITH ELEVATION



climatic conditions make this vegetation type very slow to recover. Alpine vegetation will perpetuate itself unless there is severe ground disturbance.

## DOUGLAS-FIR

Douglas-fir generally occurs with ponderosa pine or aspen and occupies about two percent of the Forest, but is more important than its relative area implies. It typically occurs on steep, north-facing slopes at lower elevations, and is frequently the only conifer vegetation in a large area. On south-facing slopes, Douglas-fir occurs sparsely on rocky ridges, step hillsides, and canyon slopes.

Douglas-fir is a long-lived species which is valued for watershed protection, wildlife habitat diversity, scenic quality, and cover on big-game winter range. The type has not been harvested in the past, resulting in mostly mature and overmature stands. Thus, very little acreage of early successional stages of Douglas-fir are known to exist on the Forest.

Douglas-fir is a climax species that reproduces from seed. Without treatment, stands mature and die, but perpetuate the Douglas-fir type. Currently, the stands have a relatively uniform age structure. Natural succession will perpetuate the current uniform distribution.

## SUBALPINE FORB GRASSLAND

Grass and forb vegetation types occupy 17 percent of the Forest and are interspersed with other vegetation types. In the subalpine type, they are extensive and rarely interspersed with aspen and spruce-fir types. Most grassland support, or are capable of supporting, numerous kinds of perennial grasses and forbs. Herbage production on mountain grasslands occasionally exceeds 3,000 pounds per acre; however, yields of 1,000 to 2,000 pounds per acre are much more common.

The forage produced in the grass and forb vegetation types is available for both wildlife and domestic livestock. The open nature of these vegetation types provides a great deal of scenic variety. Management is typically directed at increasing forage while maintaining visual quality.

## ENGELMANN SPRUCE/SUBALPINE FIR (CONIFER)

Engelmann spruce and subalpine fir occupies eight percent of the Forest. This type occurs at mid to high elevations and represents the climax on the majority of the sites it occupies. This type usually occupies moist sites. Spruce can grow to over 300 years and fir to 250 years old. They naturally occur in single age stands, but can occur in 2, 3 or multi-story stands as a result of timber harvest or insect infestation. Its dense forest growth and layered appearance provides outstanding scenic views. It is also valued for wildlife habitat, watershed protection, and production of wood products.

Sixty percent of the type is overmature. As the spruce and fir type matures, the trees become susceptible to insect and disease infestations. A balance of structural stages is needed to enhance Forest health and vigor.

The spruce-fir type reproduces by seed, and it will reproduce itself naturally if not treated. The reproduction will retain the same age class distribution as currently exists. These types usually convert to aspen, if a natural catastrophe, such as a major fire, occurs.

The aspen vegetation type occupies 13 percent of the Forest and typically occurs at low and mid elevations interspersed with grasslands, meadows, spruce-fir and ponderosa pine Forest types. At the middle of its elevation range, it may be climax. Aspen stands on the Forest are typically mature to overmature with high disease and mortality levels.

Aspen is important to visual quality. Aspen color, form, and texture contribute to the character in many ways. These include edge contrast between aspen and conifer stands, aspen islands in large meadows, and massive textural blocks. Color is a dominant element in all distance zones, contrasting with surrounding coniferous vegetation, nonforest areas, bare rock, water and sky. The color change between seasons attracts many Forest visitors year-around.

Grasslands and associated aspen ranges often furnish a large part of the forage for livestock grazing on the National Forest.

The aspen ecosystem is important to wildlife. Deer and elk use aspen under six feet in height for forage. They use taller aspen for thermal and hiding cover. Aspen sprouts above snowcover are critical to winter diet in some areas. The grass, forb and shrub understory provide a summer food source as more forage is present than in conifer stands. Aspen forests are prime elk calving and deer fawning habitat. This is especially true on south slopes within one-fourth mile of water between winter and summer range. Aspen management in transitory big-game range helps support the animals longer in the spring and fall. This takes pressure off summer and winter range and provides extra forage during mild winters.

More songbirds are normally observed in aspen forests than in coniferous forests. Aspen provides food, nest sites, and cover for warblers, vireos, blue grouse, owls, raptors, thrushes, kinglets, and a variety of other birds. Small mammals such as shrews, moles, and mice derive their food, cover, and nest sites from aspen understory and leaf litter. Aspen along riparian areas is the basic food for beaver.

Overmature aspen stands are usually decadent and provide cavities and insects for bird and mammal species. Aspen stands are usually in close proximity to conifer stands that can provide cover during aspen regeneration.

Recently, there has been increasing interest in aspen for sawtimber, waferboard, particle board, and fuelwood.

Aspen regenerates almost exclusively through root sprouting. This results in clones which are genetically identical to the trees from which they originated. Trees within one clone are very homogeneous in such characteristics as rate of growth, form, vigor, resistance to disease, and time of leaf break and leaf fall. These characteristics often vary widely between clones due to genetic and site differences.

To stimulate root sprouting, the majority of aspen clones require a major disturbance that results in the death or removal of most or all of the existing trees. Wildfire has historically been the primary disturbance initiating root sprouting. Control of wildfire has permitted many aspen stands to become overmature with no means of regenerating themselves. In the absence of disturbance much of the aspen type is rapidly converting to conifer. This is shown by comparing the 1915 and 1965 timber inventories on the Manti Division. Aspen declined 34 percent, from 194,245 acres to 127,831 acres, during this period. The loss of this aspen has obvious resource implications. In order to maintain the aspen on the Forest, approximately 1,600 acres should be treated annually.

## PONDEROSA PINE

This vegetation type occupies six percent of the Forest and occurs throughout the Forest. The LaSal Division has most of this type. It is located between 7,000 and 9,000 feet, either in pure stands or associated with aspen and oak brush. Ponderosa pine reproduces by seed. Natural regeneration requires the combination of a good seed crop, favorable seedbed conditions, and ample moisture in the spring following seed fall to assure germination and seedling survival.

Historically, low-intensity wildfires burned through ponderosa pine stands at frequent intervals. These fires had little effect on pole size or larger trees because of their thick bark. These fires prevented duff accumulations and kept competing vegetation in check, thus maintaining seedbed conditions favorable to ponderosa pine. Fire suppression over the past several decades has resulted in a buildup of organic litter, making seedbed conditions less favorable for ponderosa pine. Currently two distinct conditions exist on the Forest. The first is mature to overmature stands, open grown and generally poorly stocked, which need to be harvested and the areas regenerated. The second is stands released from an overstory which was removed during the earlier accelerated harvest. These stands are young, becoming stagnated or are stagnated and in need of thinning. Many of them are of minimum merchantability, being available for commercial thinning entries.

Ponderosa pine is important for timber production, livestock grazing, and wildlife habitat. Elk calving occurs in this type at lower elevations.

Ponderosa pine is considered a climax species on many of the sites on which it occurs, particularly near the center of its elevational range. Major disturbances, such as high-intensity fires, heavy logging, or widespread mortality from insect or disease infestations may cause ponderosa pine sites to revert to more seral stages such as aspen, oak brush, or grass. The mountain pine beetle is currently at high levels in some stands.

## MOUNTAIN BRUSH

This vegetation type occupies six percent of the Forest and is dominated by one or more of the following species: serviceberry, rabbitbrush, snowberry, four-wing saltbrush, cliff rose, prunus species and mountain-mahogany. The primary value of the type is for wildlife habitat and domestic sheep range. It has particular importance when used as big-game winter range. There is a significant imbalance in the structural stages with most of the type in intermediate and late stages. Without disturbances such as fire or chaining, the type will maintain itself in the mature stages, or become decadent and be replaced.

## PINYON-JUNIPER

This vegetation occupies 21 percent of the Forest. It is a widespread scrub woodland type generally occupying the lower elevations on the Forest.

The pinyon-juniper type occurs on the driest sites on the Forest and is the least productive type. Vegetation is characterized by small size and low growth rate. The type provides forage for wildlife and livestock, adds scenic variety to the landscape, and furnishes products such as fuelwood, posts, and Christmas trees. It is important cover on big-game winter range. Most of the type is estimated to be in the intermediate and late structural stages which reflects the lack of recent natural disturbance.



As a result of successional change, pinyon-juniper often expands into sage-grass sites. Many of the mature pinyon-juniper have little or no understory species. Many acres of pinyon-juniper have been treated through revegetation practices. These sites are now in the early seral stages of the pinyon-juniper successional chain. If not maintained, these sites will return to a more mature successional stage resulting in a decline in forage production as the pinyon-juniper dominates the site by taking moisture, nutrients, sunlight, etc., that the understory species need for survival.

## SAGEBRUSH

This vegetation type occupies 10 percent of the total Forest and normally occurs on relatively dry sites at all elevations. Owing to climatic conditions, it is most common to lower elevations. Sagebrush can be an invader species that may eventually take over other sites. It provides a scenic desert-like landscape and forage for big game and occasionally livestock. Most of the type is in intermediate and late structural stages. Prescribed burning and mechanical or chemical treatment are used to treat this type when necessary to convert to other types.

## OAK BRUSH

The oak brush vegetation type, principally Gambel oak, occupies 16 percent of the Forest and commonly occurs with vegetative types from ponderosa pine down to desert shrubs. At its lower elevation range, it is frequently associated with pinyon-juniper trees. At its upper limit it is often interspersed with aspen, Douglas-fir, or ponderosa pine.

The type provides watershed protection, retards snowmelt, provides browse for wildlife and domestic stock, and is a popular fuelwood species. Gambel oak is capable of reaching tree size on some sites. This savannah type and its associated understory provide highly productive useable forage for wildlife and livestock. The mature trees provide cavities for small mammal dens and non-game bird nests, and is important for accipiters such as sharp-shinned and copper hawks. Food production for deer and turkey is highest on these sites. Younger Gambel oak stands are often thick, severely restricting animal mobility, and shading out the more palatable grasses and forbs.

Currently, the majority of the Gambel oak type is estimated to be in an early seral stage. A more balanced structural distribution would improve this type for wildlife and domestic stock, and increase the landscape's visual diversity.

## RIPARIAN

The riparian ecosystem type occupies one percent of the Forest and occurs in areas with year round high water tables. This type occurs at all vegetative transitional zones and consequently, most of the distinct vegetation types on the Forest are represented in riparian areas. The riparian area often includes willow, cottonwood and alder. These areas are typically located adjacent to streams and around springs, lakes, or bogs. While small in total area, they represent delicate, very important habitat for wildlife and fish. About 86 percent of the wildlife on the Forest are dependent on this vegetative for significant portions of their habitat. Normally, lush riparian vegetation serves as a sediment trap and improves quality of water runoff. Desirable forage production is high, and these areas are an important part of grazing allotments. The riparian type also provides visual diversity and some timber management potential. Riparian areas are important for recreation, as campgrounds are often built nearby and dispersed activities are popular.

Without protection and maintenance of this ecosystem, it may steadily decline.

## NOXIOUS AND POISONOUS PLANTS

Noxious weeds occur at all elevations throughout the Forest, though control is mostly confined to the Manti Division. Musk thistle, white top and Canada thistle are the weeds targeted for major control efforts. Dyers woad, toad flax, and Russian knapweed are the other noxious weeds that are present on the Forest in small numbers. These weeds are also being controlled as available funding permits. Cooperation with Sanpete, Juab, Emery, and San Juan Counties weed control districts has helped with the control of many weeds growing along the Forest Development Roads and in other accessible areas on the Forest.

Poisonous range plants are one of the major causes of livestock loss on open range lands. Reported losses attributed to these plants average 700 animals per year. There are 21 species of plants that are considered poisonous to livestock on the Forest. Two species, tall larkspur (*Delphinium bankeyi*) and low larkspur (*Delphinium nelsonii*), have caused about 90 percent of the total loss.

## Economic and Social Setting

Carbon, Emery, Grand, Juab, Sanpete, San Juan, and Utah Counties in Utah, and Mesa and Montrose Counties in Colorado are Counties which encompass the Forest and are affected by management of the Forest.

Economic factors of population, income, and employment are displayed by County and Human Resource Unit (HRU) for the base year 1980. The social analysis is discussed by Human Resource Units in the Social Setting section (following).

### Population

Total population of the HRU's in 1980, based on the 1980 census and population projections from the Utah State Planning Office and the County Associations of Government, is 18,156 people.

### Income

The average 1980 per capita income of the eight counties was about \$6,900, a 254 percent increase since 1970. The personal income was \$165.2 million in 1980.

### Employment

Employment in the eight county area is estimated to be 61,300 jobs, of which 2.4 percent (1,448 jobs) are a direct result of activities on the Forest. Table II-2 shows how employment (influenced by the Forest) is distributed among various employment sectors. The population supported by that employment is 7,100. The average total unemployment for the Counties in 1980 was 5.5 percent.

TABLE II-2

EMPLOYMENT INFLUENCE OF THE  
FOREST  
IN MAN YEARS - 1980

Forest Service Programs	165
Minerals Industry	1,100
Recreation Industry	15
Timber Industry	10
Range Industry	154
Other Industry	<u>4</u>
Total	1,448

### Payments to Counties

Each year, 25 percent of the value of receipts from Forest activities is returned to the State for distribution to the counties in which the Forest is located (see Table II-3). The following components comprise the receipts that make up the "25 percent fund".

-Value of Timber Harvested	-Mineral Permits
-Land Use Permits	-Recreation User Fees
-Recreation Permits	-Grazing Fees
-Power Permits	

A major source of funds to counties is from oil and gas and coal lease payments and royalties. These funds are distributed to the county by the Bureau of Land Management, the leasing agency, and are not included in the dollars shown in Table II-3.

Counties have also received Payments in Lieu of Taxes (PILT) funds. These payments are based on the number of acres of National Forest System lands in each county. This program of payments in lieu of taxes is dependent on annual Congressional appropriations, and is administered by the Bureau of Land Management.

TABLE II-3

PAYMENTS TO COUNTIES IN DOLLARS - 1980

County	State	25% Fund	Payments (In Lieu of Taxes)
Carbon	Utah	2,491	\$337,532
Emery	Utah	17,560	\$343,277
Grand	Utah	4,745	\$327,201
Juab	Utah	7,655	\$289,310
Sanpete	Utah	30,188	\$367,287
San Juan	Utah	37,164	\$401,777
Sevier	Utah	2,451	\$ 17,084
Mesa	Colorado	374	\$ 80,967
Montrose	Colorado	1,861	\$ 36,683

## Forest Zone of Influence

The Forest Zone of Influence encompasses three Social Resource Units (SRU). Two of these SRU's contain Human Resource Units (HRU) where activities on the Forest directly influence communities and/or public welfare, and where community affairs can directly affect the Forest or its management. The SRU is an accumulation of HRU's, but where the community relationship to the Forest is indirect or less direct, and the issues are broader or regionally oriented. The three SRU's are described as follows.

### WASATCH MEGALOPOLIS SOCIAL RESOURCE UNIT

The west escarpment of the Wasatch Mountains, Utah Lake, and the Great Salt Lake create boundaries to a corridor that is 100 miles long, and averages 10 miles wide. Within this corridor is the Wasatch Megalopolis, a rapidly growing, urban area with an industrial/commercial based economy. It is a major distribution and supply center for the Intermountain area. It contains the highest concentration of Black, Spanish American and Oriental minorities in the State.

Based on recreation use information, people from Wasatch Megalopolis account for 30 percent of the recreation use on the Forest, and may feel a vested interest in the Forest. Many are persons who left the small communities adjacent to the Forest during the 1940's and 1950's and who feel that a visit to the Forest is like going home. These people use the full range of recreation opportunities within the Forest. They are especially dependent on the Forest for big-game hunting, camping facilities, and to a lesser extent, fishing and fuelwood gathering.

### CENTRAL UTAH SOCIAL RESOURCE UNIT

This SRU includes several HRU's in the Sevier River and Sanpete River Valleys, and the Juab Valley in Central Utah. The HRU's that have a direct relationship with the Manti-LaSal National Forest are the Juab and the Sanpete HRU's.

Human Resource Unit Description - The Juab HRU is bound by the San Pitch-Mount Nebo Divides on the east, by Long Ridge and West Hill on the west, by the ridge between Chris Creek and the Sevier River on the south, and by the ridge between Mona and Utah Lakes on the north. Communities in the valley include Nephi, Mona, and Levan.

The Sanpete HRU includes Sanpete Valley and extends into the Sevier River Valley to include Gunnison and the other nearby communities in Sanpete County. The HRU is bound by the Wasatch Plateau on the east, the San Pitch Mountains on the west, and the San Pitch-Thistle divide on the north.

Human Resource Unit Characteristics - Native Americans occupied the Sanpete HRU until the late 1840's and the Juab HRU until the early 1850's, when Mormon colonists settled these areas. The Mormon pattern of settlement was community living with commuting to farm and rangeland. Communities were established where water was available and at strategic locations to protect the travel-way from Salt Lake City to the settlements in Southern Utah. In the Juab HRU, the early trails have become modern highways and communities along these routes are important service centers to travelers. During the 1950 to 1970 period, the local economy of the Sanpete HRU could not support community growth causing an out-migration from the area. Improved access across the Wasatch Plateau in the early 1970's made it possible for local residents to commute and find employment in the power plants and coal mines adjacent to Castle Valley.

Some light industry has moved into both HRU's to take advantage of the labor supply. This has resulted in some community growth.

Agriculture and agricultural activities have always been an important factor in the communities of the Sanpete and Juab HRU's. Sanpete County ranks in the top 10 Counties in the United States as a producer of turkeys.

In the Sanpete HRU, mining is a reactively new job source, but has leveled off until low sulfur coal regains its prior importance. Locals commute outside the HRU to the mines in Salina Canyon or across the Plateau to mines in Huntington Canyon or Scofield (Pleasant Valley).

Both HRU's have light industry and manufacturing that is important to the local economy. In the Juab HRU, service industries cater to tourists or to the long haul truck industry. Snow College in the Sanpete HRU also provides some support to the local economy and adds to the lifestyle.

Commercial recreation activities include theaters, golf courses, and bowling. Communities support Little League Baseball, Bantam basketball, football, soccer and tennis programs. Churches and schools provide cultural events, dances, sports competition, and a myriad of other activities for members of the communities. However, these do not diminish the demand placed on the Forest to provide opportunities for hunting, fishing, camping, horseback riding, backpacking, cross country skiing and snowmobiling. Fuelwood gathering and cutting the family Christmas tree are a traditional part of the family activities.

The majority of the residents in both HRU's are favorable of Forest Service management activities in the HRU's. They are generally development oriented, and believe that the consumptive use of the Forest resources is appropriate. Maintenance of traditional uses and values is very important and residents recognize the need to protect high quality scenic values and recreation values which add to their economy or employment.

Both HRU's have the basic medical, educational, fire and law enforcement social services. Major medical and educational requirements are normally met in the larger population centers of the Wasatch Megalopolis.

Populations are increasing moderately throughout the HRU's with a larger percentage increase in communities such as Nephi and Ephraim which provide the greatest amenities.

The majority of the private land is used for farming. Some subdivisions of private land are occurring near communities and usually on land historically used for farming.

## SOUTHEASTERN UTAH SOCIAL RESOURCE UNIT

This SRU is the Colorado Plateau area, bordered on the north by the Book Cliffs; on the west by the East Escarpment of the Wasatch Plateau, Thousand Lake Mountain and Boulder Mountain; on the south by the Utah-Arizona State line; and on the east by the Dolores River Valley. It is a large, lightly populated SRU with basic economics related to interstate transportation, mining, recreation, and some agriculture. In addition to the D&RGW Railroad, the area is crossed by I-70, US 50&6, US 191, and US 61. The unit contains major tourist attractions in three National Parks, three National Monuments, two State Monuments, six State Parks, and one National Recreation Area.

Three HRU's in Southeastern Utah SRU have a direct relationship with the Manti-LaSal National Forest. These are the Carbon-Emery, Moab, and San Juan-Abajo HRU's.

Human Resource Unit Descriptions - The Carbon-Emery HRU is bound on the north by the Book Cliffs, on the west by the water divide on the Wasatch Plateau, on the south by Interstate Highway 70, and on the east by the water divide in the San Rafael Swell. The communities in this HRU are Price, Helper, East Carbon, and Wellington in Carbon County; and Castle Dale, Orangeville, Huntington, Ferron, Cleveland, Elmo, Emery and Moore in Emery County. These communities are all in Castle Valley which lies between the East Escarpment of the Wasatch Plateau and the west edge of the San Rafael Swell.

The Moab HRU has indistinct boundaries. It is made up of communities adjacent to the LaSal Mountains. Beyond these communities, there is a vast desert area where suitable habitation is limited. The communities in this HRU include Moab and LaSal in Utah and Paradox and Gateway in Colorado.

The San Juan-Abajo HRU has indistinct boundaries. It is made up of communities adjacent to the Blue Mountains and the farms and ranches on the pediment that extends eastward into Colorado and southward toward the San Juan River. Suitable habitation to the north and west is limited by the desert and canyonlands. Communities include Blanding, Monticello, and Bluff. Half the population, Native Americans, live in scattered rancherias on the Navajo or Ute Reservations.

Human Resource Unit Characteristics - The first occupancy in the three HRU's of the Southeastern Utah SRU was by Native Americans in the San Juan-Abajo HRU as far back as 8000 B.C. There have been several periods when the area was settled then abandoned. Utes and Navajos were in this area when the first cattlemen arrived out of Colorado and New Mexico in the early 1820's. Communities were established in this HRU by the Mormon Colonists in the 1880's.

Mormon colonization in the Moab HRU area failed in the 1850's because of trouble with Native Americans, but was reestablished in the mid 1870's when cattlemen moved into the area.

The first colonization in the Carbon-Emery HRU occurred in 1877 by a group of Mormons.

Mormon settlements were based on a pattern of settling near water, community living and commuting to farms and ranches. Agriculture was the foundation for most early settlements. Mining became an important economic factor in the late 1800's in the Carbon-Emery and San Juan-Abajo HRU's. Early coal mining in the Carbon-Emery HRU was followed by the production of oil and gas. Beginning in the early 1970's, migration began to this area as a result of coal powered electrical generation development, the world oil shortage and a demand for low sulfur coal. Some gold and silver occurred into the early 1900's in the San Juan-Abajo HRU. In the early 1950's, mining of uranium and vanadium became important to the economy of the San Juan-Abajo and Moab HRU's, but a recent decline in the market for uranium has caused a near close down of this mineral industry.

Settlement was also augmented by the construction of the Denver Rio Grande Western Railroad in the late 1800's. New communities grew up by the railroad.

During the 1960's, tourism became an important industry for the Moab HRU, and to a lesser degree the other HRU's, as a result of the establishment of several State Parks and two National Parks in the area.

Some communities have grown because of the demand for support services and transportation to accommodate local industry, agriculture and government.

The major sources of employment in the San Juan-Abajo and Carbon-Emery HRU's are farming, ranching, mining, some light manufacturing and related support and transportation services. Electrical energy production is a big employer in the Carbon-Emery HRU. While mining and related activities are becoming less active in the Moab HRU, the tourist service industries are developing. Tourism also provides employment to the communities of the San Juan-Abajo HRU.

Price provides urban type amenities to those in the Carbon-Emery HRU, while rural amenities are available in many small communities in all three HRU's. Commercial recreation opportunities vary from community to community but include golf, bowling, theaters, rollerskating, and social clubs. The larger communities support baseball, football, swimming, tennis and related activities. Churches provide cultural, social and athletic activities for members of the communities. The public schools and the College of Eastern Utah in Price provide cultural and athletic activities, especially for the youth. On the Native American reservations of the San Juan-Abajo HRU, traditional activities still occur.

The Forest provides opportunities for hunting, fishing, vehicular travel use, camping, boating and picnicking, as well as fuelwood gathering. Winter activities including snowmobiling, cross country skiing and downhill skiing at Blue Mountain. Dark Canyon Wilderness provides limited primitive recreation opportunities. In the Carbon-Emery HRU there is a high ratio of four-wheel drive vehicles per capita, as well as off-road motorcycles, ATV's, campers and boats. The majority of the recreationists prefer dispersed area camping over developed site use. Local populations also depend upon the Forest for climatic relief.

The majority of the residents in all HRU's are favorable of Forest Service management activities. They are generally development oriented and believe that the consumptive use of Forest resources is appropriate. However, they want to maintain some traditions and traditional uses. They recognize the need to protect scenic and recreational values for economic and environmental reasons.

All HRU's have medical, educational, fire and law enforcement basic services. Major medical or social requirements are normally met in larger population centers in the Wasatch Megalopolis.

Population changes in the San Juan-Abajo HRU are generally equal between the two major communities, although other communities close to development activities are growing. The majority of the private land is used for farming.

Population fluctuations in the Moab HRU are confined to the Moab and Spanish Valley areas. The rest of the communities in this HRU are quite stable and experience little recent change. In the Carbon-Emery HRU, communities that provide the greatest amenities grow more rapidly and decline slower than the others. Development occurring in the north end of the HRU has encouraged growth to nearby communities. In these two HRU's, the majority of the land is used for ranching. Some subdivision of private land is occurring near communities and usually on land historically used for farming. In some areas, the private land in or adjacent to the Forest is used for second or recreational homes. Counties have adopted ordinances to control the type and amount of these developments.

## **Resource Elements**

Table II-4 displays trends for key Forest resource outputs. Trends shown include estimated demand, output potential where management maximizes resource production (single-use emphasis), and output potential where management optimizes resource production with other resource outputs (multiple-use emphasis). For comparison purposes, the current level is also shown.

## (In Annual Average Units)

Resource	Category	Present Level 1980	Time Periods		
			1986 1995	1996 2005	2006 2036
Developed Recreation in MRVD's	Estimated Demand		1,027	1,263	6,049
	Resource Maximum Capacity	987.0	835	1,159	2,271
	Multiple-Use Optimum Capacity		800		
Dispersed Recreation in MRVD's	Current Level			45	45
	Estimated Demand		45	45	45
	Resource Maximum Capacity	0.0	45	45	45
Wilderness Management in M-Acres	Multiple-Use Optimum Capacity		45		
	Current Level			29	39
	Estimated Demand		26	60	69
Deer Habitat Capacity in M-Numbers	Resource Maximum Capacity	32.0	50	55	61
	Multiple-Use Optimum Capacity		50		
	Current Level			32.0	42.0
Elk Habitat Capacity in M-Numbers	Estimated Demand		16.0	8.0	13.6
	Resource Maximum Capacity	4.4	6.0	6.5	8.0
	Multiple-use Optimum Capacity		5.0		
Range Use Capacity in MAUM's	Current Level				
	Estimated Demand		0.6	0.6	0.6
	Resource Maximum Capacity	1.0			2.5
Timber Program Sales M-Cubic Ft	Multiple-use Optimum Capacity				1.1
	Current Level			Undefined	4.1
	Estimated Demand	1.9			2.5
Fuelwood Program M-Cubic Ft	Resource Maximum Capacity				
	Multiple-use Optimum Capacity				
	Current Level			Not Estimated	.731
Water Yield Recreation in MRVD's	Estimated Demand				.731
	Resource Maximum Capacity	.731	.731	.731	.731
	Multiple-use Optimum Capacity		.731	.731	
Coal Production in MM-Tons	Current Level			618	
	Estimated Demand		506	6,990	
	Resource Maximum Capacity	400	2,800	2,271	
Current Level	Multiple-use Optimum Capacity	400	1,080		
	358.0	400			
	Current Level		1,448	1,764	



## Recreation

Recreation pursuits include wood gathering, sightseeing, fishing, snowmobiling, camping, or just relaxing in the Forest environment. Recreation use is especially heavy during times when coal mines are shut down, on holidays, and during the big-game hunting season. People from the Wasatch front are attracted to the Forest by big-game hunts, and by opportunities for snowmobiling, camping, and sightseeing.

About one million recreation visitor days (RVD's) are spent on the Forest annually in diverse opportunities. The Recreation Opportunity Spectrum (ROS) System has been used in identifying the continuum of opportunities and stratifying them into classes for both developed and dispersed use. Each class contains important relationships among selected activities, preferred environmental settings, and expected recreational experiences. The ROS class experience levels are grouped as follows:

Primitive - Remote from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers a high degree of challenge and risk.

Semiprimitive Nonmotorized - Generally isolated from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.

Semiprimitive Motorized - Some isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. Opportunity to have a high degree of interaction with the natural environment. Opportunity to use motorized equipment while in the area.

Roaded Natural Appearing - Less isolation from sights and sounds of humans. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and nonmotorized forms of recreation are possible.

Rural - High probability of affiliation with individuals and groups plus the convenience of developed sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenge, risk-taking, and testing of outdoor skills is generally unimportant except for specific activities like downhill skiing, for which challenge and risk-taking are important elements.

### DEVELOPED RECREATION

Developed recreation occurs at areas with facilities constructed especially for recreation. Developed public recreation sites on the Forest include: 20 family type campgrounds, four family type picnic grounds, one winter sports site, one boating site, seven minor interpretive sites associated with an auto tour, four isolated minor interpretive sites, three recreation residence subdivisions comprised of 34 total individual residences, and nine isolated recreation residences. There are two privately-owned resort type facilities under special-use permit. These developed recreation sites utilize 1,484 acres and can support approximately 415,000 RVD's annually under current site conditions.

The inventoried capacity of the National Forest is 5,192,000 developed RVD's of summer use on 11,395 acres. Table II-5 displays campground rehabilitation and expansion needs. Demand is projected at the same rate of increase as the local population. There is no inventory for developed winter use because of the limited demand.

TABLE II-5

CAMPGROUND REHABILITATION AND EXPANSION NEEDS

<u>Campground</u>	<u>Rehabilitation Year*</u>	<u>Expansion Year**</u>
Twelve Mile Flat	1976	1986
Manti Community	1982	1993
Pinchot (Vice) ***	1988	2007
Lake Hill	1993	2028
Maple Canyon	2004	2030+
Chicken Creek	1989	2014
Spring City	2030+	2030+
Ferron Reservoir	1983	1993
Joes Valley	1984	1995
Indian Creek	2030+	2030+
Ferron Canyon	2030+	2030+
Flat Canyon	1975	1981
Gooseberry	1984	1996
Forks of Huntington	1984	1996
Old Folks Flat	1984	1984
Fish Creek	1980	2030+
Buckeye	1981	1998
Pack Creek	1986	2004
Oowah Lake	2030+	2030+
Warner	2008+	2029
Dalton Springs	1973	1980
Buckboard	1990	2005
Red Bluff	1982	2018
Devil's Canyon	2007	2030+

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\* Based on projected use exceeding 20 percent of theoretical capacity.

\*\* Based on projected use exceeding 30 percent of theoretical capacity.

\*\*\* Pinchot is to be replaced by another campground at a new location.

Use of National Forest developed recreation sites is approximately 240,000 RVD's annually. This use is expected to triple over the next 50 years. At this rate, demand for the Manti-LaSal National Forest is expected to exceed supply at some sites starting in the year 1990. Table II-6 displays developed recreation existing use and estimated demand use at the year 2030.

Near the Forest, there are ten State developed recreation areas and five National Parks, Monuments and Recreation areas. National and State parks in addition to Bureau of Land Management facilities are located at lower elevation and do not provide opportunities for people seeking high elevation

experiences typical of the National Forest System lands.

## II-23

Private lands and some State lands have potential for recreation development within and adjacent to the Forest boundary. The current major use on private lands is for dispersed type recreation. There is a trend toward subdivisions for recreation residence development. Some lands, especially those next to reservoirs on the Forest possess a high recreational value.

TABLE II-6

### DEVELOPED RECREATION EXISTING USE AND ESTIMATED DEMAND

<u>ROS Class</u>	<u>1980 Base</u>		<u>2030 Demand</u>	
	<u>RVD's</u>	<u>Gross Acres</u>	<u>RVD'S</u>	<u>Gross Acres</u>
Roaded Natural Appearing	131,750	1,054	256,616	2,836
Rural	<u>108,700</u>	<u>1,484</u>	<u>473,494</u>	<u>4,752</u>
Total	240,450	2,538	730,110	7,588

### DISPERSED RECREATION

Dispersed recreation occurs outside of areas where facilities are built especially for recreation. It occurs mostly along or adjacent to roads, and includes activities such as driving for pleasure, camping, hiking or mechanized trail use, hunting, fishing, and wilderness travel.

Dispersed recreation use totals approximately 690,000 RVD's annually. Factors such as population growth, leisure time, and energy costs have an affect on this use. As dispersed recreation activities on the Forest increase, use will need to be controlled or limited in certain areas in order to reduce resource damage and/or conflict with other resource uses while maintaining the desired opportunities and quality of the recreation experience. Table II-7 displays dispersed recreation existing use and estimated demand at the year 2030.

TABLE II-7

### DISPERSED RECREATION EXISTING USE AND ESTIMATED DEMAND

<u>ROS Class</u>	<u>1980 Base</u>		<u>2030 Demand</u>	
	<u>RVD's</u>	<u>Gross Acres</u>	<u>RVD'S</u>	<u>Gross Acres</u>
Primitive	2,806	48,082	20,800	48,082
Semiprimitive Nonmotorized	18,162	117,891	58,256	117,891
Semiprimitive Motorized	158,194	831,807	473,287	831,807
Roaded Natural Appearing	<u>524,036</u>	<u>413,672</u>	<u>1,587,912</u>	<u>413,672</u>
Total	703,198	1,411,452	2,140,255	1,411,452

## Cultural, Historical, and Paleontological Resources

Sites displaying prehistoric and historic evidence of man and paleontological values constitute an important non-renewable resource of the Forest that have and can be adversely affected by natural forces, vandalism, and project implementation. In addition to protecting these resources, Forest activities should provide for general inventory and as appropriate, nominate sites to the National

Register of Historic Places, develop interpretive sites, and identify areas needing further inventory (see 36 CFR 219.24). Evaluation of sites by Forest personnel, consultants, or academic institutions is likely to increase and eventually lead to completion of the general inventory of sites on the Forest.

These resources found on the Forest are very diverse in type and size, because of a wide spectrum of vegetation, topography, time, and geologic formations.

## PALEONTOLOGY

The North Horn Formation is well renowned for its unique and very important fossil mammals, dinosaurs, and lizards. A North American Provincial Land Mammal "Age", the Dragonian, is based on fossil mammals found on the Manti Division. Recent discoveries indicate the great potential for significant future studies in this formation. The known fossil producing portions of the North Horn Formation are found only within the Manti-LaSal National Forest.

The Morrison Formation is also known world-wide for its fossilized dinosaurs, mammals, and plants. Other formations likely to contain significant paleontological resources include the Dakota, Burro Canyon, Green River, and Blackhawk Formations. However, fossils are found in nearly all of the sedimentary rock formations exposed on the Forest, and important fossils could be found in any of them, including the unconsolidated Quaternary deposits as evidenced by the recent discovery of mastodon bones in the sediments of an ancient natural pond.

## PALEO-INDIAN STAGE

A few isolated finds in Utah possibly relate to this earliest period of known human habitation in this part of North America a period of about 10,000 B.C. to about 5,000 B.C. None of these finds have been on this Forest, but the potential exists for such.

## ARCHAIC STAGE

A reduction of vast herds of large game animals that Paleo-Indian apparently relied on may have led to the change in general lifestyle termed the Archaic. The relationship between Paleo and Archaic peoples is at present unknown. The Archaic may not necessarily be an out-growth of Paleo, but could have existed concurrently. Verifiable Archaic sites on the Manti-LaSal are few, less than one percent of the total, though some of the presently undatable lithic scatters could be from that period.

## FREMONT CULTURE (MANTI DIVISION)

Sedentarism in the Fremont area began somewhere about A.D. 400 and is absent after about A.D. 1250. Evidence for a completely settled life is not found as much nomadic hunting and gathering, at least during certain seasons of the year, seems to have taken place even from people living in pithouse villages. Thus, rather than a complete change in lifestyle, Fremont subsistence could be a part of a general Archaic model where local populations exploit local resources. About 15 percent of the presently known and dateable sites on the Manti Division are from this period.

## PUEBLO PEOPLES (MOSTLY MONTICELLO DISTRICT)

The Pueblo people were contemporary with the Fremont culture, but in a different location. These people first lived in pithouses and slab-lined rooms, later in villages of surface rooms (sometimes several stories) and still later in cliff structures. They cultivated crops, and apparently domesticated animals such as dogs, and turkeys. Small room blocks and single rooms can be found called "field

houses" for limited use while tending crops away from larger villages. Over 71 percent of the known sites on the Monticello Ranger District are Pueblo. The end of the 13th century A.D. saw a nearly complete abandonment of the area.

## PREHISTORIC AND HISTORIC TIMES

Before the brief Spanish explorations in the late 1700's, Ute/Southern Paiute groups sparsely inhabited the region. In the early 1800's, the fur trade reached Utah. In the middle and late 1800's, Mormon colonization caused a great increase in population and changed visible lifestyles.

## CURRENT USES AND MANAGEMENT

The Forest has collected and documented information about historic, prehistoric, cultural, and paleontological resources. This information is found in the following sources:

- Cultural resource surveys and overviews completed by various groups including local universities, contractors, and the Forest Service. These describe prehistoric sites on the Forest.
- An atlas of standard U.S. Geological Survey quadrangle maps marked with surveyed cultural resource sites and project boundaries. Access to the atlas by the general public is restricted to protect the sites from vandalism.
- A Forest Service computerized data base that indicates the presence or absence of cultural resource sites within a given land unit. The sole function of this source is to determine whether protection measures are needed for a project in a specific location. Access to the data base is restricted to protect the sites.

During the late 1950's and early 1960's, the archeological values on the Monticello Ranger District became apparent. Some actions at the time included recommendations for archeological withdrawals and the preparation of preliminary interpretive facility designs. These actions greatly anticipated the National Environmental Policy Act (NEPA) in 1969. NEPA led to the employment of an archeologist on the District to protect and manage the resource. The archeologist was also hired to fulfill the requirements of Executive Order 11593. This Executive Order required a complete inventory of sites on Federal lands, nomination of eligible sites to the National Register, and the preservation of significant cultural resources. The 1979 Archeological Resource Protection Act supported this Executive Order and made provisions for civil and criminal action to protect the resource.

Early Forest cultural inventories were sporadic and generally incomplete. However, beginning in the early 1970's, mostly on the Monticello Ranger District, large scale organized surveys were made by the Forest Archeologist in cooperation with Brigham Young University and Weber State College. During the mid 1970's, a private contractor surveyed the Manti Division in conjunction with coal leasing activities. In recent years, cultural surveys or cultural evaluations have been made prior to ground-disturbing activities. Protection measures are undertaken whenever a cultural or paleontological site is found. Through these inventories/evaluations, the Forest is gradually gaining any inventory of the resource. About eight to ten percent of the acreage of the Forest has been surveyed in mappable blocks. Very little analysis or long-term recommendation work has been done. No stabilization or interpretive work has taken place.

The location of known cultural and paleontological resource sites and areas of potential sites is kept confidential to protect them from vandalism. Vandalism of sites is currently increasing because of the high market values for artifacts. As an example, a reexamination of an area in 1985 showed 90 percent of the sites vandalized, where in the early 1970's, the areas showed less than 10 percent of the sites vandalized.

Many of the Forest administrative structures are over 50 years old and could be considered cultural resources. Most of these are structurally sound and in use. Others have outlived their usefulness or are beyond repair, and are being considered for demolition.

Older buildings within the Forest are being evaluated to determine their historic significance. Those found to qualify for the National Register of Historic Places will be nominated for inclusion. These facilities that are selected will be appropriately signed and interpreted.

## **Visual Resource**

National Forest System lands provide a diversity of views in foreground, middleground, and background when viewed from on or off the Forest.

The Manti Division provides varied quality in viewing. Above average views are composed at high elevation plateaus, in canyon displaying a high degree of visual landscape diversity, around moderate to large size water impoundments, and at areas containing large, near vertical cliff escarpments. Below average views are composed of relatively flat appearing sagebrush covered expanses.

The Manti Division also serves as middleground and background when viewed from cities and towns such as Price, Huntington, and Orangeville on the east; Manti, Ephraim, and Fairview on the west; and Levan, west of the San Pitch Division.

Many areas on the Manti Division are visually sensitive because of the significant visual variety which is viewed by large numbers of recreation oriented visitors. These are areas where certain management activities would be highly visible and could cause a high degree of man-made visual contrast. Developed and dispersed recreation environments in Huntington Canyon, Joe's Valley (including Straight Canyon), Ferron Reservoir, Skyline Drive, Forest border slopes and escarpments are in this category.

The Moab Ranger District scenic attractions include mountain peaks and passes, forested lands and canyons. Spectacular viewing of the surrounding desert is also available. The Moab District serves as a scenic backdrop to Arches and Canyonlands National Park, the town of Moab, and to travelers along connecting highway systems.

Visually sensitive areas on the Moab Ranger District include the peaks, views from the LaSal Loop Road, Warner, Oowah, and Buckeye Reservoirs, and views from other major recreation areas on and off the Forest.

The Monticello Ranger District's timbered slopes of the Abajo Mountains provide a welcome middleground and background contrast to the sand and heat of the nearby desert. This view is available to Monticello and Blanding communities, to travelers along roads and highways throughout the area, and to visitors at the National Parks, monuments, and recreation areas in the Four Corners Region. Pictographs, petroglyphs, and stone dwellings are evidence of past civilizations and are interesting scenic attractions.

Road, Chippean Rocks, Federal and State highways, Monticello and Blanding communities, Hammond, Arch, Peavine, Dark and Woodenshoe Canyons, and National and State Parks.

Wildlife such as elk, deer, small mammals and birds are often seen throughout the entire Forest and add to the viewing experience.

### SCENIC QUALITY

Scenic quality is divided into three major classes: Class "A", unique, distinctive, or outstanding landscape variety; Class "B", prevalent, usual, or widespread variety; Class "C", little or no visual variety. Table II-8 displays scenic quality for the San Pitch, Manti, Moab, and Monticello land areas.

TABLE II-8

#### FOREST SCENIC QUALITY (ACRES)

<u>Land Area</u>	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>
San Pitch Division	2,453	73,707	- 0 -
Manti Division	147,861	605,863	40,448
Moab District	39,516	120,650	14,492
Monticello District	<u>116,134</u>	<u>207,856</u>	<u>45,141</u>
Total	305,964	1,008,076	100,081

### VISUAL QUALITY

Visual quality is measured in five levels of excellence based on physical (scenic quality) and sociological (user's concern) characteristics of an area. It allows for an acceptable degree of alteration of the characteristic landscape. The level includes: preservation, retention, partial retention, modification, and maximum modification. Table II-9 displays Forest visual quality levels of the existing visual condition based on the 1980 planning inventory.

TABLE II-9

#### FOREST VISUAL QUALITY (ACRES)

<u>Land Area</u>	<u>Existing Condition (1980)</u>				
	<u>Preservation</u>	<u>Retention</u>	<u>Partial Retention</u>	<u>Modification</u>	<u>Maximum Modification</u>
San Pitch Division	- 0 -	2,717	40,583	32,860	- 0 -
Manti Division	- 0 -	133,679	408,391	249,743	2,539
Moab District	- 0 -	23,429	82,666	57,966	10,597
Monticello District	<u>45,529</u>	<u>69,523</u>	<u>136,199</u>	<u>111,143</u>	<u>6,736</u>
Total	45,529	229,348	667,839	451,712	19,692

The characteristic visual landscape is composed of interactions of existing vegetation, water, and landform on the line, form, color, and texture of the viewed scene. Since a large proportion of the Forest's vegetation is in a mature to over-mature condition, the characteristic landscape should change as the vegetation changes. Vegetation treatment could influence this change by regenerating vegetation to blend with or improve the existing landscape. Changes to the characteristic landscape through the natural successional processes such as wildfire, windthrow, or insect attack, could often be very large, contrasting, and could temporarily degrade the visual quality.

Many Forest users place high importance on visual quality. Maintenance of the visual resource should increase in importance as recreation use continues to grow.

## **Wilderness**

Prior to the Colorado Wilderness Act of 1982 and the Utah Wilderness Act of 1984, the Forest planning process had developed an inventory of lands that were essentially unroaded and undeveloped. These met the minimum definition of wilderness, and qualified for wilderness evaluation per NFMA Regulation 219.17. The inventory contained 40 roadless areas, totalling 600,170 acres Forest-wide. This inventory and a description of each area was filed with the Forest's planning records.

The Utah Wilderness Act designated 706,736 acres State-wide, including the 45,000 acre Dark Canyon Wilderness on this Forest. Adjacent public lands administered by the Bureau of Land Management and National Recreation Area lands are being considered for wilderness and could add to the size and diversity of Dark Canyon Wilderness. The Colorado Wilderness Act did not designate any Manti-LaSal National Forest System lands as wilderness. Both laws released other National Forest System lands to other multiple use management until the next planning cycle. It is estimated that Dark Canyon Wilderness would meet the anticipated demand for wilderness in Utah during the first planning period. At the end of this period, and during the Forest Plan revision, the need for additional wilderness could again be evaluated. The total acres that are estimated to be available at that time is discussed in Chapter IV.

Dark Canyon represents the first major Colorado Plateau Canyon terrain to be added to the National Forest Wilderness System. This area is characterized by deep sandstone canyons with vertical walls ranging from a few hundred to thousands of feet in height, interspersed with pinyon-juniper benchland. It contains arches, springs, seeps and hanging gardens. Life zones range from ponderosa pine and aspen-covered high country to desert vegetation in the bottom of Dark Canyon at the National Forest boundary. High red rock canyons dwarf visitors with terraced castle-like walls towering 3,000 feet above the canyon floors. Wildlife species are diverse and include mule deer, some cougar and possibly desert bighorn sheep. The area also ranks high in archeological and scenic values. The Dark Canyon Wilderness current use and demand use are displayed in Table II-7 under the primitive ROS class.

## **Wildlife and Fish**

The Manti-LaSal National Forest ranks first of the six National Forests in the State of Utah in projected potential to produce big game. According to the Intermountain Region's Wildlife and Fish Assessment data base, the Utah Division of Wildlife Resource (UDWR), in 1990, projects the Forest producing 28 percent of the elk in the State, 21 percent of the mule deer, 11 percent of the moose, 30 percent of the mountain goat, and 24 percent of the bighorn sheep. Table II-10 shows UDWR population estimates and goals for certain big-game species. How close UDWR's figures are to



actual populations is unknown. Presently, one-third of the elk and one-sixth of the mule deer harvested in the State are taken on the Forest. Additional hunting opportunities are provided by black bear, cougar, turkey, blue, sage and ruffled grouse, chukar, band tail pigeon, snowshoe hare, and cottontail rabbits.

There are 680 miles of streams on the Forest. About 167 miles have been severely damaged as a result of landslide and flood events of 1983 and 1984, leaving 513 miles currently fishable. There are 1,765 acres of lakes and reservoirs on the Forest.

TABLE II-10

UDWR POPULATION EXISTING AND DESIRED GOALS

	<u>1980 Population Estimate</u>	<u>1990 Desired Goal*</u>
Elk	4,390	6,600
Mule Deer	32,150	83,630**
Moose	50	200
Mountain Goat	0	200
Bighorn Sheep	55	170

\*Obtained from the Intermountain Region Wildlife and Fish Assessment Data Base for the 1980 Regional Guide, August, 1981, and reflects UDWR goals without multiple use considerations or interaction between big-game species.

\*\*Since these goals were established, the Interagency Committee has agreed to complete Interagency Herd Unit Plans which will establish individual herd unit population objectives. How close the herd unit population objectives will come to the UDWR desired goals is unknown.

FOREST SPECIES

Diversity in topography, vegetation, and climate on the Forest provides habitats for 368 vertebrate species of mammals, birds, reptiles, amphibians, and fish. General groupings of the species and their game status are show in Table II-11. A complete species list and summary of habitat relationships are included in the Forest planning records.

TABLE II-11

NUMBER OF VERTEBRATE SPECIES  
(Vertebrate Species of Southern Utah, Pub. No. 78-16 - UDWR)

	<u>Total Species</u>	<u>Game Species</u>
Mammals	94	19
Birds	216	9
Reptiles	29	0
Amphibians	8	0
Fishes	21	4
Total	<u>368</u>	<u>32</u>

Estimated 1980 populations of the primary game species are indicated in Table II-12. Population projections for small game and non-game species have not been made Forest-wide.

TABLE II-12

ESTIMATED 1980 POPULATIONS OF PRIMARY GAME SPECIES

Species	Population
Black Bear	375
Elk	4,390
Mountain Lion	300
Moose	50
Mule Deer	32,150
Turkey	100

MANAGEMENT INDICATOR SPECIES

Management Indicator Species (MIS) are a select group of species which can indicate change in habitat resulting from activities on the Forest.

Criteria used in selecting MIS include:

- Threatened, endangered, and sensitive species.
- Special habitat indicators.
- Economically or socially important species.
- Ecological indicators.

These criteria and the MIS concept are discussed in the Intermountain Region's Wildlife and Fish Assessment Data Base, August, 1981, pp. 1-5. Table II-13 lists the selected MIS and an index of habitat capability, based on the capability in 1980 as an index of 100 for each species.

TABLE II-13

INDEX OF HABITAT CAPABILITY FOR FOREST MIS

Indicator Species	Current (1980) Capability	Minimum Viable	Maximum Potential
Elk	100	48	310
Mule Deer	100	62	215
Macroinvertebrates	100	*	128
Blue Grouse	100	*	200
Golden Eagle	100	*	100
Albert Squirrel	100	80	350

\*Data to determine minimum viable population is not available.

## ROCKY MOUNTAIN ELK

Elk is an economically important species which occurs throughout the Forest and is hunted on four Districts. Hunting demand is high, increasing, and expected to continue increasing.

Elk use most Forest habitat types during different periods of the year. The limiting habitat factor is winter range on or adjacent to the Manti and San Pitch Divisions, and summer range on and off the LaSal Division. Calving areas are important, but not limiting on all divisions. Elk are sensitive to activities occurring on their ranges and monitoring of projects is necessary to show the effects of land uses.

Management trade-offs may necessarily occur between elk and mule deer which could be reflected in population changes of both species.

The minimum viable population (MVP) of 2,125 is a threshold level below which the species cannot exist over time, within its present range. Existing population, 4,390, is the number on the Forest in 1980. The potential population, assuming lands on and off the Forest can provide winter habitat is 13,650, the maximum number National Forest System lands are capable of supporting using only soil and water protection limitations. The UDWR's desired population of 6,600 is the goal the State would like to see reached by 1990. The population trend is increasing.

## MULE DEER

Mule deer is an economically important species occurring and hunted throughout the Forest. Hunting demand has been high, increasing, and is expected to continue increasing.

Mule deer are found in most Forest vegetation types. They are quite dependent on lower and mid-successional stages of shrub and timber types, and activities occurring in these areas can significantly affect mule deer populations. Monitoring this species will show the effects of Forest management.

Mule deer populations are limited by winter range on and adjacent to the Manti and San Pitch Divisions. A large percent of the winter range is in private holdings off Forest. Use of this habitat could be eliminated as a result of private lands uses at some point in the future. Thus, the management of key winter range on the Forest becomes very important.

The population estimates at different levels are as follows:

- a. Minimum viable population is 19,820;
- b. Existing (1980) population is 32,150;
- c. Potential population with multiple use considerations is 49,938; and
- d. State DWR desired population without multiple use considerations is 83,630.

The population trend is increasing.

The Abert squirrel is a Utah State high interest species found only on the Monticello District in Utah. Optimum Abert squirrel habitat is characterized by ponderosa pine stands with even-aged clumps of 12-19 inches D.B.H. and 45-75 foot height, with interlocking crowns and a ground cover of forbs, grasses, and shrubs. Several studies have shown Abert squirrels to have summer territories averaging 18-24 acres and winter territories averaging five acres.

By selecting Abert squirrel as a MIS, the species will be monitored to determine how timber management activities manipulate its habitat (mature ponderosa pine) and population. The basic habitat area of the squirrel will remain constant although population densities may change in the various areas with time or as a result of timber management.

Existing, potential, and UDWR desired population estimates are not available for Abert squirrels. Its present habitat of 79,925 acres of ponderosa pine is believed to be needed to support a minimum viable population. Currently, 2,200 acres of the total ponderosa pine acreage is unavailable for timber management activities due to steep slopes and rough terrain. These acres are generally mature ponderosa pine types and constitute poor to optimum Abert squirrel habitat. The remaining 77,725 acres of ponderosa pine available for timber management activities constitute from poor to optimum Abert squirrel habitat. Maintenance of healthy ponderosa pine timber stands should sustain the Abert squirrel within its present range. Abert squirrel population trend is stable.

## BLUE GROUSE

Blue grouse, hunted on all Districts, is closely tied to several vegetative types occurring above 6,500 feet in elevation on the Forest. Breeding males require areas of escape cover in open timber stands adjacent to open sagebrush/grass/forb habitat types. The edges are most heavily used. Males display in the open areas. Females require nesting cover on the ground, usually sagebrush or other dense brush. Females usually nest in the territory of the male they mate with. Brooding cover, tall grasses and tall forbs (12-15 inches high), is usually found along the edge between timber stands and sagebrush flats. Blue grouse move to higher elevations in the winter and require mature conifer stands. Douglas-fir is preferred.

Management activities can impact habitat and result in population changes. Logging and roading mature conifer stands may reduce winter habitat. Ecotones between timber and shrub/grass habitats may be altered by logging and/or range vegetative manipulations. Pesticide spraying in shrub/grass habitat reduces the prey base (insects) in brooding areas. Livestock grazing reduces brood cover in many areas.

The DWR annually collects summer inventory and harvest data which should indicate how management affects blue grouse.

On the Manti-LaSal National Forest, there are approximately 244,000 acres of marginal timber lands. Of this total, it is estimated that 100,00 acres would be required to maintain the blue grouse within its present range. Winter feeding areas are considered to be the limiting factor for blue grouse production.

Though population estimates of blue grouse are not available, according to the Utah State Division of Wildlife Resources, the population trend is stable.

The golden eagle is a State and Federal high interest species found on all Districts. They use most vegetative types found throughout the Forest. Their nest sites are generally localized in escarpment areas, and are usually found in undisturbed areas. During nesting and brooding seasons (mid-February to mid-July) activities in active nest site areas may impact golden eagle populations. Monitoring this MIS should determine how these activities affect golden eagles.

Existing, potential, and UDWR desired population estimates of golden eagles are not available. The optimum number of golden eagles on the Manti-LaSal National Forest was estimated using the fact that a breeding pair requires a territory up to 30 square miles in size. Dividing the total Forest area (1,334,491 acres) into 30 square mile units would provide habitat for a maximum of 69 breeding pairs.

#### MACROINVERTEBRATES (Aquatic Insects)

Macroinvertebrates are ecological indicator species in aquatic habitats and the ability of that habitat to support fisheries. Habitat requirements for aquatic macroinvertebrates vary with species. Habitat requirements for any one species are very specific.

Aquatic habitat on the Forest consists of 680 miles of stream fisheries and 1,765 acres of lakes and reservoirs. Macroinvertebrates are found in these areas. Tunnels and canals, which carry water, may also provide habitat for macroinvertebrates. These habitats can be monitored for macroinvertebrates on a priority basis as needed to determine the specific effects of any one project or activity, as well as the effects of general Forest land management, on the aquatic resources. The number and variety of macroinvertebrates found express the quality and quantity of the aquatic habitat. Changes in aquatic habitats, resulting from activities in the terrestrial habitat, are rapidly seen through changes in the species composition and biomass of macroinvertebrates.

Any serious concerns about habitat conditions beyond MVP levels should be addressed under well defined procedures outlined in the R-4 General Aquatic Wildlife System (GAWS) and the publication "Aquatic Ecosystem Inventory - Macroinvertebrate Analysis" published by USFS, Intermountain Region, October, 1979. The following list of macroinvertebrate species is considered minimal to accomplish any meaningful assessment of the aquatic ecosystem, and may be utilized essentially as one MIS:

Epeorus Species - Mayfly - Requires good water quality and good instream habitat. Must have a resident population.

Zapada Species - Stonefly - Depends upon allochthonous leaf litter for nutrients. Relative numbers generally indicate riparian habitat quality and quantity. Best when sampled in fall.

Ephemerella doddsi - Mayfly - Requires good water quality and good instream habitat. Relative numbers can indicate habitat quality.

Ephemerella inermis - Mayfly - Moderately tolerant to sedimentation. Good red-flag species when their numbers increase.

Chironomidae species - Dipteran - Highly tolerant to multiple forms of pollution. Particularly tolerant to sedimentation. Often dominate the community when pollution is severe.

Table II-14 shows the 1980 and projected demand for wildlife and fish through the planning period.

Hunting demand for elk has increased since open bull seasons were implemented (1967 for the Manti Division, 1970 for the LaSal Mountains) and this trend is expected to continue. Elk hunting pressure on the Forest has averaged about 28 percent of the State's total over the last 10 years.

Stream habitat for fisheries is estimated to be about 25-30 percent of its potential. This is due to historic land abuse and recent mud slides and associated flooding. Improvement of stream habitat and construction and /or reconstruction of flat water fisheries will aid in meeting the projected demand for fishing.

Mule deer numbers have been less than the carrying capacity of their key habitat for much of the last decade. These numbers are gradually increasing. The increase of numbers will aid in meeting the expected demand for deer hunting.

TABLE II-14

PROJECTED DEMAND FOR WILDLIFE AND FISH  
WILDLIFE AND FISH USER DAYS (WFUD)

<u>Year</u>	<u>Mule Deer WFUD</u>	<u>Elk WFUD</u>	<u>Fish WFUD</u>	<u>Total WFUD</u>
1980	34,051	12,241	52,198	98,490
1990	49,664	37,753	98,569	185,986
2000	56,423	53,249	123,663	233,335
2010	63,180	68,742	148,751	296,169
2020	69,939	84,238	173,846	328,023
2030	76,695	99,732	198,934	375,361

ENDANGERED, THREATENED, AND SENSITIVE SPECIES

The following definitions are applicable to these species:

Endangered Species - Any species listed in the Federal Register which is in danger of extinction throughout all or a significant portion of its range.

Threatened Species - Any species listed in the Federal Register which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Sensitive Species - Any species which (1) has appeared in the Federal Register as proposed for classification as T&E and/or is presently under consideration for official listing, or (2) is recognized by the Regional Forester to need special management in order to prevent them from being placed on a Federal or State list.

There are extensive guidelines for endangered, threatened and sensitive species including the Endangered Species Act of 1973 (PL-93-205); Forest Service National Policy; the Manti-LaSal National Forest Endangered, Threatened and Sensitive Species Management Plan; and the Regional Forester's Endangered, Threatened and Sensitive Animal and Plant list. Special attention is necessary for the environmental needs and habitat management for those species listed as endangered, threatened, and sensitive, which are dependent upon the Forest.

Table II-15 lists the endangered, threatened, and sensitive plants, mammals, birds, amphibians, and reptiles found on the Forest.

The Bald Eagle is a winter migrant and is found in Joe's Valley and Castle Valley Ridge. Roosting areas have been located in Four-Mile Canyon and north of Indianola. Except for the roosting areas, no National Forest System lands on the Manti-LaSal National Forest are considered to be critical or essential for Bald Eagle. Winter surveys indicate approximately four eagles use the Joe's Valley area and 12 use the Castle Valley Ridge area each winter. The roosting areas have not yet been surveyed.

During the spring of 1984, a breeding pair of peregrine falcons was located on the Monticello District. Surveys need to be completed to determine the habitat and extent of use of this pair or others on National Forest System lands.

River otter have recently (within the last 15 years) been located on National Forest System lands in the vicinity of Potters Pond. Additional surveys are needed to determine the viability and extent of the population and its critical habitat requirements.

Little information is available on the other animal species listed as sensitive. As information becomes available, appropriate actions will be taken to maintain and/or increase the number with the goal of taking the animals off the list.

There is one plant species, Echinocereus triglochidiatus var. inermis, on the Forest which is officially listed as endangered. Thirteen other species are considered as sensitive.

Astragalus montii has been proposed for listing as a threatened species by the USDI Fish and Wildlife Service.

All the endangered, threatened, and sensitive plant species are protected, studied, and maintained under the guidelines set forth in the Endangered Species Act of 1973, the Forest Service Manual, National Policy and Guidelines for Sensitive Species, and the Manti-LaSal National Forest's Endangered, Threatened, and Sensitive Species Management Plan.

With the exception of the Bald Eagle roosts (mentioned above) no population trends or critical or essential habitat has been established or determined for any of the sensitive or endangered species located on the Forest. Studies have been established and plans initiated to determine species distribution and essential habitat on the Forest.

Habitat for most of the sensitive and endangered plant species is located within livestock grazing allotments. As allotment plans are developed, protection of these species is made part of the plan. Protective measures may include grazing of the habitat area only after the plant has completed its annual life cycle, grazing at a time when the plant is least sensitive, fencing the habitat areas, and elimination or reduction of grazing.

TABLE II-15

THREATENED, ENDANGERED, AND SENSITIVE SPECIES  
FOUND ON THE FOREST

<u>Species</u>	<u>Status</u>
<u>Plants</u>	
Astragalus desereticus (Deseret milkvetch)	Sensitive
Astragalus iselyi (Isley milkvetch)	Sensitive
Astragalus montii (Heliotrope milkvetch)	Sensitive*
Carex scirpoidea var. curatorum (None)	Sensitive
Cryptantha creutzfeldtii (Creutzfeld catseye)	Sensitive
Echinocereus triglochidiatus inermis (Spineless hedgehog cactus)	Endangered
Erigeron mancus (LaSal daisy)	Sensitive
Festuca dasyclada (Sedge fescue)	Sensitive
Hedysarum occidentale var. canone (Canyon sweetvetch)	Sensitive
Hymenoxys depressa (Low hymenoxys)	Sensitive
Hymenoxys helenioides (Helenium hymenoxys)	Sensitive
Penstemon tidestromii (Tidestrom beardtongue)	Sensitive
Senecio dimorphyllus var. intermedius (Intermediate groundsel)	Sensitive
Silene petersonii (Plateau catchfly)	Sensitive
<u>Mammals</u>	
Sciurus aberti (Abert squirrel)	Sensitive
Lutra canadensis (River otter)	Sensitive
Ochotona princeps-moorei (Moores pika)	Sensitive
Euderma maculatum (Spotted bat)	Sensitive
<u>Birds</u>	
Haliaeetus leucocephalus (Bald Eagle)	Endangered
Falco peregrinus (Peregrine falcon)	Endangered
Aquila chrysaetos (Golden Eagle)	Sensitive
Accipiter cooperii (Cooper hawk)	Sensitive
Asyndesmus lewis (Lewis woodpecker)	Sensitive
Coccyzus americanus (Yellowbilled cuckoo)	Sensitive
<u>Amphibians</u>	
Hyla arenicolor (Canyon tree frog)	Sensitive
<u>Reptiles</u>	
Diadophis punctatus regalis (Regal ringneck snake)	Sensitive
Xantusia vigilis utahensis (Utah night lizard)	Sensitive
Opheodrys vernalis blanchardi (Western smooth green snake)	Sensitive
Lampropeltis pyromelana var. infralabialis (Utah mountain king snake)	Sensitive
Lampropeltis triangulum var. taylori (Utah milk snake)	Sensitive
<u>Summary</u>	
Federally Listed (Endangered)	3
Sensitive	27

\*Proposed for listing by the USF&WS



## HABITAT DIVERSITY

Forest wildlife species depend on a variety of vegetation and different growth stages for habitat. Certain species such as goshawks depend on the late succession or mature forest stages for nesting. Mule deer and elk need early structural stages (seral) for feeding and mid and late stages for protective cover from predators and shelter from the elements. Few of the species are exclusively dependent on any one structural stage. The Forest condition that best provides wildlife diversity is one that contains structural stages in a well distributed mosaic of vegetation types and stages.

### Range

Table II-16 is a summary of the range resource on the Forest.

TABLE II-16

#### RANGE RESOURCE SUMMARY RANGE CONDITION, TREND, AND VEGETATIVE TYPES

	Acres, Range Suitable for Grazing and Browsing	Acres, Range Suitable for Livestock Grazing
Acres of Range	1,212,846	651,481
Range Forage Condition*		
Acres Good	122,278	78,399
Fair	655,853	449,963
Poor	210,876	123,119
Unclassified (7 & 7T Types)	223,839	0
<b>Total</b>	<b>1,212,846</b>	<b>651,481</b>
Ecological Trends*		
Acres Up Trend	37,411	32,686
Not Apparent	841,317	527,417
Down Trend	110,279	91,378
<b>Total</b>	<b>989,007</b>	<b>651,481</b>
Vegetative Types		
1. Grasslands	176,627	162,558
2D. Dry Meadow	4,441	4,441
2W. Wet Meadow	887	887
3. Perennial Forb	26,035	22,553
4. Sagebrush	117,550	93,811
5. Browse-Shrub	264,114	129,186
6. Coniferous	204,375	81,836
9. Pinyon-Juniper	252,643	14,778
10. Aspen	158,893	134,585
20. Reseeded Lands	7,281	6,846
<b>Total</b>	<b>1,212,846</b>	<b>651,481</b>

\*Condition and trend figures are based on formal inventory procedures, some of which are over 20 years old. A more current inventory would reflect slightly more acres in the higher condition classes.

There are 144 designated grazing allotments on the Forest comprised of 47 cattle and 97 sheep allotments. At present, most of the allotments are being grazed at or near their estimated grazing capacities, although some allotments are over obligated.

The Forest has permits for 20,730 cattle and 84,913 head of sheep. The 1980 permitted AUM obligation for the Forest was 175,334. This is 23,648 AUM's over the 151,686 actually being grazed. The difference between permitted and actual use is shown on non-use agreements for: (1) reduced stocking range protection, (2) reduced stocking while range development takes place, and (3) some non-use for personal convenience of the permittees (Table II-17). While the existing permit obligation is 20 percent greater than the carrying capacity Forest-wide, the actual use being made of the range is within six percent of the carrying capacity. It varies from allotment to allotment, but the actual use is getting closer to the grazing capacity. This is accomplished by adjusting numbers and season of use, and by installing improvements and grazing management systems that increase capacity.

In 1980, there were 482 valid livestock permits issued on the Forest. Of this 329 were cattle, and 153 were sheep permits (Table II-18). Forty-seven percent of the cattle permits were for less than 30 animals and 82 percent of the sheep permits were for less than 1,000 head. This large number of permittees, with relatively small numbers of animals, creates a heavy impact on administrating the range program on the Forest. There are many changes in permits with an average of about 75 permit waivers and modifications each year.

TABLE II-17

PRESENT AND POTENTIAL RANGE USE

	Present Obligation AUM's*	Actually Grazed AUM's*	Present Capacity AUM's**	Estimated Potential AUM's***
Total AUM's	175,334	151,686	142,249	162,132

- \* Data From 1980 Grazing Report
- \*\* Based on Best Estimate at This Time (1984)
- \*\*\* Estimated Potential Capacity Based on Current Direction

The range carrying capacity must be balanced so the long-term soil productivity is not impaired. Range carrying capacities can change based on the kind and amount of available moisture, the quality and effectiveness of the allotment grazing system, the level of improvement and maintenance work done, the influence of many natural factors such as catastrophic events (landslides, wildfires), cycle of changes in rodents, pests, diseases, etc., and the impacts from other resource uses and activities on an area.

To keep use levels in balance with the range, additional improvement work is needed on many of the allotments on the Forest. Some allotments contain poor condition range, lack available water, or need both structural and non-structural improvements to improve and maintain their condition. Some allotments are over-obligated in terms of livestock use to available forage supply. Without range improvement, the obligation will eventually be reduced. Likewise, when improvements in range condition and carrying capacity occur, increase in livestock stocking can be considered.

TABLE II-18

NUMBER OF LIVESTOCK PERMITTEES  
ON THE MANTI-LASAL NATIONAL FOREST

Permit Size	Manti Division No. of Permits	LaSal Division No. of Permits	Total	Percent
Cattle 1-30	140	13	153	47
31-50	68	1	69	21
51-100	50	4	54	16
101-300	29	15	44	13
301+	1	8	9	3
<b>Subtotal</b>	<b>288</b>	<b>41</b>	<b>329</b>	<b>100</b>
Sheep 1-30	7		7	5
51-100	10		10	6
101-300	30		30	20
301-1,000	78		78	51
1,000+	28		28	18
<b>Subtotal</b>	<b>153</b>		<b>153</b>	<b>100</b>
<b>Total</b>	<b>441</b>	<b>41</b>	<b>482</b>	<b>---</b>

The inventory (Table II-16) shows sixteen percent of the suitable livestock range on the Forest is in poor condition, 69 percent is in fair condition, and 12 percent is in good condition. Range trend on suitable range on the Forest shows that five percent of the total suitable range is in a up-trend, 80 percent is in a stable condition, and 14 percent is in a down-trend. Range condition and trend need to be improved. Some of these figures are 20 years old. A more current inventory would show a somewhat better range condition.

The greatest potential for improving range conditions and trend is on the poor condition range sites in the high elevation grass-forb, aspen, mountain brush, sagebrush, and pinyon-juniper vegetative types. Approximately 123,000 acres of poor condition rangelands suitable for livestock grazing have been identified on the Forest. Most of these lands will need either treatment or less grazing pressure to improve their condition and trend.

Plant competition has changed in many of the plant and habitat types on the Forest. Many of the original, more desirable species are missing. Lower elevation sites in the sagebrush-grass and the grass-forb types on the high plateaus were heavily grazed near the turn of the century with resultant much soil loss. These lands have lost much of their productivity and cannot support the quality and quantity of vegetation previously found there. The species found in many of these types today are classed as secondary or invader species, providing less ground cover and available forage. These poor range sites could take a long time to recover and reach their potential because of the slow rate of soil development.

Many range revegetation projects have been completed on the Forest to improve the vegetative and soil conditions. There is a potential for many projects on the Forest. The current range management direction on the Forest is to develop range allotment plans for all grazing allotments by 1988, and to include in these plans the projects needed to develop and improve the range condition. These projects will benefit both livestock and wildlife. As of 1984, 91 of the 144 grazing allotments have plans written and approved.

Many local ranchers are dependent upon the forage produced on the Forest for an important part of their operation. Grazing on National Forest System lands aids in maintaining a stronger tax base and provides support to the local economy and communities.

The conflicts between livestock and big-game use on big-game winter range are minor at present. Conflicts may increase in the future as private lands near the Forest are sold for development. This will reduce the available big-game winter range areas off Forest and increase the use on National Forest System lands.

Conflicts between livestock use and exploration and development of the mineral industry, currently minimal, have a potential to increase with increased mineral activities. Rangelands will be either lost or impacted. Without adequate mitigations, some adjustment in livestock numbers may be needed. It may also be necessary to make changes in management systems and plans to adjust to the effects of these developments.

## Timber

### LAND CLASSIFICATION

Some 368,100 acres are classified as tentatively suited for timber production on the Manti-LaSal National Forest (Table II-19). This classification was determined in accord with regulations in 36 CFR 219.14. The suited land acreage for timber production is based on total National Forest System lands included in the 1964 timber inventory. These lands were evaluated on slopes, access, and land stability to determine lands tentatively suitable for timber production. Tentatively suited lands include lands that could be harvested using available logging systems without causing irreversible or irretrievable environmental damage. Owing to demand and limitations on logging equipment locally, a second evaluation was made to show the lands suitable for logging with methods commonly used on the Forest (see Table II-20). While 92 percent of the timberland is suitable for timber management, currently only 34 percent of the timberland is available for harvest.

TABLE II-19  
TIMBERLAND CLASSIFICATION

	<u>M Acres</u>	<u>Percent</u>
I. Non-Forest Land	644.7	48.3
II. Forest Land	(689.8)	(51.7)
A. Forest Land not Suited for Timber Production	(321.7)	(24.1)
1. Land not capable of producing 20 cubic feet/acre/year.	252.6	18.9
2. Land withdrawn from timber production.	9.4	.7
3. Land not physically suited (irreversible damage likely to occur.)	22.6	1.7
4. Land with inadequate current information.	37.1	2.8
B. Tentatively Suited Forest Land	(368.1)	(27.6)
1. Land not suited for timber production due to high logging costs.	235.4	17.7
2. Net land suited for timber production.	<u>132.7</u>	<u>9.9</u>
III. Total Land	1,334.5	100.0

TABLE II-20

## SUITABLE TIMBERLAND CLASSIFICATION BY TIMBER TYPE

Timber Type	M Acres			MBF			
	Total	Tent.	Curr.	Current Allowable Sale Quantity		Optimum LTSY Projected	
				Tent.	Curr.	Tent.	Curr.
PP	105.6	101.9	51.4	3,566	1,799	22,418	11,308
ES	74.1	66.4	24.7	6,640	2,470	13,208	4,940
AF	36.8	33.1	3.4	1,754	180	6,620	680
DF	31.4	28.3	12.8	1,358	614	5,660	2,560
AS	154.6	138.2	44.6	6,081	1,962	20,730	6,690
Total	402.5	368.1	136.9	19,399	7,025	68,708	26,178

Tent. = Tentatively

Curr. = Currently

## REGULATION OF CUT

The Forest is now overbalanced in favor of old-growth sawtimber. The percentage of total stocking by size-class follows:

<u>Size Class</u>	<u>Acres</u>	<u>Percent</u>
Mature Sawtimber	95,500	72
Immature Sawtimber and Poles	33,200	25
Seedlings-Saplings and Nonstocked	<u>4,000</u>	3
TOTAL	132,700	

The current allowable sale quantity (ASQ) and projected optimum long-term sustained yield are shown in Table II-20 by species. The ASQ is calculated using the volume production per acre by species developed for the 1966 Forest Timber Management Plans. The LTSY is based on optimizing management for timber growth for each species.

A regulated forest would have approximately 40-50 percent of its commercial forest land in the sawtimber class, 25-35 percent in the pole class, and 25-30 percent in the seedling-sapling class.

## EXISTING SITUATION

Of the Forest's 105,600 acres of ponderosa pine, about 25,500 acres are rated as having high to medium susceptibility to attack by mountain pine beetle. About 80 percent of the Engelmann spruce type was affected to some degree by the bark beetle attack in the early 1960's. The remaining 20 percent is rated as having medium to high susceptibility. Root rots are continuing to cause quite

high mortality rates in fir types. About 33 percent of the ponderosa pine type is infected with dwarf mistletoe. An infection of spruce budworm was recently noted in the Engelmann spruce in the Huntington Canyon area.

The price of timber over the last 10 years has been very erratic. The current high interest rate has severely depressed the lumber market. Costs for road construction, logging, and milling have caused most timber sales to be below cost sales.

Most timber sales are on relatively flat slopes with a very few reaching or exceeding 40 percent slopes. Tractor logging is the only yarding method currently used.

Cutting practices have changed over the years. Until about 1960, approximately 25 percent of the spruce fir areas were harvested by clearcuts. Currently, all merchantable timber is salvaged in insect infected or fire killed trees. Growing public sentiment against clearcutting prompted the use of other harvest methods in healthy spruce-fir stands. Ponderosa pine has always been harvested by individual or group selection or shelterwood methods. Clearcutting is still the harvest method for aspen as it is necessary to cut an entire clone at one time to achieve successful sprouting and regeneration of the species.

The present harvest is:

- 2 MMBF Spruce Fir Type
- 2 MMBF Ponderosa Pine Type
- 4.3 MMBF Roundwood Products and Fuelwood, All Species
- Minor harvesting in the Aspen Type
- 8.3 MMBF (Total)

## DEMAND ANALYSIS

Demand for sawtimber on the Manti-LaSal National Forest is assumed to be completely elastic. This infers that the quantity offered for sale does not affect stumpage prices and all timber offered for sale will be sold. Average annual production for the past 3 years has been 8.3 MMBF. This figure includes sawtimber, roundwood, and fuelwood.

Fuelwood is being managed under an interim fuelwood management plan until fuelwood management is incorporated as part of the Forest Plan. A charge system for fuelwood for personal use was implemented in 1982. Fees collected through this program are used to maintain the fuelwood management program.

In 1982, 8,500 cords of fuelwood were harvested. Consumption is predicted to increase approximately five percent annually through the planning period to as much as 44,500 cords per year by 2030.

## Water

The Forest contributes water to three major rivers: (1) the Upper Colorado River, (2) the Sevier River, and (3) the Jordon River, tributary to the Great Salt Lake. Within these three major drainages, 19 separate watersheds have been identified on the Forest.

Current Use and Management - The Forest receives about 2,640,000 acre-feet of precipitation of which about 731,000 acre-feet is yielded as streamflow. The rest is lost to evapo-transpiration, and groundwater losses. Precipitation varies from 10 to nearly 35 inches per year. (Figures II-3 and II-4

FIGURE II-3

AVERAGE MONTHLY PRECIPITATION

ORANGE OLSEN RANGER STATION

1969 — 1978

AVERAGE ANNUAL PRECIPITATION = 13.97 Inches

ELEVATION = 7,240 Feet

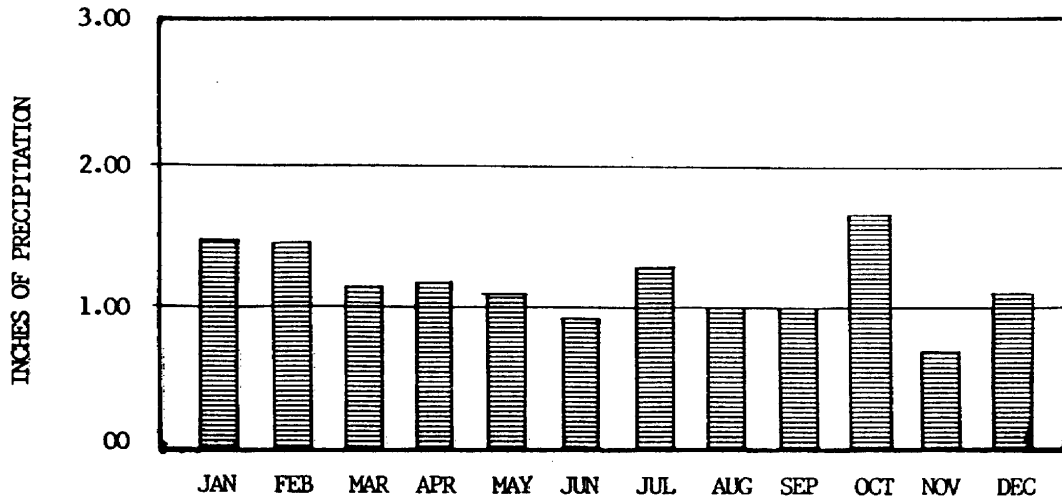


FIGURE II-4

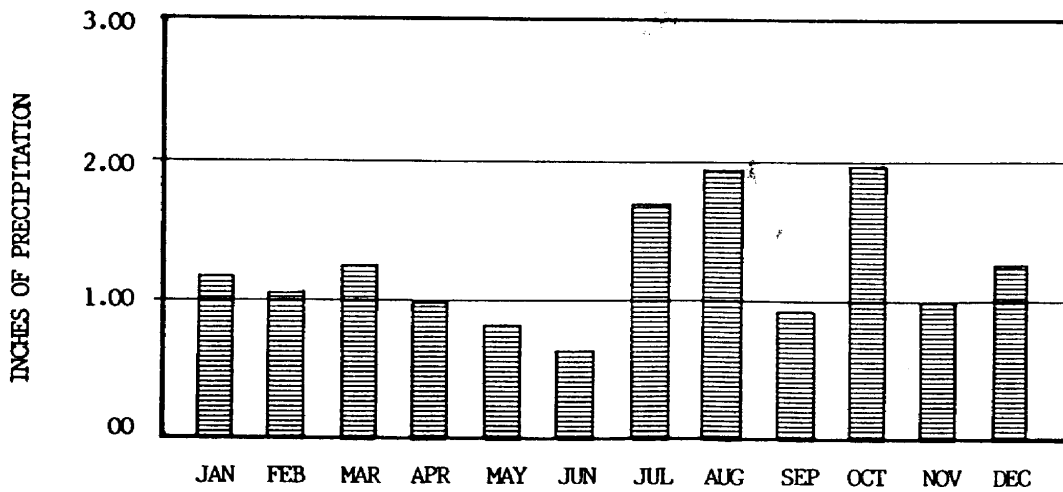
AVERAGE MONTHLY PRECIPITATION

MONTICELLO, UTAH

1906 — 1975

AVERAGE ANNUAL PRECIPITATION = 15.22 Inches

ELEVATION = 7,050 Feet



show the distribution of precipitation through the year at Orange Olsen Guard Station and Monticello, Utah). Water yield throughout the Forest ranges from less than 1 to nearly 19 inches per year. Table II-21 lists the mean annual water yield by watershed. The bottom of the table summarizes the water yield into the major river basins. Thirty-one percent of the high runoff (12 inches or more) occurs on less than 15 percent of the Forest. Forty percent of the Forest produces little runoff (4 inches or less).

Streamflow follows a general pattern influenced by precipitation and topography. The streams rise in the spring as snowmelt progresses up the mountains. The high country includes extensive areas at relatively the same elevation which melts at the same time. Peak flows generally occur between mid-May and mid-June. The streams recede with only temporary increases from summer storms until the fall storms. The storms bring the streams up slightly, but then flows continue to recede as the precipitation turns to snow with little additions to streamflow. The flows continue to recede as groundwater supplies are diminished through the winter.

TABLE II-21 MEAN ANNUAL WATER YIELD BY WATERSHED

Watershed Name	Watershed Number	Mean Annual Water Yield (Acre-Feet)
Upper Spanish Fork	01	41,171
Price River	02	58,641
San Pitch River	03	151,681
Huntington Creek	04	76,309
Straight Canyon	05	69,666
Ferron Creek	06	56,980
Muddy Creek	07	37,284
Moab	08	41,099
Dolores	09	19,038
Indian Creek	10	29,246
Dark Canyon	11	46,807
San Juan	12	36,290
Montezuma	13	9,292
Salt Creek	14	9,188
Fountain Green	15	6,714
Chicken Creek	16	25,608
Upper Salina Creek	17	3,986
Paradox	18	10,866
Grand Gulch	19	<u>1,132</u>
Total		730,998
SUMMARY		
Great Basin	01, 03, 14, 15, 16, 17	238,348
Sevier River	03, 15, 16, 17	(187,989)
Jordan River	01, 14	( 50,359)
Upper Colorado	02, 04, 05, 06, 07, 08 09, 10, 11, 12, 13, 18, 19	<u>492,650</u>
Total		<u>730,998</u>



Water flows off the Forest through an estimated 13,600 miles of channels. These channels include the first and second order headwater channels which are nearly all intermittent. About 2,500 miles of channel are third order and larger, with only a portion of these considered perennial. About 680 miles of stream channels are recognized as perennial streams and as fisheries.

An inventory of lakes and reservoirs is given in Table II-22. Most of these are used to store snowmelt and supply irrigation water. However, a few large reservoirs are used to store most of the runoff and provide a nearly constant release of water for industrial and municipal use.

Numerous water collection, storage, and distribution systems exist within the Forest boundaries. Some hydroelectric development has occurred and additional interest in water as a source of power has been expressed. Requests for future water developments will be processed according to State water law and the Forest Service special-use authorization process, and will protect water needed for National Forest purposes.

Water from the Forest supplies all or a portion of the water used by 23 local communities. Table II-23 provides some additional information about the communities and the municipal watersheds. About 39 percent of the Forest provides municipal water. Management is concerned about the health and safety of the people who drink waters from the Forest. These concerns include both the quality and quantity of the water supply.

Existing uses of water are being inventoried, quantified, and filed in accordance with State Law and in keeping with the State's program of stream adjudications. There are some legal questions which must be resolved, but the program of inventory and claims brings questions to the proper area for resolution. (See Tables II-24 and II-25).

Water yield changes are theoretically possible from snowpack manipulations, vegetative manipulations, and topographic changes such as contour furrowing and trenching. Generally, clearcut harvest of conifer or aspen tend to maintain or slightly enhance water production, but might also create land instability problems.

Three reports describe water quality on the Forest. A report for Straight Canyon by McLaughlin in 1973 shows that water is within State standards except occasionally coliform bacteria amounts are exceeded in select spots above Joes Valley Reservoir. A report by Kelly in 1980 shows that water on the Monticello District is within State standards except where natural occurring concentrations of copper occur in the Montezuma drainage. A third report by Kelly in 1983 summarizes data for 15 drainages throughout the Forest and shows that the water leaving the National Forest is generally within State standards.

Riparian areas on the Forest were identified on the basis of stream type. This stream type classification meets the requirements of Executive Order 11990 on wetlands. Presently, individual projects that occur in these riparian areas incorporate specific protection and management measures as reflected in Management Unit Requirement RPN in Chapter III of the Forest Plan.

The riparian and aquatic areas identified in the stream type classification process are the flood-prone areas of the Forest, covered in Executive Order 11988, Floodplain Management.

Demand Trends - The growing population and agricultural industries located on lands surrounding the Forest and, to some extent, the lower Colorado River, place heavy demands on available water supplies. Streams in the Forest are over-appropriated; that is, there are more water rights than water available to fulfill them.

Depth					Surface	Depth		
	Lake Name	Section	Township	Range	Elevation	Area	Max.	Flux
	Joes Valley Reservoir	5 & 6	11S	19W	7,960	0.0	16	3.3
	Twin Lake	32	18S	3E	8,038	3.7	15	1.6
	Smiths Reservoir	7	48N	2E	8,265	57.3	64	9.8
	Manti Comm-Yearns	13	19S	3E	8,378	2.0	20	0.0
	Buckeye Reservoir	2	14S	3E	8,422	160.1		4.0
	Town Reservoir	20	19S	4E	8,443	3.9		3.3
	Hamburger Lake	28	18S	6E	8,465	476.0	4	3.3
	New Field Reservoir	20	17S	22E	8,618	0.0	4	1.6
	Patten Reservoir	22	13S	6E	8,618	12.1	21	3.3
	Lake Hill Reservoir	20	33S	22E	8,665	2.0	13	1.6
	Gooseberry Reservoir	7	15S	6E	8,684	2.2	6	7.2
	Spring Lake	21	33S	5E	8,738	6.2	11	1.6
	Millers Flat Reservoir	3	14S	20E	8,743	9.1	15	0.0
	Monticello Lake	23	18S	22E	8,746	5.4	15	0.7
	Electric Lake	14	34S	5E	8,770	4.4		6.6
	Slide Lake	3	33S	6E	8,793	5.4	10	0.0
	Duck Lake	19	17S	5E	8,795	105.0		2.6
	Racetrack Pond	22	13S	5E	8,798	2.5		3.3
	Soup Bowl	32	18S	24E	8,810	49.9	16	1.6
	Boulger Reservoir	33	18S	5E	8,838	0.0	36	0.0
	Grassy Flat Reservoir	4	26S	6E	8,841	11.9	19	0.0
	Academy Mill Reservoir	4	18S	6E	8,845	32.4		13.1
	Oowah Lake	33	14S	6E	8,861	8.2		0.0
	Marys Lake	14	13S	4E	8,870	0.0	19	1.6
	Cleveland Reservoir	27	14S	5E	8,897	7.0		3.3
	Beaver Dams Reservoir	30	27S	4E	8,920	11.1	11	0.0
	Rolfson Reservoir	33	18S	6E	8,920	12.1	18	27.9
	New Canyon Reservoir	3	20S	3E	8,936	8.2		0.0
	Petes Hole Reservoir	5	20S	6E	8,938	7.7	28	3.3
	Julius Flat Reservoir	27	19S	5E	8,957	0.0		3.3
	Wriggly Spring Reservoir	7	13S	3E	8,958	137.9	8	0.0
	Lower Six Mile Pond	2	17S	6E	8,975	0.0	20	0.0
	MIA Camp Lake	21	19S	6E	9,012	1.7		1.6
	Grassy Lake	26	16S	5E	9,220	4.4		4.9
	Upper Six Mile Pond	2	16S	5E	9,250	3.0	8	1.6
	Potters Pond West No. 2	8	13S	3E	9,307	46.9		1.6
	Potters Pond East	8	14S	5E	9,310	4.2		1.6
	Fairview Lakes	36	19S	3E	9,311	4.9	15	1.6
	Huntington Reservoir	21	17S	3E	9,348	2.0	7	0.0
	WPA Pond No. 2	36	19S	4E	9,348	7.7	8	0.7
	Blue-Jewkes	23	19S	4E	9,358	2.7		3.3
	Deep Lake	36	19S	24E	9,409	4.4	10	3.3
	WPA Pond No. 1	36	18S	24E	9,416	12.8	30	1.6
	Duck Fork Reservoir	10	26S	3E	9,416	3.0	11	0.0
	Cove Lake	25	26S	4E	9,433	57.1	4	0.0
	Warner Lake	28	20S	4E	9,448	2.7		6.6
	Clarks	34	19S	4E	9,472	4.4		0.0
	Woods Lake	15	19S	4E	9,478	0.0	26	1.0
	Upper Rush Pond	24	19S	4E	9,478	24.0		3.3
	Lower Rush Pond	24	19S	4E	9,613	9.6	5	1.6
	Emery Reservoir	4	19S	4E	9,640	0.0	16	3.3
	Lower Horse Creek Pond	24	19S	4E	9,997	2.0	23	1.0
	Ferron Reservoir	22	19S	5E	10,012	3.9	33	6.6
	Lower Harmonica Lake	13	19S	4E	10,017	7.2	26	1.6
	Upper Harmonica Lake	13	19S	4E	10,097	7.2	25	9.8
	Spinners Reservoir	2	18S	24E	10,130	2.0	22	3.3
	Willow Lake	29	20S	25E	10,132	30.4	2	1.6
	Loggers Fork Reservoir	10	27S	4E	10,147	11.9	21	
	Henningson Reservoir	20	27S	4E	10,192	7.2	5	
	Medicine Lake	35	18S	4E	10,261	28.2	0.0	
	Blue Lake	7	20S	4E	10,303	4.9	8.2	
	Snow Lake	15	20S	4E	10,319	160	3.3	
	Emerald Lake	17	18S	4E	10,394	38	1.6	
	Slide Lake	32	20S	4E	1,170.5	10	11.5	
	Jet Fox Reservoir	15	17S	4E	9.1	16	1.6	
	Blue Lake	20	20S	6,988	21.0		0.0	
	John August Lake	35	20S	7,198	5.4	28	0.0	
	Island Lake	18	6E	7,198	65.0		0.0	
	Middle - 3 Lakes	31	3E	7,502	6.4		1.6	
		18S	5E	7,598	0.0		3.3	
		19S	3E	7,743	0.0	10	0.7	

TABLE II-23

LOCAL COMMUNITIES SUPPLIED BY WATER  
FROM THE MANTI-LASAL NATIONAL FOREST

Watershed Source	Portion of Watershed Providing Municipal Supplies		Municipalities Served	Population Served	Subwatershed
02 Price River	76%	95 mi <sup>2</sup>	Helper Kenilworth Wellington Price Spring Glen	3,710 500 1,410 9,400 545	Fish Creek Price River Price River Water District Scofield Reservoir Price City
03 San Pitch River	18%	48 mi <sup>2</sup>	Ephraim Manti Sterling Spring City	2,803 2,088 300 676	Ephraim Canyon Manti Canyon Sterling Spring Oak Creek
04 Huntington Creek	100%	198 mi <sup>2</sup>	Cleveland Elmo Huntington  Lawrence	684 342 2,622  100	Rilda Canyon Rilda Canyon Little Bear Canyon Big Bear Springs Huntington Creek Tie Fork Rilda Canyon
05 Straight Canyon	100%	205 mi <sup>2</sup>	Castle Dale Orangeville	2,052 1,140	Straight Canyon Straight Canyon
06 Ferron Canyon	79%	142 mi <sup>2</sup>	Clawson Ferron	100 1,173	Ferron Community System Millsite Reservoir
07 Muddy Creek		132 mi <sup>2</sup>	Moore	342	Muddy Creek
10 Indian Creek	1%	2 mi <sup>2</sup>	Blanding	3,787	Head of Indian Canyon
12 San Juan River	10.8%	22 1/2 mi <sup>2</sup>	Blanding	3,787	Head of Johnson Creek Recapture Creek
13 Montezuma Creek	12%	5 1/2 mi <sup>2</sup>	Monticello	2,575	North Creek - South Creek
15 Fountain Green	7%	2 mi <sup>2</sup>	Wales	153	Wales Spring
16 Chicken Creek	53%	4 mi <sup>2</sup>	Levan	450	Chicken Valley
18 Paradox Creek	1%	0.6 mi <sup>2</sup>	LaSal	200	Coyote Spring

Total Area = 852.6 mi<sup>2</sup>  
Total Area of National Forest = 2,203.9 mi<sup>2</sup>

$$\frac{852.6}{2,203.9} \times 100 = 39\%$$



COUNT OF WATER USE BY CATEGORIES, MANTI-LASAL NATIONAL FOREST (10)  
(AS OF 1980)

II-49

Watershed Number (A)	Uses						Rights					
	Livestock	Recreation	Administrative	Wildlife	Other	Total	Beneficial Uses	Appropriative		Reserved	Decreed	Filed
								Filed	Certified			
001	188	1	0	0	0	189	0	5	6	0	0	145
002	217	2	2	0	1	222	0	6	6	2	0	193
003	583	15	2	0	1	601	0	2	3	3	0	0
004	367	3	2	0	0	372	0	5	5	2	1	371
005	692	1	1	0	6	700	1	4	4	6	0	697
006	719	4	0	0	2	725	0	5	7	0	0	28
007	250	2	0	0	0	252	0	0	0	0	0	0
008	218	5	1	0	0	224	0	0	0	3	0	0
009	34	0	0	0	0	34	0	0	0	1	0	0
010	100	2	0	0	0	102	0	0	0	0	0	0
011	109	1	1	0	0	111	0	0	0	1	0	0
012	118	4	1	5	1	129	0	0	0	2	0	0
013	55	10	0	2	0	67	0	2	0	0	0	2
014	4	0	0	0	0	4	0	0	0	0	0	4
015	24	1	0	0	0	25	0	0	0	0	0	24
016	48	1	1	0	0	50	0	0	0	1	0	49
018	208	7	3	1	0	219	0	0	1	3	0	0
019	5	0	0	0	0	5	0	0	0	0	0	0
Totals	3,940	59	14	8	11	4,032	1	29	32	24	1	1,514

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TABLE II-25

## WATER USES IN ACRE FEET

## MANTI-LASAL NATIONAL FOREST (10)

Rights Watershed Appropriative Number Certified	Uses											
	Livestock Reserved	Recreation Decree	Administrative Filed (AJ)	Wildlife	Other	Total	Beneficial Uses		Filed			
001	32.2	0.0	0.0	0.0	0.0	32.2	0.0	2.1	2.2	0.0	0.0	25.8
002	92.5	8.9	3.6	0.0	1.3	106.3	0.0	11.6	11.6	1.9	0.0	75.1
003	87.1	2.8	1.0	0.0	.1	91.0	0.0	1.3	1.7	1.1	0.0	0.0
004	46.9	1.9	.5	0.0	0.0	49.3	0.0	2.4	2.4	.5	.5	49.2
005	1,565	.3	2.2	0.0	1,886	3,454	.3	1,884	1,884	11.6	0.0	3,453
006	.3	3.0	0.0	0.0	.5	.3	0.0	.4	.4	0.0	0.0	.8
007	106.7	0.0	0.0	0.0	.2	109.9	0.0	3.2	3.3	0.0	0.0	45.1
008	26.7	6.4	.1	0.0	0.0	26.7	0.0	0.0	0.0	1.4	0.0	0.0
009	585.7	0.0	0.0	0.0	0.0	592.2	0.0	0.0	0.0	.2	0.0	0.0
010	48.9	0.0	0.0	0.0	0.0	48.9	0.0	0.0	0.0	0.0	0.0	0.0
011	11.6	0.0	.5	0.0	0.0	11.6	0.0	0.0	0.0	.5	0.0	0.0
012	63.3	1.5	.3	.5	0.0	63.8	0.0	0.0	0.0	.4	0.0	0.0
013	23.6	6.6	0.0	.2	.1	26.0	0.0	0.0	0.0	0.0	0.0	0.0
014	10.8	0.0	0.0	0.0	0.0	17.6	0.0	.3	0.0	0.0	0.0	.3
015	2.8	.1	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	2.8
016	.8	.1	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	2.8
017	2.7	0.0	8.8	.1	0.0	9.7	0.0	0.0	0.0	8.8	0.0	9.6
018	8.8	0.0	0.0	0.0	0.0	1,120	0.0	0.0	7.8	0.0	0.0	0.0
019	1,111	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0
	.5					.5						0.0
	.5											
Totals	3,830.4	32.3	17.1	.8	1,888.2	5,768.8	.3	1,905.3				
	1,913.4	26.5	.5	3,667.2								

The demand for water is expected to continue to increase with the projected population increases. This expected increase in demand is greater than the maximum amount of water the Forest can produce and still meet water quality standards.

## WATERSHED CONDITION

When the Manti and LaSal National Forests were established, the land was in poor watershed condition. While the condition has improved since time, considerable watershed improvement work is still necessary to bring watersheds up to an acceptable condition. These improvements may include topographic changes to reduce sediment yields and increase vegetative production capabilities of the land. Treatment is recommend in places where erosion and sediment yields are high and where treatment will reduce these processes. Almost every major watershed and every Ranger District have areas what need treatment.

Where watersheds have been treated, springs have been restored; there is tall grass and stands of brush where the lands was barren. These improvements have captured potential flood waters that historically have damaged downstream communities. (The flood disasters of 1983 and 1984 did not originate on treated areas.)

The Wasatch Plateau has been identified as an area that may be suitable for snowfencing to delay runoff and to increase water yield. Historic research is inconclusive on the effectiveness and impacts of snow fencing. Future researchers may wish to investigate the economic and environmental conditions associated with snowpack manipulations on the Plateau.

## WATERSHED IMPROVEMENTS MAINTENANCE

Mechanical watershed improvements in the form of contour furrows, trenching, and gully control structures have been installed on over 32,000 acres at a cost of over three million dollars. The purpose of these improvements is to slow water movement and hold the soils in place until vegetation is established that will perform these functions. Without periodic maintenance, these structures can weaken and fail before the vegetation is established so maintenance activities are scheduled and carried out as funding is available.

## Minerals

Statutory and regulatory direction separate mineral resources on lands owned by the United States into three categories: locatable, leasable, and saleable.

Less than one percent of the Forest has lands with outstanding and reserved rights or lands which are not available for mineral entry.

## LOCATABLE MINERALS

Locatable minerals are subject to exploration and development under the U.S. General Mining Law of 1872 and its amendments. Examples include, but are not limited to, deposits of vanadium, uranium, gold, silver, lead, zinc, and copper. Citizens, and those who have declared their intent to become citizens, have the right to claim, develop, and purchase mineral deposits subject to the U.S. Mining Laws on lands in Federal ownership, including those of National Forest System. Through a memorandum of understanding between the Bureau of Land Management (BLM) USDI, and the Forest Service, USDA, the Forest Service administers most aspects of the U.S. Mining Laws on National Forest System lands. In addition, under the regulations in 36 CFR 228, the Forest Service approves exploration and mining operating plans and administers those operations to ensure protection and reclamation of affected surface resources.



The LaSal Division contains know deposits of uranium/vanadium ores and other metals such as gold, silver, copper, and zinc. Approximately 50,000 mining claims have been staked on the LaSal division, mainly for development of uranium/vanadium, gold, silver and copper. The uranium ore is low grade and local industry cannot compete economically on the world market with the present price of yellow cake below \$20.00/lb. The price has to be in the range of \$25.00/lb. or higher in order for the local industry to compete. With the high cost associated with mining and the low ore grade, exploration and mining activities have been limited in recent years. Considerably fewer claims have been staked on the Manti and San Pitch Divisions. The interest here is generally for development of limestone, decorative stone, or carbonaceous shale (which is suitable as a base material for fertilizer and soil conditioner).

The market for locatable minerals is extremely volatile, especially regarding uranium,/vanadium and precious and semi-precious metals. The level of activity and production on the Forest at any given time is controlled by boom and bust cycles in the respective markets.

Within the Forest, 1,237,850 acres are considered available for locatable mineral entry and location. The balance, 96,650 acres, is withdrawn from entry for administrative, recreation, or cultural purposes.

## LEASABLE MINERALS

Federally owned leasable minerals include by are not limited to coal, gas, oil, oil shale, geothermal, potassium, sodium carbon dioxide, phosphate and sulfur. Most of these minerals are subject to exploration and development under leases, permits, or licenses granted by the Secretary of the Interior. The major controlling statutes are the Minerals, Leasing Act of 1920 and amendments, the Minerals Leasing Act of Acquired Lands of 1947, the Geothermal Steam Act of 1970, the Federal Coal Leasing Amendments Act of 1975, and the Surface Mining Control and Reclamation Act of 1977. The Secretary of the Interior's authority is administered by the BLM and the Office of Surface Mining (OSM). When National Forest System lands are involved, the BLM/OSM requests the Forest Service to evaluate leases, licenses, permits, and operating plans. If the proposals are acceptable to the Forest Service, appropriate stipulations are formulated and designed to minimize the impacts on other uses and surface resources, and to provide for prompt reclamation or restoration of affected lands upon abandonment of operations.

Prior to approval of operating plans, the Forest Service participates with BLM or OSM in the formulation of the site-specific terms and conditions of operating plans so that the plans provide appropriate mitigation measures to ensure that adverse impacts on surface resources will not exceed applicable environmental protection standards. Plans must be designed to minimize the impacts of operations on other surface resources and to provide for prompt reclamation or restoration of affected lands upon abandonment of operations.

Approximately 85 percent of the lands administered by the Forest are leased for oil and gas. Lands administered by the Forest are available for oil and gas leasing under current management direction, with the exception of 60,000 acres in the Dark Woodenshoe Management Unit, established by Monticello Land Use Plan (MLUP) approved in 1976. Eight other management units established by the Ferron-Price Land Management Plan, approved in 1979, are available for leasing, but surface occupancy is prohibited.

There are 4 gas fields on the Forest, all on the Manti Division. Only one field, the Clear Creek Field, is in production. Existing wells in the other fields, the Gordon Creek, Joe's Valley, and Flat Canyon Fields, are played out or shut-in for future production. The San Pitch Division and western portion of the Manti Division lie along the eastern margin of a geologic structure known as the "Western Overthrust Belt" which has recently yielded significant discoveries and production of oil

and gas reserves. The entire Forest has been affected by the intense interest in oil and gas exploration and development generated by recent discoveries. The Manti Division contains approximately 1,600 oil and gas leases. The estimated oil and gas resources below the Known Geologic Structures (KGS) or the rest of the Forest have not been released by private industry.

The Wasatch Plateau Coal Field, as delineated by the Department of Interior in their letter to the Forest, dated January 24, 1983, contains 445,100 acres of medium or high potential coal lands on the Manti Division of the Forest. The Manti Division encompasses a majority of the Wasatch Plateau Coal Field and has vast reserves of high quality mineable coal. Approximately 60 percent of the total coal produced in the State of Utah in 1981 (13.3 million tons) was mined from the Manti Division (8.0 million tons). The coal was produced from a total of 9 mines. At that time, there were 50 existing leases on the Forest that encompassed approximately 41,900 acres. This leased land may contain upwards of 1,000,000,000 tons of coal. Considering today's market, local coal mined underground is valued between \$22 and \$25 per ton. The Federal government receives \$1.74 for each ton of coal mined. The public interest for the high BTU-low sulfur coal found on the Manti Division is high.

The coal lease moratorium imposed by the Department of Interior in 1971 was lifted in 1979 by the establishment of a new program directed at the improved management of Federally-owned coal. This created the need to apply the unsuitability criteria to all lands which may be capable of coal production as part of this planning effort.

The first round of coal leasing effort in 1981 under the new coal leasing program resulted in leasing of 3 new coal tracts consisting of a total area of 2,926 acres on National Forest System lands.

Though the present coal market is depressed, eight potential coal lease tracts comprising nearly 37,300 acres were evaluated in the second round of leasing. They contain almost 730 million tons of inplace coal.

#### SALEABLE (COMMON VARIETY) MINERALS

Common variety minerals have been developed throughout the Forest. They are generally low value deposits of sand, gravel, clay, and stone. The greatest demand is for the development of gravel sources for road construction and improvements in support of mineral activities. Within the Forest, at least 1,237,850 acres are available for the production of common variety minerals.

## Support Service Elements

### Fire

#### CURRENT USES AND MANAGEMENT

Wildfires have periodically burned areas of the Forest. These fires have affected the type, composition, age, quality, and growth rate of the various vegetation types. On an average, 51 fires burn a total of 105 acres annually on the Forest. Approximately five percent of the fires are human caused. Human caused fires are expected to increase with population growth and proportionate increases in Forest visitor use. Table II-26 summarizes the fire statistics for the Forest.

The current fire management program is based on resource protection from fire through presuppression, prevention, and fuel treatment. The overall fire management objective is to provide a cost-effective program which responds to land and resource management goals and objectives. Presently, the wildfire suppression objective is to confine or control all wildfires so that land management objectives can be met at a reasonable cost.

Fuel treatment to reduce fire hazard has been largely accomplished by removal of dead and down material for fuelwood, slash cleanup of timber sales and Timber Stand Improvement (TSI) activities, and prescribed burning. From 1978 to 1984 the Forest has averaged 350 acres of slash and cleanup annually.

TABLE II-26

**FIRE STATISTICS  
(1971-1979)  
NUMBER OF FIRES**

Year	Human Caused	Lightening	Class* A&B	Class** C+	Class Total	Acres Burned
1971	7	42	47	2	49	273
1972	10	38	48	0	48	25
1973	9	36	44	1	45	36
1974	12	48	59	1	60	93
1975	10	26	36	0	36	13
1976	8	66	70	4	74	145
1977	8	53	60	1	61	65
1978	12	26	36	2	38	239
1979	22	25	46	1	47	56
<b>Total</b>	<b>98</b>	<b>360</b>	<b>446</b>	<b>12</b>	<b>458</b>	<b>945</b>
<b>Average</b>	<b>11</b>	<b>40</b>	<b>50</b>	<b>1</b>	<b>51</b>	<b>105</b>

\*Class A = Less than 1/4 acres.

\*Class B = 1/4 acres to 10 acres.

\*\*Class C+ = 10 acres or greater.

## Law Enforcement

The Forest Service is responsible for enforcing Federal laws and regulations on the National Forest. This responsibility cannot be delegated to other agencies or local law enforcement entities although the Forest Service may cooperate with State and local agencies in enforcing certain State laws on National Forest System lands. The Sisk Act provides statutory authority to reimburse local and State law enforcement agencies for protection of persons using National Forest System lands and property. Agreements are in effect with Sanpete, Emery, and San Juan Counties.

The Forest has identified the following law enforcement concerns:

1. Detailed records have not been maintained for all violations. This has prevented an accurate determination of the Forest law enforcement problems. Loss of signs, facilities, fuelwood, and equipment is believed to be substantially more than reported.
2. Theft and vandalism to archeological sites is occurring.
3. Damage to resources is resulting from vehicular travel activities, particularly during hunting season and because of encroachment into areas closed to vehicular travel.
4. A lack of adequate facilities to handle the large number of people who visit the Forest at peak periods leads to violations.
5. Encroachment sometimes occurs on National Forest System lands by adjoining landowners. Months or even years can elapse before violations are discovered and investigated. Several old cases have not yet been resolved.
6. Select timber, fuelwood, and grazing unauthorized use is occurring.
7. Most employees assigned to recreation and fire prevention receive law enforcement training. This training is not adequate to handle many of the law violations they encounter. In addition, threats, intimidations, and assaults on Forest officers are expected to increase, particularly to those responsible for compliance checking and fee collection. Lack of highly trained and experienced employees is expected to be a continuing problem.

## Forest Pest Management

Forest insects and disease can have a direct and very significant impact on many of the Forest's resources. Insects and disease have caused widespread damage to the timber resource. They have also impacted and caused losses in forage production on many reseeded range sites.

Two insects, the mountain pine beetle (*Dendroctonus ponderosae*) and the Engelmann spruce beetle (*Dendroctonus rufipennis*), are of the most concern to the Forest timber resource.

Other insects that have caused problems on the Forest are: aspen leaf miner (*Phyllocnistis populiella*), roundheaded pine beetle (*Dendroctonus adjunctus*), Douglas-fir beetle (*Dendroctonus pseudotsugae*), Mormon crickets (*Anabrus simplex*), grasshoppers (*Melanoplus spp.*), and black grass bugs (*Labops hesperius*).

Any of the above listed insect species can, under the right conditions, cause significant damage and impact on one or several resources. However, with good management practices and continued awareness of population buildups, most of these insects can be controlled or maintained at levels where significant resource damage would not occur.

Insects that have caused range damage on the Forest are the Mormon cricket, Carolina and two striped grasshopper, and black grass bug.

Approximately 15,000 acres located in Twelve Mile Canyon, and on the Wales top were treated with malathion insecticide to control grasshoppers in the early 1970's. Weather conditions during the early 1980's favored grasshopper reproduction with the result that the population is growing and control may again be needed.

Black grass bugs are present in most of the wheat grass seedings on the Forest. They have not been a serious threat to date, but must be monitored to insure that population buildups do not damage these rangelands.

The tree diseases that are the most common are the brown rot (Fomes annosus), white mottled root rot (Fomes applanatus) and shoestring root rot (Armillaria mellea). Root rots cause mortality and growth loss in localized areas. These fungi survive as saprophytes in stumps and pose a threat to any regeneration on infected sites.

Dwarf mistletoe, a semi-parasite, has caused significant losses in both Douglas-fir and ponderosa pine trees on the Forest. A roadside survey conducted on the Forest in 1978 showed that 34 percent of the ponderosa pine sites surveyed were infected. Timber losses continue to increase because dwarf mistletoe intensity increases at an average of one severity class every 15 years. Any natural regeneration on these sites could become infected at an early age and could sustain heavy losses before harvest age.

## **Air Quality**

The entire Forest is designated as air quality Class II.

Air quality over the Forest is believed to be good with respect to air pollutants. The largest source of air pollution from Forest activities is smoke from fires (both wildfires and prescribed fires) and fugitive dust from unpaved Forest Developed Roads.

The Clean Air Act and its 1977 amendments give the States most of the responsibility for managing air quality within their boundaries. The framework for air quality management is the State Implementation Plan. This establishes standards and guidelines which require forest plans to identify significant current potential air pollution emissions from management activities that would cause the ambient air quality to exceed Federal and State ambient air quality standards. It also establishes standards and guidelines relative to incremental changes in air quality in Class I and Class II areas.

The Forest's role in air quality management is to coordinate Forest management activities with State and Federal air quality control efforts. This is accomplished by properly managing Forest management activities such as prescribed fire, construction and use of roads, and the operation of various facilities. Temporary air degradation does occur, but is managed so that air quality standards are not exceeded.

Some air quality problems come from communities and industrial development adjacent to the Forest, especially in Carbon, Emery, and Sanpete Counties. However, the actual potential for long-term degradation of air quality over the Forest is low because potential point sources of air pollution unwind (north and west) of the Forest are legally restrained from creating significant adverse effects upon Forest air quality-related values.

The Forest Service's responsibility under PSD (Prevention of Significant Deterioration) regulations is to protect Class I air quality areas. Two Class I air quality areas are near the Manti-LaSal National Forest including Canyonlands National Park north of the Monticello Ranger District and Arches National Park west of the Moab Ranger District. In both cases, these Parks are normally upwind of the National Forest.

The Forest complies with the State agricultural burning application and permit requirements.

There is concern about potential air quality degradation from wood burning stoves and fireplaces. This also has been a concern to the Forest Service and EPA. Studies are ongoing to determine the extent and significance of impact. Ultimate responsibility for regulations and control belongs with the States of Colorado and Utah.

## **Lands**

### LAND USES

National Forest System lands are generally available to occupancy, where such is in the public interest, except where occupancy is specifically prohibited through legislation or administrative decision. Occupancy is authorized through the issuance of special use permits. Nearly 400 special-use permits have been issued for uses ranging from recreation to research to utilities. The demand is increasing for special use permits to occupy National Forest System lands. This demand can likely be attributed to the Forest's mixed landownership pattern and the increasing population.

Applications for special uses are dealt with on a first-come, first-serve basis, except that occupancies providing for a public need receive priority over those meeting private needs. If competition occurs in the application process, a prospectus is issued for bids. Following a bid evaluation, a permit would be issued with the purpose of obtaining the greatest public benefit. The Forest Service discourages special uses that solely benefit private parties, and also discourages uses on parcels which may be involved in land exchanges in the future.

In administering special uses, priority is given to those with health and safety considerations such as water supplies, reservoirs, and public roads.

Prime farmland, rangeland, and forest lands, as defined in the Secretary of Agriculture's Memorandum Number 1827, Supplement 1, do not occur on the Forest. Therefore, no such land use considerations were included in the planning effort.

### CORRIDORS

Special uses for powerline, pipeline, and highway rights-of-way are another use of National Forest System lands. Because of its location, there is high demand for rights-of-way across the Manti Division. There are four major powerlines (745 KV) and one pipeline crossing the Forest and four State or Federal highways. There are no corridors.

### LANDOWNERSHIP ADJUSTMENT

Landownership within the Forest includes private lands, mineral fractions, and lands owned by other Federal agencies, the State, Counties, and municipalities. Ownership changes occur through land exchange, fee purchase, and - more recently - the use of scenic easements to acquire certain rights short of fee ownership. Exchange activity has been low in the past due to uncertain funding and few proposed exchanges which would benefit the public.

The Small Tracts Act allows for three categories of land: (1) parcels encroached on through sale or exchange, (2) road rights-of-way, and (3) mineral survey fractions. There are very specific limitations for each of the categories.

Occupancy trespass involves the identification, investigation, and resolution of non-mineral related unauthorized occupancy and use of the Forest. There are suspected occupancy trespasses resulting where private landowners have constructed improvements on adjacent National Forest System lands. Where boundary lines are not surveyed, the Forest Service has increased efforts to do so. It is anticipated that ongoing surveys of township and property boundaries will identify more occupancy trespass.

Forest landownership adjustments are coordinated with the plans and programs of other Federal agencies and State and local governments. Both private and government interest in landownership adjustment is expected to increase from the present level.

## WITHDRAWALS

A withdrawal is an order removing a specific tract of land from availability for certain uses. Certain lands administered by the Forest Service may be withdrawn from entry and appropriation under various acts of Congress.

Land withdrawals by the Forest Service are made for minerals, power sites, archeological values, recreation sites, and administrative sites. The Bureau of Reclamation has withdrawals for reclamation and the Federal Energy Regulatory commission has withdrawals for power sites. Congressional withdrawals have been made for certain activities with the Dark Canyon Wilderness.

A review and assessment of existing mineral withdrawals is required by Section 204 of the Federal Land Management and Policy Act. Present direction to all Federal agencies is to review land withdrawn from entry under the 1872 Mining Act by 1991, and revoke those which create an unnecessary encumbrance on the land.

## RIGHTS-OF-WAY ACQUISITION

Increasing use and development of National Forest System lands has resulted in many problems. One of these problems is access to National Forest System lands for the general public.

Landowners often enjoy nearly exclusive use of public land through control of access. Because of the mixed landownership pattern of the Forest and the lack of fences and signs, the status of rights-of-way (ROW's) for roads and trails is often uncertain.

The current emphasis is to acquire ROW's where problems from lack of access are the greatest and where property owners are willing to grant and sell easements. The right of eminent domain (condemnation) has not been used in the past. It may become necessary when a ROW is in the public interest and the property owner is unwilling to grant it.

## SPECIAL AREAS

Currently 4,659 acres of the Forest are designated as special areas.

- The Great Basin Experimental Range (4,608 acres) was established for range and hydrological research.

- The Grove of Aspen Giants is a special scenic area (10 acres) containing some very large ~~an~~ trees.

-The Pinhook Battleground is a historical site (one acres) where a group of Indians battled ranchers that were chasing them.

-The Elk Knoll Research Natural Area (40 acres) was established to preserve and interpret ecological trends in soil and vegetation, under protection of grazing from domestic livestock.

Dispersed recreation is permitted in some special areas. Some motorized use is permitted on designated routes in the Great Basin Experimental Range.

The Department of Interior has identified four National Natural Landmarks on the Forest. They include Fisher Towers - Onion Creek Gorge in Grand County, Manti Canyon slide and Maple Canyon - Box Canyon in Sanpete County, and Mount Peale - Dark Canyon glacial features in San Juan County.

Nelson Mountain, Mount Peale, and Cliff Dwellers Pasture proposed Research Natural Areas (RNA's), and the Scad Valley proposed Botanical Area are additional sites that have been identified for possible formal designation. They will be evaluated by research and administrative personnel in the near future. These areas are described as follows:

1. Nelson Mountain - Approximately 490 acres located in portions of Sections 22, 23, 26, 27, 34, and 35 of T20S, R6E, Salt Lake Meridian (SLM). This area is located in Emery County, Ferron Ranger District. Principal features include vegetative communities of curlleaf mountain mahogany woodlands, black sagebrush and mountain big sagebrush. Minor representation of the white fir coniferous forest series is also present.
2. Mount Peale - Approximately 2,380 acres in portions of Sections 11, 12, 13, 14, 15, 22, 23, and 24 of T27S, R24E, SLM. This area is located in San Juan County, Moab Ranger District. Principal features include several types of alpine turf, rock communities, and high-mountain landforms. Minor representation of the subalpine fir coniferous forest series is also present.
3. Cliff Dwellers Pasture - Approximately 265 acres in portions of Sections 22, 23, and 27 of T34S, R21E, SLM. This area is located in San Juan County, Monticello Ranger District. It is a species-rich, sub-irrigated box canyon surrounded by semi-desert habitat. Principal features include birch/bluegrass communities, gambel oak-bigtooth maple woodlands, and slickrock shrub communities.
4. Scad Valley Botanical Area - This area is located in Emery County on the Price Ranger District. It supports a number of disjunct plant species which do not occur elsewhere on the Manti-LaSal National Forest, and which are uncommon in Utah.

## **Facilities**

Forest facilities include Forest Highways, Forest Development Roads and Trails, and buildings such as guard stations, ranger stations, and warehouses. In addition, the Forest is affected by general transportation facilities such as airports and railroads.

### **GENERAL TRANSPORTATION**

Airfields serving the planning area include noncommercial airfields at Blanding, Monticello, Moab, Price, Huntington, Ephraim, Mount Pleasant and Nephi. The area is served by the Denver Rio Grande Western Railroad (D&RGW) line that goes from Denver to Salt Lake City through Price with a station in Helper. The D&RGW has a track line to Scofield serving coal mines in that area,



and a track line to Moab serving the Potash and uranium mines in that area. The D&RGW had a track line in Sanpete Valley that was cut by the Thistle mudslide and has not been restored. Utah Railway has a line serving the coal mines along the east escarpment of the Wasatch Plateau to Huntington and joins the D&RGW at Helper, with a track to Salt Lake City. Several bus lines use the major highways for transit and sightseeing charter services.

## HIGHWAYS AND ROADS

Highways - A list of Federal and State highways that provide access to the Forest is found in Table II-27. These routes parallel the Forest boundaries with the exception of the Forest Highways which are important crossing links and internal collectors on the Forest.

Forest Highway 7 (SR 31), the Fairview Huntington Highway connecting Fairview and U.S. Highway 89 on the west with Huntington and State Route 10 on the east, is the only bituminous paved route across the Forest. It carries heavy cross Forest traffic, minerals exploration, development, and production traffic and recreation traffic. This road is at the highest standard of any arterial or collector road on the Forest.

Forest Highway 8 (SR 29), the Orangeville-Ephraim Highway connecting Ephraim and U.S. Highway 89 on the west with Orangeville and State Road 10 on the east, is below standards for a Forest Highway. Some 13.1 miles of the route under county jurisdiction should be upgraded and 11.8 miles under county jurisdiction could be resurfaced.

Forest Highway 45 (SR 96), the Eccles Canyon Highway, connects the Eccles Canyon mining area and Scofield Recreation area with U.S. Highway 6 to the northeast and Fairview and Huntington via Forest Highway 7 to the west. This route is being reconstructed by the State Department of Transportation for Carbon, Emery, and Sanpete Counties, with prepaid sales taxes from mineral development in the area. A two-lane bituminous facility has been approved for the route, and all drainage and grading is complete. This route moves recreation traffic to the Scofield Recreation facilities, moves the work force to the mines, and removes the mineral products from the area.

TABLE II-27

### FEDERAL AND STATE HIGHWAYS PROVIDING ACCESS TO THE FOREST

Forest Division	Interstate Highway Number	United States Highway Number	State Routes Number	Forest Highway Numbers**
Manti	70	6 89	10	None
			31	7
			29	8
			96	45
LaSal	None	191	46	None
			128	None
			95	None
			211	None
San Pitch	15	89	28	None
			132	None
			117	None

\*\* Forest Highway number for portion of State Route crossing the National Forest.

The Forest has 1,264.4 miles of inventoried Forest Development Roads, and 112.1 miles of Forest Highways. Most of the Forest Development Roads are local, although 654 miles are arterials and collectors. See Table II-28, II-29, and II-30. Many other Federal, State, and County roads also provide access to the Forest. In addition, there are approximately 1,500 miles of noninventoried roads not included on the Forest Development Roads inventory.

TABLE II-28

FOREST DEVELOPMENT ROAD SYSTEM FOREST SERVICE JURISDICTION Classification, Surface/Grading, Maintenance Level (Miles)					
<u>Classification/ Maintenance Level</u>	<u>Subtotal Total</u>	<u>Primitive Undrained</u>	<u>Native Graded Drained</u>	<u>Aggregate Graded Drained</u>	<u>Bituminous Graded Drained</u>
Arterials	36.4			36.4	
1					
2					
3					
4	36.4			36.4	
5					
<hr/>					
Major Collectors	186.7	9.6	119.7	49.4	8.0
1					
2	9.6	9.6			
3	169.9		119.7	49.4	1.0
4	7.2			0.2	7.0
5					
<hr/>					
Minor Collectors	356.7	91.8	246.5	18.4	
1					
2	113.3	78.6	34.7		
3	241.4	13.2	211.8	16.4	
4	2.0			2.0	
5					
<hr/>					
Locals	684.6	483.0	169.1	24.2	8.3
1	3.4	3.4			
2	503.5	478.3	21.6	3.6	
3	167.7	1.3	147.5	18.5	0.4
4	8.9			2.1	6.8
5	1.1				1.1
<hr/>					
Total	1,264.4	584.4	535.3	128.4	16.3
<hr/>					

TABLE II-29

FOREST DEVELOPMENT ROAD SYSTEM  
STATE OR COUNTY JURISDICTION  
Classification, Surface/Grading, Maintenance Level  
(Miles)

<u>Classification/ Maintenance Level</u>	<u>Subtotal Total</u>	<u>Primitive Undrained</u>	<u>Native Graded Drained</u>	<u>Aggregate Graded Drained</u>	<u>Bituminous Graded Drained</u>
Major Collectors	34.7				
1					
2	3.1	3.1			
3	21.2		3.2	17.5	0.5
4	10.4			8.8	1.6
5					
Minor Collectors	22.1				
1					
2	7.9	7.9			
3	13.2		4.5	8.7	
4	1.0			1.0	
5					
Locals	13.7				
1					
2	7.5	7.5			
3	6.2		6.2		
4					
5					
Total	87.7	18.5	13.9	36.7	18.6

TABLE II-30

FOREST HIGHWAY SYSTEM  
STATE OR COUNTY JURISDICTION  
Classification, Surface/Grading, Maintenance Level  
(Miles)

<u>Classification/ Maintenance Level</u>	<u>Subtotal Total</u>	<u>Primitive Undrained</u>	<u>Native Graded Drained</u>	<u>Aggregate Graded Drained</u>	<u>Bituminous Graded Drained</u>
Arterials					
1					
2					
3	13.1		13.1		
4	11.8			11.8	
5	87.2				87.2
<b>Total</b>	<b>112.1</b>		<b>13.1</b>	<b>11.8</b>	<b>87.2</b>

Significant Forest Development Roads - There are four Forest Development Roads receiving a significant amount of use and providing access to major portions of the Forest. They are:

Skyline Drive is a major north-south route that runs the length of the Manti Division. The route runs from U.S. Highway 6 on the north to Interstate 70 on the south via the Fishlake National Forest.

Ferron-Mayfield Road is a major west-east route across the lower portion of the Manti Division between Ferron on State Road 10 and Mayfield on U.S. Highway 89.

The LaSal Loop Road is a scenic and recreation route on the Moab Ranger District.

Miller's Flat Road is a major north-south route connecting Forest Highway 7 on the north to Forest Highway 8. This route services the Miller's Flat Reservoir, Upper Joes Valley, and Joe's Valley recreation areas.

Road Management/Maintenance - About 24 miles of road are constructed, reconstructed, or surfaced annually. Historically, roads constructed for management activities were left open for motorized public use. During the last few years, roads have been closed or restricted to provide nonmotorized recreation opportunities, to reduce disturbances to wildlife, damage to roads and adjoining areas, and maintenance costs.

The current and anticipated maintenance allocations are insufficient to properly maintain the entire inventoried road system without experiencing significant lowering of the current facility standards. During the period 1977 to 1981, 1,138 miles of road were maintained on an annual basis. However, less than one percent were maintained at Level 1; 51 percent at Level 2; 41 percent at Level 3; four percent at Level 4; and less than four percent at Level 5. Level 1 maintenance is the lowest maintenance effort and Level 5 is the highest maintenance effort.

Some roads and trails are maintained by counties, mineral developers, timber purchasers, private landowners, landowner associations, user groups, permittees, and volunteers. The Forest Service coordinates the work of these groups.

The demand for use of Forest Development Roads is significant. Currently, congestion occurs primarily on public roads rather than Forest Development Roads and most often at the beginning and end of weekends. Four-wheel-drive interests want continuing opportunities for vehicular travel and primitive road use. The owners of private inholdings want access to their property. Sightseers want more roads with better driving surfaces. In the immediate future, demand for more and better roads is expected to increase. The biggest demand in the near future is expected to be access for mineral exploration and/or development. There is also a segment of the public that wants fewer roads and more opportunities for nonmotorized recreation.

## TRAILS

Current Uses and Management - There are 809 miles of Forest Development Trails on the Forest and an unknown number of miles of noninventoried trails. Visitor control to disperse use more uniformly has not been practiced. Horseback use is permitted on all trails. No trails on the Forest are reserved exclusively for horse use. Most trails are open to vehicular travel use.

Most trails have been constructed in large undeveloped areas where other types of access do not exist. Cross country travel routes that begin to show signs of use have been cleared and managed as trails. Trails have been managed to permit or restrict use according to compatible uses, resource needs along the trail, and the desire of current and potential users.

National Recreation Trails - There are two National Recreation Trails on the Forest. Fish Creek-Skyline Drive National Recreation Trail is ten miles in length.

Left Fork of Huntington Canyon National Recreation Trail is four miles long and runs from Scad Valley near Millers Flat Reservoir to the Left Fork of Huntington Creek Campground.

Significant Trails - The Manti Division contains only one significant trail (other than the National Recreation Trails), which is the Horse Creek-Scad Valley Trail. On the LaSal Division, the significant trails include LaSal Mountain Trans-Mountain, Bachelor Basin (trails), Skyline, Woodenshoe-Dark Canyon, Trail Canyon, Rig Canyon, and Robertson Pasture-Twin Peaks trails.

Trails are maintained on a periodic basis; the frequency is determined by trail use, need for maintenance, and funding. The Forest has not constructed or reconstructed trails in the past five years.

Demand Trends - Projected demand for trails is expected to increase along with the demand for dispersed recreation opportunity.

## NON-TRANSPORTATION FACILITIES

The existing administrative site buildings and facilities are considered inadequate to support the Forest program of work because of: (1) safety and health problems, (2) location with respect to anticipated work loads, (3) inadequate capacity for anticipated work loads, or (4) a combination of one, two, and three.

The Forest has 74 buildings. Eleven percent are under 15 years of age and require normal preventative maintenance, 22 percent are from 16 to 35 years of age and require high maintenance or repair to prolong usefulness, and 67 percent are over 36 years old and require excessive maintenance and extensive repair to prolong life of the facility.

Half of the 25 administrative sites require major maintenance, reconstruction, or replacement of water and sanitation facilities in order to adequately serve the public and Forest employees.

The Forest maintains and operates the following administrative sites:

1. Moroni Guard Station
2. Ephraim Administrative Site
3. Ferron Administrative Site
4. Joes Valley (Orange Olsen) Administrative Site
5. Moab Administrative Site
6. Monticello Administrative Site
7. Stuart Guard Station
8. Mammoth Guard Station
9. Lake Guard Station
10. Upper Joes Valley Guard Station
11. Seely Creek Guard Station
12. Mt. Baldy Guard Station
13. Indian Creek Guard Station
14. Warner Guard Station
15. Buckeye Guard Station
16. LaSal Guard Station
17. Gooseberry Guard Station
18. Kigalia Guard Station
19. Castle Dale Administrative Site

An aggressive and adequately financed program is needed to replace unsalvageable facilities with fixed or mobile facilities, recondition or reconstruct salvageable facilities, carry out preventative maintenance on newer facilities, and disposal of unneeded or unsalvageable facilities.

The Forest has a major responsibility for the inspection of special-use dams and electronics sites.

The Forest operates and manages electronic communications sites on Cedar Mountain, Abajo Peak, Bald Mesa, Horseshoe Flat, Monument Peak, Cold Spring, and Sanpete Point. The development at these electronic sites are not adequate to handle current and future needs. Microwave radio telecommunications systems are being installed to improve communications and service and to reduce operating costs.

## **Response to Issues and Concerns to be Addressed**

As issues and concerns were collected, opportunities to resolve them were identified. Additional opportunities were developed as the Interdisciplinary Team proceeded with the analysis. The issues and concerns were grouped by the Forest Interdisciplinary Team into like subjects, and Management Questions were formulated to encompass the problems portrayed by the issues and concerns within each subject. The following is a listing of Management Questions:

**QUESTION NO. 1: TO WHAT EXTENT SHOULD LAND MANAGEMENT AND EMPHASIS FOR WILDLIFE AND FISH HABITAT BE CHANGED?**

Generally, little change in land management and emphasis is needed, although some specific changes were identified as being appropriate. Through the planning process, three Management Unit Requirements have been prepared to provide emphasis for wildlife and fish habitat management. Previously the distinction was not clearly made as to areas where wildlife management would be emphasized. KWR - Key Big Game Winter Range and GWR - General Big-

Game Winter Range place emphasis on deer and elk use in areas they use every winter or during average winters. Lands were assigned to KWR and GWR emphasis based on a compromise in the wildlife needs and the need for other resource uses. RPN - Riparian provides for enhancement of riparian areas for aquatic and terrestrial habitat as well as a watershed. All riparian areas on the Forest are managed under the RPN prescription.

Transplants of desirable wildlife species will be considered, on suitable habitat, where this use is compatible with the land management emphasis. This allows for reevaluating transplant proposals previously denied in unit plans. Management Direction provides for the evaluation of proposed transplants on a site-specific basis in cooperation with State wildlife management agencies and other interested parties.

Management Direction, and the 10 year schedule for wildlife improvements make provision for improving fisheries on the Forest by obtaining conservation pools when the opportunity presents itself, and by improving stream habitat. While this clarifies the Forest position, it does not change management or emphasis.

**QUESTION NO. 2: HOW MUCH AND WHAT KIND OF ACCESS SHOULD BE PROVIDED FOR USE OF FOREST LANDS?**

Historically, the Forest has encouraged access development for administration and use of Forest resources. This had led to environmental and administrative problems. In recent years, there have been attempts made to reduce unplanned roading and improve the needed system roads. This direction would be continued since the road density is in excess of that needed to provide for the resource activities and uses on the Forest. About 1,280 miles of roads would be included on the Forest transportation system, a reduction of approximately 200 miles. In addition, many of the non-system four-wheel drive ways will be closed through area closures. The trail system would remain approximately the same in mileage, but may change in location.

Through travel restrictions, the acreage closed to vehicle use would increase from 83,740 to 110,720 acres. However, the areas with restricted vehicle use would drop from 170,000 acres to 74,980 acres, leaving a net gain in areas with unrestricted vehicle use. The Management Direction is written so that these travel restrictions apply to general administration as well as recreation use. Where access is needed for a specific resource activity or use, entry may be permitted by the Forest Supervisor on a case-by-case basis, and after thorough assessment of the implications of such action.

**QUESTION NO. 3: WHAT SHOULD BE THE MANAGEMENT EMPHASIS ON FORESTED LAND FOR TIMBER PRODUCTS AND SAWLOGS?**

The Forest Plan increases the emphasis on managing fuelwood to meet increasing demands and maintaining other resource uses of dead and down material. The opportunity to manage for Christmas tree culture is provided. Low value conifers and broadleaf trees will be managed for fuelwood until other markets develop. Aspen stands will be perpetuated where they currently occur. Additional consideration will be given to managing white fir and pinyon for Christmas trees. The General Direction documents the importance of managing forested land for the continued production of trees and wood fiber. High value conifers will generally be managed for sawlog production, which basically continues historic direction.

**QUESTION NO. 4: WHAT LEVEL OF MINERAL ACTIVITY CAN FOREST LANDS SUPPORT?**

Under current regulations, development of locatable minerals can continue in a manner that will return the land as near as possible to its original productive level and have minimal impact on other Forest uses. This Forest Plan emphasizes administration of mining claims and their eventual reclamation. The Forest cannot support unlimited coal development. Although, excluding the areas

under lease, the land considered available for coal leasing has been increased from 154,100 acres to 399,800 acres. Management Direction, applied through the unsuitability and multiple-use criteria application recorded in Appendix C to the Forest Plan, limits the area leased at one time so as to reduce impacts on other resources, and stay within multiple-use management thresholds.

The Forest can support more oil and gas leasing and development than previously considered. There are fewer areas closed to exploration and development, since many of the impacts from these activities can be mitigated.

#### QUESTION NO. 5: HOW SHOULD FOREST WATERSHEDS BE MANAGED?

The Forest Plan provides only one significant change in watershed management. This is the need to determine and protect instream flows to assure adequate water for the uses for which the Forest was established. Accordingly, the Forest will limit the removal of water from the natural water system to protect Forest values and the riparian ecosystems.

The Forest Plan requires maintenance or improvement of water quality. Since sediment has been identified as the current major pollutant, General Direction is toward reducing natural sediment flows. The reduction of natural sediment is stressed since most man-caused sediment is insignificant when compared to natural flows. Other resource uses on watersheds will be limited to protect the water values.

Consideration was given to increasing water quality by vegetative manipulation or by snow fencing. It was felt that the land instability and current vegetation would make it very difficult for vegetative management to increase flow. Snow fencing was experimentally pioneered on this Forest many years ago, but the results were poor. Snow fencing does not appear to be economical and could cause environmental damage. However, the Forest would consider allowing interested parties to explore this type of snowpack manipulation.

#### QUESTION NO. 6: HOW SHOULD FOREST MANAGEMENT RESPOND TO ACTIVITIES ON ADJACENT NON-FOREST LAND?

The Forest should respond positively to activities on adjacent non-Forest lands. Goals in the human and community development area provide for public participation in the evaluation of proposed Forest activities. This includes consultation with adjacent landowners so that their interests can be considered in all cases and protected where feasible. Policy provides for issuance of special uses or permits on the basis of public need. Policy also provides for acquisition of land as needed to meet resource objectives, and the acquisition of easements where title is not needed.

These goals and policies are carried into the General Direction for Forest management.

#### QUESTION NO. 7: WHAT SHOULD FOREST POLICY BE ON UPGRADING RECREATION FACILITIES AND RECREATION MANAGEMENT?

Forest policy under the Forest Plan will be to reconstruct facilities that are damaged, destroyed or worn out, but to not upgrade sophisticated, high maintenance type facilities. Expansion can occur where it is appropriate.

Recreation management will be emphasized on four Management Units including the DRS - Developed Recreation Sites, UDM - Undeveloped Motorized Recreation Sites, SPR - Semiprimitive Recreation Areas, and DCW - Dark Canyon Wilderness Area. These will provide a broad range in recreational opportunities and experiences.



The program also calls for improved management of sites and access to reduce or eliminate damage from excessive use.

The length of stay will continue to be restricted.

**QUESTION NO. 8: WHAT PORTIONS OF THE FOREST SHOULD BE MADE AVAILABLE FOR UTILITIES AND TRANSPORTATION CORRIDORS AND SERVICES?**

Through the corridor analysis, Appendix D, the Forest has identified the routes that provide acceptable corridors and windows on the Forest. The existing State highway system is acceptable as transportation corridors. The transportation corridors are not acceptable as utility corridors, nor are utility corridors acceptable as transportation corridors, except the U-46/C-90 and Rattlesnake Paradox corridor between new and old LaSal, Salt Creek Canyon at the north end of the San Pitch Division, and Mill Fork-Indianola at the northwest edge of the Manti Division.

**QUESTION NO. 9: WHAT SHOULD BE THE LEVEL OF VEGETATIVE MANIPULATION ON GRASSLANDS, BRUSHLANDS, WOODLANDS, AND TIMBER LAND?**

Vegetation should be manipulated at a level that will maintain healthy and diverse plant species. Standards and Guidelines for the various plant species provides direction on the level of vegetative manipulation. In most vegetative types, treatment may occur on a twenty year cycle. An exception would be the ponderosa pine type where a shorter cycle between treatments would be preferable to keep the basal area low, which allows for additional ground cover and more rapid growth rate.

In general, the vegetation on Research Natural and Special Interest Areas and in Dark Canyon Wilderness may be altered only through natural activities such as grazing, browsing, insects, disease and fire. Exceptions to this may occur if the areas have been set aside for a purpose which allows vegetative manipulation.

**QUESTION NO. 10: WHAT AREAS REQUIRE IMMEDIATE CONTROL OF FIRES AND WHEN SHOULD FIRES BE USED IN VEGETATIVE MANIPULATION?**

General Direction identifies certain areas where immediate suppression will occur. These include areas where there is an opportunity for the loss of life or property, such as recreation areas or areas adjacent to private land.

Otherwise General Direction, Standards and Guidelines provide direction for confinement, containment, or control. This allows for wildfire or planned ignitions to be used for vegetative manipulation if they occur in fire prescription.

**QUESTION NO. 11: WHAT SHOULD BE THE LAND MANAGEMENT AND EMPHASIS FOR LIVESTOCK PRODUCTION?**

The Forest plan calls for little change in land management or emphasis for livestock production. In general, the objective is to improve range conditions and to bring livestock use in line with forage production levels. The Forest continues to recognize the importance of livestock to social and economic stability of local communities.

**QUESTION NO. 12: HOW CAN THE FOREST BEST REHABILITATE LANDS, FACILITIES, AND RESOURCES IMPACTED BY MASS LAND MOVEMENTS, MUDFLOWS, AND FLOODING, AND MINIMIZE THE IMPACTS OF FUTURE SIMILAR EVENTS?**

Flooding is predicted to continue in the future. The mass land movements and mudflows could continue to move for several years. Many of the lost facilities and other damages can only be repaired after movement and flooding cease. The Forest has scheduled a multifunctional program for rehabilitation, with the hope that funds might be carried over from one year to the next so they can be obligated when it would serve a useful purpose. The proposed actions are carried in the Landslide and Flood Damage Repair Program.

The Forest has identified some areas where geological, hydrological, or soils data is needed prior to evaluating an activity to assure that potential landslides or flooding will not adversely effect the activity. Consideration of the data becomes a standard or guideline for evaluation of these activities.

Additional geologic, hydrologic, and soils inventories are needed to assure that all sensitive or hazard areas are identified. The Forest Plan schedules these inventories.

**QUESTION NO. 13: HOW SHOULD THE CULTURAL, HISTORICAL, AND PLALEONTOLOGICAL RESOURCES BE PROTECTED?**

Generally, where the Forest Service has a reasonable degree of control over an activity, safeguards are adequate. Thus, the issue was not considered significant and was not carried forward into the EIS and Forest Plan. Recent information outlining the level of vandalism and theft, as well as loss of these resources to natural causes, has made it appropriate to reestablish this question as a major issue to address.

Archaeologic and paleontologic sites occur on the Forest in varying densities, from a few to many sites per square mile. Few historical sites exist. Any activity has a potential for disturbing these sites. It is the intent of this Forest Plant to set direction that adequately protects these irreplaceable resources.

The Antiquities Act of 1906, the Historic Preservation Act of 1966, the Archeological Resource Protection Act of 1979, and the National Environmental Protection Act, define cultural and paleontological resource responsibilities and activities. In essence, these laws require that appropriate studies be conducted to provide the information necessary for an adequate review of the effect a proposed undertaking may have on cultural values, as well as giving adequate consideration of modifications or alterations to the proposed undertaking that could avoid, mitigate, or minimize any adverse effects.

## **Suggested Changes in Direction or Emphasis**

The Analysis of the Management Situation identified some problem areas where changes in direction or emphasis may be appropriate. They are listed below by resource area. After each underlined statement of suggested change is the Forest Plan's response.

### **RANGE**

Areas of excessive or under use indicate a need to bring livestock grazing use in line with the capacity of suitable range.

Forest-wide Direction is to bring livestock use in line with grazing capacity.

Some range fences, stock water developments, and corrals have deteriorated and/or no longer serve

the purpose for which they were built.

Improvements that have deteriorated to the point where they no longer serve the purpose for which they were built are scheduled for removal or reconstruction based on the evaluation made in conjunction with Allotment Management Plans. Many of these facilities are included in the 10 year schedule for development. Others are delayed to the second 10 year period, owing to the funding constraint in the first period.

Range revegetation is necessary to restore some areas damaged by past over-use and to restore rangelands converted to other vegetative types through plant succession.

Range revegetation needed to restore rangelands to higher production levels has been identified. The 10 year range development program has scheduled several of these projects. Others are delayed to the second 10 year period or beyond, owing to the funding constraint in the first period.

## TIMBER

The current demand for timber is somewhat less than the supply capability. Some timber cannot be harvested in a timely manner to keep the stands thrifty and growing, which leads to a build up in insects and disease.

High value species such as spruce, Douglas-fir, and ponderosa pine will be managed to keep the stands thrifty and growing. Intermediate cuts on these species and harvest of lesser value species, such as aspen and white fir, may be for fuelwood or similar uses in order to maintain the stand viability.

While much of the Forest is roaded, many roads are poorly located or inadequate for timber haul.

Funding for most timber sale road construction would continue to come from stumpage receipts, and most sales will continue to be below cost. Management Direction for timber sales requires that sale activity be coordinated with other resource activities so that major road costs can be shared, and thereby reduce the amount of stumpage receipts taken for road construction.

Increasing demand for fuelwood may provide a means for increasing salvage or harvest of wood products. Access to fuelwood areas may limit this use.

Demand for fuelwood can provide a means for salvage and for precommercial thinning. KV, TSI, and other funds taken from fuelwood receipts should provide a means for improving the use of fuelwood sales as a timber management tool, and to create access to timber stands needing treatment.

## MINERALS

Current direction limits surface occupancy in some areas for mineral development which conflicts with certain national direction.

Current direction in unit plans has been relaxed and resolution of the RARE II problem, through the Utah Wilderness Bill, has eliminated many of the surface occupancy conflicts, and has made more land available for mineral activities.

Department of Energy assessments suggested coal mining on the Forest may reach 15 million tons per year by 1985 and approach 29 million tons by 1990. These projections were made prior to the

current market trends, which may delay the date when the projected output levels are reached. A production level for the Forest (area A of the Ferron-Price Land Management Planning Unit) is currently limited to 15 million tons or less per year.

Area "A" concept of the Ferron-Price Plan, which included the Known Recoverable Coal Resource Area (KRCRA), has been altered to include the area containing mineable coal as defined by the Department of the Interior. The Forest cannot control coal production so the 15 million ton limit has been eliminated. The Forest has identified thresholds as Standards and Guidelines in the Forest Plan, and used these as Multiple Use Criteria in evaluating land suitable for coal leasing. See Appendix C.

All Forest surface resources must be protected in considering new areas for leasing and mining.

The Forest Plan contains stipulations or mitigation statements for mineral exploration, leasing development, and mining. These are shown in Appendix B.

The use of uranium is predicted to increase substantially during the mid 1990's, so most operators will continue to maintain their rights through assessment work. The Forest's interests must be protected while this work is done.

The Forest Plan contains stipulations or mitigation statements for mineral exploration, leasing development, and mining. These are shown in Appendix B.

During this planning period, oil and gas leasing, exploration, and development is expected to increase and surface resources must be protected.

The Forest Plan contains stipulations or mitigation statements for mineral exploration, leasing development, and mining. These are shown in Appendix B.

## RECREATION

Most campground and picnic facilities are approaching the end of their useful life and many need immediate replacement. Some new developed areas may be needed.

The recreation program schedules reconstruction of facilities that might affect public health and/or safety during this 10 year planning period. New developments are scheduled after the first 10 year period owing to the funding constraint. Some deterioration in facilities may occur as a result of excessive use. There are no new developed areas planned in the first or second planning periods.

Camping, picnicking, and associated recreation activities outside developed sites at times conflict with the production of range forage, wildlife habitat, and clean water.

Areas receiving heavy use for dispersed recreation have been identified and direction prepared to provide guidance in administering the use of these areas. This should reduce conflicts and maintain the quality of recreation opportunity.

Increase snowmobiling and cross country skiing have demonstrated a need for allocating areas to each form of winter recreation.

Forest-wide Direction provides for the assignment of some areas to motorized and other areas to non-motorized recreation use. This has been done and provides some separation for snowmobiles

and cross country skiers. As the conflict increases, additional separation and administration may be needed and the Plan provides for this action.

Demands for solitude and vehicular use conflict, making it necessary to allocate areas to both nonmotorized and motorized use in semiprimitive recreation areas.

Through Forest planning, areas have been identified where semiprimitive recreation opportunities will be provided. Within these areas and others, an additional separation has been made so that some areas are available for motorized use, while others are only available for nonmotorized use.

## WILDERNESS

The lands within the Manti-LaSal National Forest have been intensively used by men, and areas available, capable, and suitable for wilderness are becoming scarce. If future generations are to enjoy wilderness, then some areas must be identified and protected.

The Utah Wilderness Bill established the 45,000 acre Dark Canyon Wilderness. This is believed to be adequate for this planning period.

## ARCHEOLOGY AND HISTORY

While archaeological and historic sites are generally protected from abuse by man, natural elements are causing significant loss to these values. If future generations are to enjoy or study these values, then important sites must be identified, protected, and in some cases displayed.

Archeological, historical and paleontological site management is defined in Forest-wide Direction. Direction, Standards and Guidelines provide for the protection of these resources during design or implementation of other resource activities, and to develop interpretive sites as appropriate.

## WILDLIFE

Habitat for deer and elk is limited.

Winter habitat for deer and elk is limited on the Manti and San Pitch Divisions. Summer range may be a limiting factor on the LaSal Division. Management Unit Requirements for key and general wildlife habitat have been prepared and certain areas have been assigned to this management emphasis.

Demands for wildlife hunting or viewing will increase with population.

The productive capability of wildlife habitat is limited and cannot meet the projected demands for hunting.

As National Forest System lands are more intensively used for minerals, recreation, and other activities, coordination with wildlife needs will become more critical to the maintenance of wildlife populations and habitat.

Management Unit Requirements provide for protecting wildlife habitat so that minimum viable populations can be maintained for all animals, and populations of high interest species can be increased.

Continuation is required to protect threatened and endangered species.

The Forest-wide Direction requires continued coordination with appropriate agencies on threatened and endangered species.

## WATERSHED

Demand for water exceeds supply and demands are increasing. Watersheds on the Forest need to be protected and where possible water supply should be improved.

The Forest cannot meet the demands for water quantity. Management Unit Requirements have been prepared to improve or maintain water quality.

About 46,000 acres have been identified as needing treatment to restore deteriorated watershed, improve water quality, and reduce downstream damage from excessive sediment.

A program for treating deteriorated watersheds has been prepared. It will not be completed within the period allocated in the RPA Program for eliminating this backlog because of financial constraints.

## FACILITIES

Many roads and trails show the effects of heavy or long use and little maintenance. The surfacing is gone and drainage facilities are deteriorated.

A facilities management program has been designed to maintain system facilities at a level appropriate to their value. Temporary and permanent closures will be used to protect low standard roads during periods when use could cause significant damage. A modest facility improvement program has been defined. Much of the facility improvement program will be delayed until the second 10 year period, due to funding constraints.

The transportation system needs to be evaluated to assure that it provides the needed access for the proposed resource uses. Once this is done, a construction and maintenance program could be developed to provide adequate access for Forest users.

A program to evaluate existing roads against their perceived need has been scheduled.

## SOCIO-ECONOMIC

Local community economics are shifting from an agricultural base toward a more industrial economy. This changes lifestyles, raises the general economic level, and increases need for community services. The shift is primarily based on mining activities. If mining slows, accelerated Forest investment work could be used to counteract rapid changes in employment and thereby help maintain community stability.

Financial constraints during this 10-year period make it impossible to accelerate Forest investment work to counteract rapid changes in employment and maintain community stability.



# CHAPTER III MANAGEMENT DIRECTION

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# **CHAPTER III**

## **MANAGEMENT DIRECTION**

### **Implementation**

This chapter of the Forest Plan provides the long-range management direction for the Forest. The direction responds to public issues, management concerns, and management opportunities. The direction is within the capability, availability, and suitability objectives for the land and resources.

As soon as practicable after the Forest Plan is approved, the Forest Service will ensure that, subject to valid existing rights, all outstanding and future permits and other occupancy and use documents which affect National Forest System lands are consistent with the Forest Plan. The management direction contained in the Forest Plan is used in analyzing proposals by prospective Forest users. All permits, contracts, and other instruments for occupancy and use of National Forest System lands covered by this Forest Plan must be consistent with the Management Requirements in both the Forest-wide Direction and Management Unit Requirements sections. This is required by 16 USE 1604(i) and 36 CFR 219.10(e).

Subsequent administrative activities affecting National Forest System lands, including budget proposals, shall be based on the Forest Plan. The Forest Supervisor may change proposed implementation schedules to reflect differences between proposed annual budgets and actual funds received. Schedule changes resulting from the budget appropriation process will be considered an amendment to the Forest Plan. The final annual budget allocation for the Forest will serve as amendment documentation. Changes resulting from the budget appropriation process shall not be considered a significant amendment, and will not require the preparation of an environmental impact statement. Budget changes, which over time significantly alter the long-term relationships between levels of multiple-use goods and services projected in the Forest Plan, will be evaluated in conjunction with the RPA Program update every five years, and may result in a Forest Plan amendment or revision.

Implementation of this management direction is the key to translating the goals, objectives, and management requirements stated in the Forest Plan into on-the-ground results. The Forest Plan is implemented through the program development, budgeting, and annual work planning processes. These processes supplement the Forest Plan by making annual adjustments and changes needed to reflect current priorities within the overall Forest Plan Management Requirements.

The Forest Plan guides development of multi-year implementation programs for each Ranger District. The Forest Plan Management Requirements are translated into these multi-year program budget proposals which specifically identify the activities and expenditures necessary to achieve the direction provided by the Forest Plan. These implementation programs form the basis for the Forest's annual program budget.

Upon final budget appropriation approval for the Forest, the annual work program is finalized and implemented on-the-ground. The annual work plan provides the detail to the program budget proposals necessary to guide land managers and their staffs in responding to Forest Plan direction. The activity files in the data base and the Program Accounting and Management Attainment Reporting System provide information for monitoring the accomplishment of the annual Forest program.

# Forest Management Goals

The following goals are concise statements describing a desired condition to be achieved some time in the future. They are expressed in broad general terms and are timeless in that they have no specific date by which they are to be completed. These goal statements are the principal basis for the objectives listed later in this chapter.

## Vegetation

Certain vegetative types are to be managed such that varying successional stages will be present to provide for a high level of vegetative diversity and productivity.

Aspen is to be managed, with commercial or noncommercial treatments, with the goal of maintaining 13 percent of the Forest in aspen type or increasing the aspen type toward the 19 percent it represented in 1915.

## Recreation

Recognize the significance of recreation in proximity to population centers and national attractions.

Offer a broad range of dispersed and developed recreation opportunities by providing appropriate recreation experience and setting levels.

Provide the opportunity for developed recreation sites to be operated by public concessionaires.

Provide more cost-effective service.

Provide appropriate developed recreation capacity where demand exists and private sector cannot meet the demand.

Generally place priority on restoration of existing facilities presently below standards.

Maintain, enhance, and/or rehabilitate visual resources to the planned VQO.

Design interpretive service programs where it will help resolve management problems, reduce management costs and obtain visitor feedback, increase public understanding of Forest Service management, enhance visitor use, and provide safe use of the Forest.

## Cultural, Historical, and Paleontological Resources

Locate and determine the significance of paleontological, historical, and archeological sites and, as appropriate, nominate sites to the National Register.

Manage selected historical and archeological sites for public use, while still protecting the values of the site.

Make select paleontological, historical and archeological sites available for study by agencies involved in research and education.

Protect from theft and/or vandalism cultural, historical, and paleontological resources.

## **Wilderness**

Manage to protect the wilderness character.

Rehabilitate areas showing evidence of unacceptable physical and biological impacts of past use.

Increase visitor awareness and appreciation of wilderness values.

## **Wildlife and Fish**

Maintain or improve habitat carrying capacity for elk or deer.

Maintain or improve wildlife habitat diversity.

Maintain or improve fisheries habitat.

Protect, maintain, and/or improve habitat for threatened or endangered and sensitive plants and animals.

Provide habitat for viable populations of the existing vertebrate and invertebrate species found on the Forest.

Cooperate with the State in keeping wildlife populations within the habitat capacity.

## **Range**

Bring livestock obligation in line with rangeland carrying capacity.

Maintain upward or stable trends in vegetation and soil condition.

Invest in range improvements where they will provide the greatest benefit.

Control noxious weeds and poisonous plants in cooperation with Forest users and State and local agencies.

## **Timber**

Provide commercial timber sales of sufficient quantity and quality to maintain local timber industry and accomplish desired vegetation treatment goals.

Meet as much of the demand for wood fiber and Forest products as possible, consistent with multiple-use objectives.

Provide a stable supply of fuelwood opportunities.

Ensure that programmed reforestation is kept current.

Maintain a healthy Forest by applying appropriate silvicultural treatments.

Manage aspen stand for forage as well as wood fiber.

Provide wood products usage in the management of pinyon-juniper and oak stands.

Use timber management to meet other management or resource needs.

### **Soil and Water**

Maintain satisfactory watershed conditions.

Provide favorable conditions of water flow (quality, quantity, and timing).

Protect National Forest System lands or resources from unacceptable damage caused by the development of water uses.

Improve deteriorated watershed conditions where feasible.

Provide sufficient water for multiple-use management by securing favorable flows of water, which is interpreted to include those flows necessary to maintain stable and efficient stream channels as required by the Organic Act of 1897, and provide for fish and wildlife habitat, recreation, and livestock use as required by the Multiple Use Act of 1960.

Protect soil and water productivity so that neither will be significantly or permanently impaired.

Protect and enhance riparian areas including dependent resources.

### **Minerals and Geology**

Provide for the interpretation of surface and subsurface geologic conditions and processes such as landsliding.

Manage geologic resources, common variety minerals, ground water, and underground spaces (superficial deposits, bedrocks, structures, and processes) to meet resource needs and minimize adverse effects.

Provide appropriate opportunities for and manage activities related to locating, leasing, exploration, development, and production of mineral and energy resources.

Ensure that adequate reclamation of disturbed areas is accomplished.

### **Lands**

Exchange lands and consolidate ownership when in the public interest.

Acquire necessary rights-of-way to facilitate public access to National Forest System lands and to meet resource management objectives.

Acquire scenic or partial easements whenever Federal ownership is not required to meet management objectives.

Locate, identify, and mark National Forest property lines and protect land survey monuments.

Consider special-use applications and permits on the basis of relative benefit to the public and individual need.

## **Protection**

Promote an integrated pest management program to prevent and control insect and disease infestation.

Minimize hazards from flood, wind, wildfire, and erosion.

Reduce the accumulated fuels to a tolerable risk level.

Suppress wildfire based on values, risk, and management unit prescriptions.

Manage Forest activities so that air quality is compatible with Federal and State standards.

## **Human and Community Development**

Provide the opportunity for human resource programs that assist the disadvantaged with resource use and employment opportunities.

Charge "use fees" for products and services to provide the highest return consistent with maintaining and encouraging existing local operations and attaining goals of the management units.

Provide opportunities for public participation in the evaluation of proposed Forest activities.

Provide work opportunities and training experiences to accomplish resource objectives and to assist communities.

Within the Forest's capability, provide the opportunity for sustained economic growth of industries and communities dependent upon Forest outputs.

## **Facilities**

Manage the transportation system to safely and economically transport people, products, and services to accomplish planned management unit programs and goals.

Manage the transportation system for increased cost-effectiveness and efficiency.

Provide for energy efficiency in structure and equipment management.

Maintain facilities at a level that protects investments in the facility and adjacent resources.

Manage to provide public (user) health and safety.

Reduce total road miles while emphasizing improvement on remaining miles.

Locate facilities so as to minimize travel while efficiently accomplishing long-range management unit programs and goals.

## Research, Protection, and Interpretation Units

Manage special interest areas to protect the unique archeological, ecological, geological, paleontological, historical, and other special characteristics for long-term public benefit.

Preserve in as near as natural condition as possible areas or features of unique natural phenomenon.

## Resource Supply, Demand, and Proposed Production Summary

The outputs listed in Table III-1 are concise, time-specific, measurable results that respond to the goals listed in Chapter III. These objectives are the basis for the Management Requirements listed in the Forest-wide Direction and Management Unit Requirements in this chapter. Projected outputs and returns to the U.S. Treasury are contingent on the accuracy of assumptions used in developing the predictions including the projected funding needed.

TABLE III-1

Outputs	OUTPUTS AND BENEFITS		
	Period 1 (1986-1995)	Period 2 (1996-2005)	Period 3 (2006-2035)
Capacity MAUM's	153.8	160.0	163.5
Deer MWFUD's	37.9	54.5	61.1
Elk MWFUD's	3.2	6.5	7.6
Fish MWFUD's	79.9	90.5	107.8
Timber MMBF	5.2	8.3	11.7
Fuelwood M-Cord	11.2	16.4	21.3
Primitive MRVD's	6.3	10.0	17.2
SPNM MRVD's	25.9	34.2	50.2
SPM MRVD's	167.8	227.6	329.4
RNA MRVD's	757.6	1,006.2	1,456.0
Rural MRVD's	338.8	436.3	632.2
Uranium M-T/Ore	58.4	95.7	53.8
Gold M-T/Ore	1.2	4.8	2.7
Coal MM Tons	11.3	17.8	25.0
Water M-Ac/Ft	731.0	731.0	733.1
Sediment M-Tons	490.0	30.0	5.0
<u>Benefits M\$</u>			
Recreation	3,920.0	5,194.0	7,542.0
Wildlife	5,055.0	6,808.0	7,828.0
Range	2,115.0	2,200.0	2,248.0
Timber	428.0	509.0	570.0
Minerals	41,530.0	65,880.0	91,496.0
Water	41,328.0	42,607.0	42,793.0
Total Benefits	94,376.0	123,198.0	152,477.0
<u>Returns to Treasury M\$</u>	28,524.0	44,610.0	62,744.0

Table III-2 displays the projected costs. The projected total plan cost level associated with each time period is the amount necessary to implement the Forest Plan direction and achieve multiple-use objectives. The annual budget, as authorized by Congress, may be different from that necessary to carry out the intent of the Forest Plan. For that reason, short-range objectives must be flexible to accommodate the variation. The long-range objectives must be used to guide the development of the annual budget request to ensure completion of the Forest Plan direction.

TABLE III-2

COST BY FUNDING ELEMENT  
(In Thousand 1982 Value Dollars)

	Resource Elements	Periods		
		'86 - '95	'96 - '05	'06 - '35
Operation and Maintenance	Recreation	732.0	759.8	786.3
	Wilderness	47.0	55.9	71.2
	Wildlife	224.1	243.6	253.9
	Range	455.1	413.3	419.1
	Timber	542.8	554.2	577.1
	Soil and Water	283.7	111.2	115.9
	Minerals	611.7	632.6	607.4
	Human	5.7	8.9	9.3
	Lands	95.9	958.5	968.1
	Facilities	437.2	444.0	413.4
	Protection	217.0	211.2	216.8
	TOTAL	3,652.3	4,393.1	4,438.4
Investments	Recreation	294.2	247.2	247.2
	Wilderness	12.4	11.8	11.8
	Wildlife	539.2	36.2	36.2
	Range	115.7	119.1	119.1
	Timber	79.7	75.4	75.4
	Soil and Water	238.3	209.1	209.1
	Minerals	.0	.0	.0
	Human	.0	.0	.0
	Lands	.0	.0	.0
	Facilities	590.9	409.8	409.8
	Protection	24.0	.0	.0
	TOTAL	1,894.4	1,108.5	1,108.5
Total by Resource Element	Recreation	1,026.3	1,006.9	1,033.5
	Wilderness	59.4	67.7	83.0
	Wildlife	763.3	279.8	290.1
	Range	570.9	532.3	538.1
	Timber	622.5	629.6	652.4
	Soil and Water	522.0	320.3	325.0
	Minerals	611.7	632.6	607.4
	Human	5.7	8.9	9.3
	Lands	95.9	958.5	968.1
	Facilities	1,028.1	853.8	823.2
	Protection	241.0	211.2	216.8
<b>General Administration</b>		<b>986.0</b>	<b>1,126.0</b>	<b>1,162.4</b>
<b>Grand Total</b>		<b>6,532.0</b>	<b>6,627.0</b>	<b>6,709.4</b>



The first 10-year period shown on the tables, 1986 to 1995, is the planning period. Outputs in the second and third periods are projections out to the planning horizon, 2035, as required by RPA, and show the effects in out-years if a particular course of action is taken.

## **Desired Future Condition of the Forest**

This section is a description of the desired future condition of the Forest resulting from implementation of this Forest Plan (the High Benefit Alternative described in the accompanying EIS).

### **Vegetation**

#### **ASPEN**

The aspen vegetation type would be managed and maintained in a condition of high productivity. Silvicultural practices treating total clones would generally be utilized resulting in the aspen type appearing as even-aged stands, but with stands in all age classes throughout the Forest.

#### **ENGELMANN SPRUCE - ALPINE FIR**

Approximately 25 percent of this type is suitable for intensive management through commercial timber and wood product sales. Harvesting utilizing shelterwood or modified shelterwood systems would occur where slope stability would not be affected and where the practice would enhance vegetation diversity as well as improve wildlife habitat. The number of fir stands would be diminished as a result of some stands being converted back to aspen.

#### **PONDEROSA PINE**

Approximately 50 percent of the type is suitable for intensive management using commercial timber and wood product sales. Silvicultural practices used would emphasize the high productivity of this type while considering range, wildlife, and recreational uses and values.

#### **PINYON-JUNIPER**

Pinyon-juniper stands (about 10 percent of the total) on gentle slopes and on land with good soils will be treated periodically to maintain early successional stages. This will help provide vegetation, scenic, and habitat, as well as forage and improved watershed. Pinyon-juniper stands (about 90 percent of the total) on steeper slopes and on lands with poor or rocky soils will be extensively managed and generally not treated except by natural disturbance.

#### **RIPARIAN**

Vegetative cover within the riparian component ecosystems would be maintained or diversified and enhanced as necessary to emphasize watershed, wildlife, and fisheries values. The stage of vegetative development may be locally altered to increase riparian and/or aquatic ecosystems.

#### **SUBALPINE FORB GRASSLAND**

The subalpine forb grassland would include a diverse mixture of the native and desirable introduced high forage producing plant species. Management would maintain this complex in a healthy, vigorous condition to preclude invasion by less desirable species.

## GAMBEL OAK AND MOUNTAIN SHRUB TYPES

Intensive management practices would maintain structural diversity within the woody species in at least 25 percent of the area cover by the Gambel oak and Mountain shrub type. Vegetative diversity within the grass and forb ground cover would also be improved. In some cases, the Gambel oak would be encouraged to successionally develop as an open savannah or in a high seral stage.

### **Developed Recreation**

Recreation visitor use would be distributed between developed recreation facilities on individual and adjacent Ranger Districts. Use would also be distributed between government agency and privately-owned and/or operated facilities. Still, some individual developed recreation sites could be overcrowded during peak use periods.

Developed recreation sites would be operated at a reduced service level during the pre-and post-summer use period. During the summer use period, high use fee sites comprising approximately 50 percent of the total Forest site capacity would be managed at the full service level and the remainder at the reduced service level. Sites adjacent to private resorts, easy accessible destination use sites, and some sites near towns or cities could be operated and maintained by private concessionaires.

Existing campgrounds and picnic grounds would be rehabilitated and/or expanded where the private sector would not satisfy the demand. An average of 20 persons-at-one-time (PAOT) capacity would be constructed annually over the 50 year planning horizon to satisfy picnic ground and overnight campground demand. The condition of high use fee recreation facilities would be improved to condition class one or two. The vegetative condition including riparian areas would be maintained or improved.

Summer home residences on National Forest System lands would be fewer because isolated special use permits for this use are non-transferable.

Private sector resort demand would reach capacity between the years 1990 and 2000. The majority of any new capacity would be provided by the private sector off Forest or on private lands within the Forest boundary.

High quality winter recreation opportunities would be provided, generally by the private sector, on sites suitable to this use.

### **Dispersed Recreation**

A range of dispersed recreation opportunities would be provided on National Forest System lands. Each activity would be managed to maintain or enhance appropriate opportunities.

When a greater public need, such as timber harvest or minimal extraction would be determined by the Forest Supervisor, any dispersed recreation area not formally withdrawn from such activity could be impacted. However, after the operation ceased, the area would be reclaimed or rehabilitated consistent with the pre-project recreation opportunity classification goals.

## **Cultural, Historical, and Paleontological Resources**

Cultural, historical, and paleontological resources would be protected from resource disturbing activities and vandalism. Exceptional suitable sites should be interpreted and made available for general public viewing and, as appropriate, nominated to the National Register.

### **Wilderness**

The Dark Canyon Wilderness would be managed to protect its wilderness character for present and future use and enjoyment. Livestock grazing on suitable range would continue within compatible use levels and schedule.

On remaining National Forest System lands, protection of wilderness values would be a function of the demands for land use, activity design, and reclamation work required upon project completion.

### **Wildlife and Fish**

Appropriate habitat management would maintain viable populations of existing vertebrate species.

Habitats of threatened and endangered species would be maintained. Habitat would be surveyed and appropriate action taken. Habitats for sensitive species would be managed to reduce the potential of these species becoming threatened or endangered.

Flood damaged fisheries habitat could significantly improve as a result of the flood damage repair program in conjunction with watershed activities. In other areas, the fisheries habitat would gradually increase by improving habitat in suitable marginal and unsuitable lakes and reservoirs, and completing stream and riparian improvement projects. Riparian habitat could be maintained and its condition improved.

Big-game winter range capacity could be maintained through direct habitat improvement which could offset encroachment by other activities. Increased emphasis would be given to non-game habitat and non-consumptive wildlife uses.

Populations of deer and elk would increase over current levels. Management Indicator Species (MIS) habitat would be maintained at levels that meet or exceed requirements for minimum viable populations.

### **Range**

Grazing capacity would be increased by the end of the first decade, and actual use and permitted use would be in balance with the projected grazing capacity. This could involve some reduction of permit obligations depending on the allotment. During the planning period, range condition and trend should gradually improve. Thus, grazing capacity and use should increase to exceed present levels.

Allotment management plans would be completed. These plans would include goals and objectives, with management efforts to provide coordination and improvement of the range resource.

The noxious weed program would continue in coordination with local weed control districts with the aim of controlling existing infestations and preventing establishment of new ones. Special attention would be given to the control of musk thistle on the Forest. Integrated pest management techniques would be used to protect, maintain, and improve range conditions. Predator control should be allowed on grazing allotments where a need is demonstrated.

Some treated watershed areas closed to grazing would remain closed. However, some treated areas capable of supporting grazing, would be opened for this use.

Endangered, threatened, and sensitive plant species populations and their habitats would be maintained and improved. Land disturbing activities would be reviewed for endangered, threatened, and sensitive plant species and clearance would be made before the projects are approved, thus, providing the safeguards needed for their protection and continued existence.

## **Timber**

Areas available for timber harvest would generally include slopes less than 40 percent.

A combination of silvicultural harvest systems that maximize positive present net value would generally be used. Intensive management practices, such as precommercial thinning, would be used in commercial working groups. Harvest of the high and medium bark-beetle-susceptible ponderosa pine stands would be emphasized. A harvest based on allowable sale quantity should be maintained annually in the ponderosa pine and spruce-fir working groups.

The future condition of the commercial stands would improve, conversion of slow-growing, over-mature stands to younger, more vigorous stands, and by periodic reentry to maintain stand vigor. Insect and disease impacts would be less than present because of the emphasis on harvesting susceptible stands.

Non-commercial stands would be managed to provide other resource outputs, thus, there would be some loss of wood or wood products, and growth rates could be substantially lower.

The supply of firewood created by this alternative, when added to existing dead timber, should meet the demand through 2030.

## **Soil and Water**

Water quality and soil productivity would be maintained or improved. Flood damage repair programs in conjunction with fisheries improvement would result in improved conditions of damaged streams. Other identified watershed improvement needs would be completed at a reasonable rate throughout the planning period, which would reduce soil erosion and stream sedimentation. Future resource uses or activities would be executed so as to minimize impacts to soil and water quality. Reconstructing eroding portions of roads and trails will improve water quality. Protection from damage due to vehicular travel would increase through law enforcement and public education. The soil and water resource inventory and monitoring would be used in activity design and implementation. Water uses and needs including instream flows would be claimed through the State adjudication process. Increases in water yield due to aspen harvest could be less than one percent of current yield, and 95 percent of the increase would be in the Colorado River Basin.

## **Minerals**

### **COAL**

Proposed coal lease tracts would be identified based on expressions of interest from coal development companies. Leasing would be considered and cleared, eliminated, or delayed for tracts within the Coal Development Potential Area that have been determined to be available for coal leasing based on application of the coal lease unsuitability criteria and multiple-use management decisions.

Cleared tracts would be available for leasing subject to the mitigating requirements determined through the multiple-use management and environmental assessments.

New mines would be expected to develop on existing as well as new leases and coal production would increase.

Coal exploration, including new exploration of potential lease areas and obtaining additional geologic data for existing mining operations, would increase proportionately with new leasing and increased production.

Subsidence and the resource monitoring programs, required for approval of mine plans, would provide necessary data to create models for predicting subsidence and the related impacts for evaluating future leases and/or mining operations.

### **OIL AND GAS**

Oil and gas leases would be issued except in the Dark Canyon Wilderness Area. Leases would contain necessary stipulations to minimize or eliminate adverse impacts on other resources and resource uses that could be caused by exploration and development.

Lease exploration and development activities would be evaluated on a case-by-case basis. Recommendations for project approval would be developed through site-specific environmental analyses.

### **LOCATABLE MINERALS**

Areas not withdrawn from locatable minerals location would be open and available for prospecting and development of mining claims. However, locatable mineral withdrawals and the Dark Canyon Wilderness Area would be subject to valid rights.

Surface disturbing mining claim exploration and development activities would be evaluated and approved subject to site-specific environmental analyses.

### **COMMON VARIETY MINERALS**

Common variety minerals would be developed and disposed of based on need and site-specific environmental analyses.

### **GEOPHYSICAL AND GEOCHEMICAL EXPLORATION**

Geophysical and geochemical exploration proposals for geologic and mineral exploration would be evaluated by site-specific environmental analyses, and approved with appropriate stipulations, or denied.

## **Research, Protection, and Interpretation Units**

Research Natural Areas, botanical Areas, and other Special Interest Areas would be established so that future generations will have the opportunity to study or view the notable and/or unique physical, biological, paleontological, cultural, and historical values of the Forest.

## **Lands**

Lands would be acquired, transferred, and exchanged as available to block lands into more manageable configurations and eliminate small isolated tracts. Several programs involving the Forest Service, Department of Interior, and the State of Utah and Colorado have been initiated for this purpose, and some would be consummated.

Utilities and other special uses would be considered in suitable areas and/or corridors based on need and overall benefit. The need and number of special-use permits issues is expected to increase proportional to population growth, expansion of industry, and the demand for natural resources, especially energy minerals.

Special-use permits for isolated cabins would be phased out as permits expire under existing terms.

Current land withdrawals are to be reevaluated by 1991 as required by Section 204 (1) of the Federal Land Policy and Management Act of 1976 (FLPMA). It is expected that the total area under withdrawals may increase since some new areas may be withdrawn to protect specific special interest and high investment areas.

Special-use fee returns would increase.

Exterior Forest boundaries and interior State and private land boundaries would be identified and marked on the ground by the end of the year 2035.

## **Fire**

Appropriate suppression response would be taken on wildfires as provided in the general Forest Direction and specific Management Unit Requirements.

Prescribed fire from planned or unplanned ignitions would be used for fuels treatment and resource improvement. Prescribed burning would be used if justified by an environmental analysis. Manipulation of vegetation could provide adequate fuels reduction.

In the Dark Canyon Wilderness, prescribed unplanned ignitions could be used to maintain natural ecosystems.

## **Law Enforcement**

Cooperative law enforcement agreements with local law enforcement agencies would continue. Increased public use of the Forest would increase the law enforcement problem, and greater protection efforts would be needed.

## **Facilities**

### **TRANSPIRATION**

The transportation system would be safe, functional, economical, and environmentally acceptable. Road construction, reconstruction, surfacing, operation and maintenance for coal, gas, oil and uranium exploration, development and production would be coordinated with other resource activities.

The basic arterial and collector, as well as the local system serving major rural recreation sites, would be constructed, reconditioned, and/or surfaced, and then maintained to carry passenger traffic at level 3 or higher maintenance for the intended season of use. This reconstruction and 20 percent of the surfacing placement should occur in the first 10 years. The remainder of the surfacing should be placed in the second 10 years.

The remainder of the local system would be evaluated and substandard roads rebuilt to standard or abandoned as determined in the road management program. Management of local roads would include intermittent restrictions of road use, vehicle type or loading restrictions, and weather restrictions as necessary to maximize access while minimizing maintenance costs, roadway damage, and environmental damage. Local unrestricted roads would be travelable by high clearance vehicles at level 2 for the intended season of use. Reconstruction of the local system would occur during the second 10 year period, except where required for timber or mineral access. This could occur in the first 10 year period.

After the first 20 years, road construction would consist of that necessary for support of timber and some mineral activities, mostly temporary roads. In conjunction with maintenance activities, an ongoing surface replacement program of 29 miles per year would be required.

### **BUILDING AND ADMINISTRATIVE SITES**

Major health and safety problems would be resolved so that unrestricted use can occur by the end of the first 10 year period. Less severe health and safety problems would be resolved so that unrestricted use can occur by the end of the second 10 year period. Further, major work centers would have space adequate to serve administrative needs. Reconstruction and major maintenance not related to health and safety would be completed during the third 10 year period, and as other space requirements are fulfilled.

## **Management Requirements**

The Management Requirements document the controls that must be maintained to accomplish the goals and objectives of the Forest Plan. They define the environmental quality requirements, natural and depletable resource requirements, and mitigating measures. The Forest-wide Direction Section applies to all areas of the Forest unless specifically amended by a Management Requirement for a Management Unit.

Management Requirements are presented in three columns: Management Activities, General Direction, and Standards and Guidelines.

Management Activities are work processes that are conducted to produce, enhance, or maintain levels or outputs, or to achieve administrative and environmental quality objectives. Management Activities are identified by code number and title defined in the Management Information Hand-book (FSH 1309.11) dated July 1980. In some cases, Management Activities were grouped under one activity when it was not appropriate to develop separate requirements. National Forest System lands will be managed to comply with laws, regulations, Executive Orders, Forest Service Manual, and acceptable work standards.

General Direction Statements specify the actions, measures, or treatments (management practices) to be done when implementing the Management Activity or the condition expected to exist after the General Direction is implemented.

Standards and Guidelines are qualifications of the acceptable limits within which the General Direction is implemented.

### **Forest-wide Direction**

The following section contains the direction Standards and Guidelines for managing the entire Forest, unless specifically amended by the requirements for a management unit.



Management  
Activities

General  
Direction

Standards &  
Guidelines

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CULTURAL  
RESOURCE  
MANAGEMENT  
(A02)

01 Protect, find an adaptive use for, and or interpret cultural and paleontological resources on National Forest System (NFS) lands which are listed on the National Register of Historic Places the National Register of Historic Landmarks, or may be determined to be eligible for the national registers.

a. 36 CFR 800.4, 36 CFR 296, & FSM 2360

02 Nominate or recommend cultural or paleontological sites to the National Register of Historic Places or National Natural Landmarks in the following priority:  
A. Sites representing multiple themes;  
B. Sites representing themes which are not currently on the National Register within the State; or  
C. Sites representing themes which are currently represented by single sites.

a. 36 CFR 60,35 CFR 63, & FSM 2360

03 Protect and foster public use and enjoyment of cultural and paleontological resources:  
A. Conduct appropriate studies to provide information necessary for an adequate review of the effect a proposed undertaking may have on cultural values.  
B. Give adequate consideration of modifications or alterations to proposed undertakings that could avoid, mitigate, or minimize adverse effects.  
C. Collect and record information from sites where appropriate.  
D. Issue antiquities permits to qualifying academic institutions or other approved organizations for the study and research of sites.  
E. Interpret sites as appropriate, and foster public appreciation of these resources.

a. 36 CFR 800.4

04 Use a predictable model to determine areas of high and low potential for cultural resources. Design site-specific survey requirements in various areas on the basis of the predictive model, after appropriate review and approval (including SHPO).

a. Predictive models can only be used where a cultural resource overview has been completed.

Management  
Activities

General  
Direction

Standards &  
Guidelines

---

VISUAL  
RESOURCE  
MANAGEMENT  
(A04)

01 Forest resource uses or activities should meet the adopted VQO as displayed on the Planned Visual Quality Objective Map (reduced copy in Appendix F).

a. FSM 2380 and 2309.16 through FSH 2309.25.

02 Design and implement management activities to blend with the natural landscape.

03 Rehabilitate existing projects and areas which do not meet the adopted Visual Quality Objective(s) (VQO) specified for each management unit. Set priorities for rehabilitation, considering the following:

a. FSM 2380.

- A. Relative importance of the site and amount of deviation from adopted VQO. Foreground areas have highest priority;
- B. Length of time it will take natural processes to reduce the visual impacts so that they meet the adopted VQO;
- C. Length of time it will take rehabilitation measures to meet the adopted VQO; and
- D. Benefits to other resource management objectives gained through rehabilitation.

04 Achieve landscape enhancement through addition, deletion or alteration of landscape elements. Examples of these include:

a. FSM 2380.

- A. Addition of vegetation species to introduce unique form, color or texture of existing vegetation.
- B. Vegetation manipulation to open up vistas or screen out undesirable views.

MANAGEMENT  
OF DEVELOPED  
RECREATION  
SITES  
(A08, 09, 11 & 13)

01 Manage sites identified for developed recreation during the planning period under the Developed Recreation Site (DRS) management unit prescription.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Describe, as appropriate, high interest or unique geological, paleontological, biological, archeological, or historical features for public information and, as appropriate, develop interpretive information for these sites.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CONTINUATION  
OF:  
DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

- 02 Provide opportunities for roaded natural appearing, semi-primitive motorized, and semiprimitive nonmotorized recreation uses.
- 03 Classify areas as to whether vehicular travel use is restricted.
  - a. Specify vehicular travels restrictions, if any, based on vehicle travel use management (FSM 2350).
- 04 Restrict use and/or rehabilitate dispersed sites where unacceptable environmental damage is occurring.
  - a. Close sites that cannot be maintained in Code-A-Site categories light, moderate, or heavy campsite condition. (USDA FS Research Paper PNW-209, date 1976).
  - b. Rehabilitate sites that are in Code-A-Site category "extreme".
- 05 Limit camping near lakes and streams or in watersheds as necessary to protect riparian and aquatic ecosystems and to maintain the quality of the recreation experience.
- 06 Preclude camping in undeveloped sites within one quarter mile of developed fee sites, where it is appropriate.
- 07 Manage dispersed recreation activities and use of trails in dispersed areas to not exceed the established PAOT/acre or mile of site or trail capacity.
  - a. Maximum use and capacity levels are by:  
Recreation use and capacity range during the snow-free period (PAOT/acre): and,  
Forest Development Trail use and capacity range (PAOT/mile) of trail:

III-18

ROS Class	Capacity Range			
	Very Low	Low	Moderate	High
Semiprimitive Nonmotorized or Motorized;				
On Trails PAOT/mile. . . .	2.0	3.0	9.0	11.0
Area-Wide PAOT/acre. . . .	.004	.008	.05	.08
Roaded Natural;				
On Trails PAOT/mile. . . .	based on trail design capacity			
Area-Wide PAOT/acre. . . .	.04	.08	1.2	2.5
Rural;				
On Trails PAOT/mile. . . .	based on trail design capacity			
Area-Wide PAOT/acre. . . .	.5	.8	5.0	7.0

ACTIVITIES

DIRECTION

GUIDELINES

CONTINUATION OF: DISPERSED RECREATION MANAGEMENT (A14 AND 15)

Adjust the above use level coefficient as needed to reflect useable acres, patterns of use, and general attractiveness of the specific management unit type as described in the ROS User's Guide. Reduce the above use levels where unacceptable changes to the biophysical resources will occur.

RECREATION MANAGEMENT (PRIVATE AND OTHER PUBLIC SECTOR) (A16)

- 01 Ensure that permitted private and public sector sites on National Forest System lands which are adjacent to, or provide an access point into The Dark Canyon Wilderness, complement wilderness management objectives.
- 02 Act on special-use applications according to the following priorities:
  - A. Public Service operations catering to the general public.
  - B. Group type operations
  - C. Private type operations.

- a. FSM 2340 and FSM 2720.
- b. An application for permit may be denied if the authorizing officer determines that:
  - (1) The proposed use would be inconsistent or incompatible with the purpose(s) for which the lands are managed, or with other uses, or
  - (2) The proposed use would not be in the public interest, or
  - (3) The applicant is not qualified, or
  - (4) The use would be inconsistent with applicable Federal and/or State laws, or
  - (5) The applicant does not or cannot demonstrate technical or financial capability.

III-19

WILDERNESS AREA MANAGEMENT (B02)

- 01 Mange Dark Canyon Wilderness Area under the management unit prescription for wilderness (DCW).

WILDLIFE AND FISH RESOURCE MANAGEMENT (C01)

- 01 Provide habitat needs, as appropriate, for management indicator species.
  - A. Deer and Elk .....

- (1) Maintain adequate hiding cover around calving areas.
- (2) Optimum habitat mix for the daily normal range is 25 percent hiding cover, 15 percent thermal cover, 10 percent hiding or thermal cover and 50 percent foraging area.

ACTIVITIES

DIRECTION

GUIDELINES

CONTINUATION OF:  
WILDLIFE AND  
FISH  
RESOURCE  
MANAGEMENT  
(C01)

B. Golden Eagle .....

C. Blue Grouse .....

D. Macroinvertebrates .....

E. Abert Squirrel .....

(3) In areas of historic water shortage during the dry season of the year develop water as appropriate.

(4) Manage key deer and elk habitat so as to minimize disturbance during the period of use.

(1) Avoid activities that could cause abandonment of actives nests.

(1) Maintain and/or improve lands suitable for Blue Grouse to provide a mix of 10 percent breeding, 20 percent brood rearing, 40 percent feeding and 30 percent wintering.

(1) Improve to and maintain a good or above Density Index (DAT) of 11-17, a standing crop of 1.6 - 4.0, and a Biotic Condition Index (BCI) of 75 or above, based on analysis from R-4'S Aquative Ecosystem Analysis Laboratory.

(1) \*Habitat in ponderosa pine; Silvicultural prescriptions for ponderosa pine on the Monticello Ranger District should consider management that:

(a) Protects habitat by maintaining occupied sites to produce good to very good habitat condition. This should include; 2 nest or feed trees 9-19" DBH, 1 feed tree 16" DBH, and 10 feed trees 9"+ DBH within 50 foot radius and 30 additional trees 9"+ DBH outside the 50 foot radius but within a 100 foot radius.

III-20

ACTIVITIES

DIRECTION

GUIDELINES

CONTINUATION OF:  
WILDLIFE AND  
FISH RESOURCE  
MANAGEMENT  
(C01)

(b) Maintain and/or improve good (1 squirrel/10 acres) to very good (2-4/10 acres) habitat conditions on at least 60 percent of the total ponderosa pine habitat type. For every 5 to 10 acre tract, there could be; 2 nest or feed trees 9-19" DBH, 1 large feed tree 16"+ DBH, and 10 feed trees 9"+ DBH within 50 foot radius and 30 additional feed trees 9"+ DBH outside 50 foot but within 100 foot radius.

(c) Stands heavily diseased or insect infested would be considered on a site-by-site basis to determine improvement needs.

(2) Use slash and silvicultural practices that deter shrub growth, provide ponderosa pine reproduction, but do not encourage habitat for rodents that compete for Abert squirrel habitat components.

(3) Leave Gambel oak 6"+ DBH in association with ponderosa pine.

\*Based on Wildlife Society Bulletin 12:408-44, 1984.

02 Manage habitat for recover of endangered and threatened species.

a. Where activities or uses may impact T&E species or their habitats, initiate consultation procedures. Include the results of consultation in determining the viability of the activity or use.

03 Implement activities to meet the Forests's share of approved recovery plans.

04 Manage habitat of sensitive species to keep them from becoming threatened or endangered.

a. FSM 2670.

III-21

CONTINUATION OF:  
WILDLIFE AND  
FISH RESOURCE  
MANAGEMENT  
(C01)

05 Maintain and/or improve habitat and habitat diversity for minimum viable populations of existing vertebrate wildlife species.

a. Manage vegetative composition so as to maintain at least 50 percent of current (1980) habitat for existing and approved introduced wildlife species.

b. Maintain a least 5 percent of forested areas in mature timber stands.

06 Provide for habitat needs of cavity nesting birds, raptors, and small animals by:

- A. Through coordination with project work or resource uses, insure the appropriate density of snags are available and protected in vegetative types.
- B. Selecting and utilizing live trees to create snags.

a. A snag is defined as a completely or partially dead standing tree at least 4 inches DBH and at least 6 feet in height.

b. Maintain various size classes of standing snags with the approximate density per 100 acres based on broad vegetative types.

	<u>No./100 Acres</u>
(1) Ponderosa pine	110
(2) Mixed Conifer (Spruce/Fir/Douglas)	90
(3) Aspen	120
(4) Pinyon-Juniper	15
(5) Riparian	120

c. R-4 Supplement 26 to FSM 2631.

07 Manage down timber to provide habitat for wildlife.

a. Retain slash on at least 10 percent of timber stand areas and pinyon-juniper control projects.

b. Manage to provide at least two logs per acre in timber habitat types.

08 Manage waters capable of supporting self-sustaining fish populations to provide for those populations.

a. Manage stream habitat to at least 50 percent of potential where existing self-sustaining fisheries occur.

b. Proposed management activities which may cause unfavorable conditions in existing fisheries will include mitigation measures.

III-22

WILDLIFE HABITAT IMPROVEMENT AND MAINTENANCE (C02, 04, 05, AND 06)

- 01 Maintain or improve habitat capability through direct treatment of vegetation, soil, and/or water.
- 02 Manage non-commercial aspen stands in mixed age groups to provide a source of forage.
- 03 Give wildlife funding priority to habitat improvement projects which are jointly or cooperatively funded with the states.
- 04 Use both commercial and non-commercial silvicultural practices to accomplish wildlife habitat objectives.
- 05 Maintain a medium to high edge contrast between tree stands created by even-aged management.

a. Contrast by age class, measured by H high, M medium, and L low, is:

	Age Class									
Age Class	O	S	G	H	R	S	G	H	R	
	<u>G</u>		<u>M</u>		<u>P</u>		<u>S</u>		<u>F</u>	
Old Growth. (OG) . . . . .	-	L	M	H	H	M	H	M	H	
<u>Mature (M)</u> . . . . .	L	-	M	M	H	M	H	M	H	
<u>Poles.(P)</u> . . . . .	M	M	-	M	H	M	H	M	H	
Shrub, Seedlings and Saplings.(SSS) . . .	H	M	M	-	L	L	L			
Grass-Forb.(GF) . . . . .	H	H	H	L	-	M	L			
Shrubland.(SHR) . . . . .	M	M	M	L	M	-	M			
Grassland.(GRS) . . . . .	H	H	H	L	L	M	-			

WILDLIFE AND FISH COOPERATION WITH OTHER AGENCIES (C12)

- 01 Coordinate the animal damage control program with the State Wildlife Agencies, APHIS, other appropriate agencies, and cooperators to prevent or reduce other resource damage. Direct control toward preventing damage or removing the offending animal(s).

a. Conservation pools will be required where a potential exists for carry over fisheries and recreation use is appropriate.

FOREST-WIDE DIRECTION

MANAGEMENT ACTIVITIES

GENERAL DIRECTION

STANDARDS & GUIDELINES



CONTINUATION OF:  
WILDLIFE AND  
FISH COOPERATION  
WITH OTHER  
AGENCIES  
(C12)

02 Consider wildlife transplants to suitable habitat when it is compatible with the management prescription for the unit(s) concerned.

03 Obtain a Memorandum of Understanding with the State(s) involved prior to allowing wildlife transplants.

a. R-4 Supplement to FSM 2611.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Within the rangeland capability, provide forage to sustain the dependent livestock industry.

a. FSM 2203.1 Item 1.

02 Manage the range resource within its productive capabilities for grazing and browsing animals in harmony with other resources and activities to provide sustained yield and improvement of the forage resource. Encourage and coordinate other resource activities so as to maintain or enhance forage production.

a. Place allotments under an approved management plan.

b. Use Interdisciplinary teams to establish proper use criteria (R-4 Supplement No. 59 to FSM 2214.11).

03 Manage livestock and wild herbivores forage use by implementing proper use criteria as established in the Allotment Management Plan.

RANGE  
IMPROVEMENT AND  
MAINTENANCE  
(D03, 03, 05  
AND 06)

01 Provide structural and non-structural range improvements needed to maintain or improve range conditions as specified in allotment management plans.

a. Complete project effectiveness analysis to determine investment priorities (FSH 2209.11).

b. Construct and maintain structural improvements in accordance with Forest Service standards (FSH 2209.23).

c. Where site-specific developments adversely affect long-term production or management, those authorized to conduct activities will be required to replace losses through appropriate mitigations.

02 Perpetuate non-commercial aspen communities as a forage source.

FOREST-WIDE DIRECTION  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CONTINUATION OF:

RANGE

IMPROVEMENT AND

MAINTENANCE  
(D03, 04, 05  
AND 06)

03 Control and reduce noxious weeds and poisonous plants, using integrated pest management techniques and strategies; including the use of herbicides, biological control agents, and/or mechanical or hand treatments.

a. Control spread fires, and then work on established populations.

b. Apply herbicide treatments under the direction of certified applicators and following label instructions.

c. Those authorized to conduct soil disturbing activities will be required to control noxious weeds on the area disturbed during the life of the project.

TIMBER RESOURCE  
MANAGEMENT  
(E00)

01 Manage timberlands suitable for commercial harvest for timber or wood fiber productions.

02 Provide for timber stand improvement, reforestation in sale area improvement plans, and wildlife habitat improvement.

a. Timber stands suitable for harvest;

(1) Produce 20 cu.ft. or more per acre per year.

(2) Are capable of being restocked within five years.

(3) Can be harvested within the General Direction, Standards & Guidelines for the site of the stand.

(4) Generally include ponderosa pine, mixed conifer, aspen, and spruce fir types, and rarely oak or pinyon-juniper

03 Manage timberlands not suitable for commercial harvest to maintain forest cover species, but emphasis should be on production of other forest resources and uses.

04 Require those authorized to conduct activities to replace losses through appropriate mitigations where a site-specific development adversely affects long-term production or management.

05 Use clearcuts as appropriate on any forest cover type with potential for impact, or impacted by insects or disease.

06 Coordinate timber and fuelwood programs to take advantage of roads constructed for other resource development or use.

FOREST-WIDE DIRECTION

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CONTINUATION OF:  
TIMBER RESOURCE  
MANAGEMENT  
(E00)

07 Assure that even-aged conifer stands scheduled to be harvested during the planning period will generally have reached the culmination of mean annual increment of growth.

08 Make Christmas trees available in areas where Christmas tree culture or other resource objectives can be accomplished through commercial or personal use Christmas tree sales.

SILVICULTURAL  
PRESCRIPTIONS  
(E03, 06,  
AND 07)

01 Combine appropriate management activities for the timber type to provide the acceptable range of management intensity for timber production.

MANAGEMENT ACTIVITY	TIMBER TYPE					
	SPRUCE- FIR	PONDEROSA PINE	DOUGLAS FIR	ASPEN	OTHER PINES	HARD- WOODS
TREE IMPROVEMENT		X	X	N	N	O
SITE PREPARATION REFORESTATION;	X	X	X	N	N	X
PLANTING	X	X	X	O	O	X
SEEDING	N	N	N	O	N	N
NATURAL	X	X	X	X	X	X
REGENERATION						
PROTECTION	X	X	X	N	N	X
STOCKING CONTROL (THINNING):						
PRECOMMERCIAL	X	X	X	N	N	X
COMMERCIAL	X	X	X	N	N	X
SALVAGE OF DEAD MATERIAL	X	X	X	X	N	X
CUTTING METHODS:						
CLEARCUT	N	N	N	X	N	X
SHELTERWOOD	X	X	X	O	N	X
SELECTION	X	X	X	X	X	X

X = appropriate practice, O = not an appropriate practice, N = not a standard practice but may be acceptable where justified by other Management Unit requirements.

FOREST-WIDE DIRECTION  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

SILVICULTURAL  
PRESCRIPTIONS  
(E03, 06,  
AND 07)

02 Silvicultural treatments will normally begin after the stand density index (SDI) reaches the lower management level and will be completed prior to reaching the upper management level.

a. Lower management level SDI is start of root or crown competition. Upper management level SDI is start of imminent mortality zone.

A. SDI for stands above 5 inches DBH:

	Forest Cover Type				
	ES/AF	DF	WF	PP	AS
a. Maximum	670	600	830	830	---
b. Upper Level	302	240	374	291	---
c. Lower Level	<del>134</del>	<del>149</del>	<del>205</del>	<del>127</del>	<del>---</del>

B. Rotation age:

a. Maximum	140	140	140	140	120
b. Minimum	80	80	80	80	80

C. Appropriate harvest method: (SW = Shelterwood, PC = Patch cut 1 to 10 acres, CC = Clear cut 10 or more acres, S = Seed tree, GS = Group selection, ST = Single tree selection.)

a. Evenaged	SW	SW	SW	SW&S	cc
b. Unevenaged	GS&ST	GS	GS	GS&ST	PC&ST

D. 5th year stocking standards by site class (SC) (Primary species must be at least 60% of total stand composition.)

a. SC 20 to 40	150	175	175	175	---
b. SC 50 to 84	195	180	180	180	---
c. SC 84 plus	195	180	180	180	---

E. SDI for residual stands below 5 inch average stand DBH should equal Forest reforestation standards.

F. Height of preferred species at final harvest under a shelterwood harvest system is based on multiple use management needs but must exceed 4 feet.

G. Limit the maximum size opening created by timber sales to 40 acres unless; (1) Approved by the Regional Forester after a 60 day public review period, or (2) Salvaging openings created by natural events such as fire, insect or disease attack, and windthrow.

H. Maximum size opening created by silvicultural treatment other than timber sales can exceed 40 acres provided it meets multiple use management requirements for the concerned Management Unit.

I. Cutting cycle is determined by silvicultural prescription and economic analysis.

03. management timber product removal and utilization to meet Forest multiple use requirements.

A. Sawlog Utilization Standards;

	Species	
	Conifer	Aspen
Minimum DBH (inches)	8.0	7.0
Minimum Top Diameter (inches)	6.0	6.0
Minimum Sawlog length (feet)	8.5	8.5
Maximum Log Cull Value (as % of gross volume.)	33.3	50.0

B. Other wood product minimum specifications for all species.

a. Product	Unit of Measure	Length	DIE**
Props	ea/lin.ft.	6ft.	6in.
PWR Poles	ea/lin.ft.	16ft.	5in.
Corral Poles	ea/lin.ft.	10ft.	4in.
Posts	ea/lin.ft.	6.5ft.	4in.
Pulpwood	cords	8.3ft.	4in.
Fuelwood	cords	----	----

\*\*DIB is diameter inside bark.

a. On slopes less than 20 percent allow conventional logging systems and equipment where soil surveys or soil data are unavailable.

b. On slopes less than 40 percent allow conventional logging systems and equipment where soil surveys or soil data are available to design erosion mitigation needs.

C. Logging or wood product removal requirements to assure controlling soil erosion within acceptable levels.

c. Utilize high floatation equipment on slopes up to 60 percent or cable or aerial systems on any slope.

FOREST-WIDE DIRECTION

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARD  
GUIDELINES

CONTINUATION OF:  
SILVICULTURAL  
PRESCRIPTIONS  
(E03, 06,  
AND 07)

05 Perpetuate Aspen communities through silvicultural treatments:

A. Stands suitable for commercial harvest should be managed for aspen timber production.

B. Stands not suitable for commercial harvest should be managed for range forage and/or wildlife habitat.

a. No more than 12 percent of the total aspen acreage suitable for commercial harvest can be treated in a ten year period except in an accelerated harvest where up to 50 percent of the volume may be removed in a 10 year period.

b. Stands managed for commercial timber may be treated by thinning, weeding, chaining, burning or spraying when conifer encroachment approaches 20 percent of crown cover, or the stand is reaching decadence and harvest is not possible within 5 years.

REFORESTATION  
(E04)

01 Establish a satisfactory stand on cutover areas, emphasizing natural regeneration within five years after final harvest except:

A. For permanent opening that serve specific management objectives; or

B. When provided for otherwise in specific management prescriptions.

a. Stocking Standards by Site Productivity for Forest Cover Types:

(1) Table A

Forest Cover Type	Site Prod. (cu.ft. /a/yr)	Planting** Densities (trees/a)	5th Year trees/acre	
			min	max.
Spruce- /Fir	85+	360-680	195	335
	50-84	360-540	195	275
	20-49	300	150	150
Aspen	ALL	----	300	600
Mixed Conifer	85+	435-680	180	275
	50-84	435-550	180	275
	20-49	300-360	150	150
Ponderosa Pine	85+	435-680	180	275
	50-84	435-550	180	220
	20-49	300-360	150	150

\*\* Lower densities are recommended to meet minimum stocking standards. Higher densities are recommended to meet desired stocking standards, with ample stock for selecting genetically superior trees.

III-29

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CONTINUATION OF:  
REFORESTATION  
(E04)

Forest Cover Type	Percent of of Area Stocked		5th Year Seedling Height (cm.)	
	Minimum	Desired	Minimum	Desired
	Spruce-Fir	70	100	8
Aspen	70	100	30	114
Mixed Conifer	70	100	8	46
Ponderosa Pine	70	100	8	46

(3) Use minimum stocking standards where no precommercial cutting should be done, and only one harvest should be made to regenerate the stand.

(4) Use desired stocking standards where at least one precommercial cut should be done followed by two saw-log harvest before the final cut is done (aspen should have only one final cut).

02 Do not apply final shelterwood removal cut until the desired number (as specified in minimum stocking standards of well-established seedling/acre are expected to remain following overwood removal.

03 When supplemental planting, use trees of the best genetic quality available which are adapted to the planting site (FSM 2475).

TIMBER STAND  
IMPROVEMENT  
(E05)

01 Utilize Christmas tree or other product sales and thinning for stocking control where the opportunity exists.

WATER QUALITY  
MANAGEMENT  
(F00)

01 Improve or maintain water quality.

a. Meet Utah and Colorado State Water Quality Standards (FSM 2532).

02 Implement best management practices relative to water quality in all resource activities.

a. Nonpoint Source Water Quality Management Plan for Utah and Colorado.

FOREST-WIDE DIRECTION



MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
MUNICIPAL WATERSHED MANAGEMENT (F00)	01 Manage municipal watersheds for multiple-use with mitigation measures to protect the water supply for intended purposes. Allow projects when the proposed mitigation measures provide adequate protection.	a. R-4 Supplement to FSM 2543.
RIPARIAN, FLOOD PLAIN & WETLANDS MANAGEMENT (F00)	01 Prior to implementation of project activities, delineate and evaluate riparian areas and or wetlands that may be impacted.	a. FSM 2542.
	02 Give preferential consideration to riparian area dependent resources in cases of unresolvable resource conflicts.	a. FSM 2526.
	03 Flood plains should be identified and, as appropriate, a risk/hazard analysis performed for project sites where long-term occupancy is proposed.	a. FSM 2527.
	04 Protect present and necessary future facilities that cannot be located out of the 100-year floodplain by structural mitigation (deflection structures, riprap, etc.)	a. Implement mitigation measures when present or unavoidable future facilities are located in active floodplain to ensure that public and facility safety requirements, State water quality standards, sediment threshold limits, bank stability criteria, flood hazard reduction and instream flow standards are met during and immediately after construction.
SOIL & WATER RESOURCE INVENTORIES (F01)	01 Complete appropriate order of soil and water resource inventories to provide data for Forest activities and uses.	a. Meet the National Cooperative Soil Survey Standards. b. FSM 2530.4.43 and FSH 2509.16.
	02 Protect snow courses from site modification.	
SOIL RESOURCE MANAGEMENT (F00)	01 Maintain or improve soil productivity and watershed qualities within the ecological site capabilities.	a. Provide soil resource inventories, interpretations, and evaluation at the appropriate intensity level for projects which could adversely affect the soil resource or where the success or failure of the project depends on soil management.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CONTINUATION OF:  
SOIL RESOURCE  
MANAGEMENT  
(F00)

- 02 Minimize adverse, man-caused impacts to the soil resource including accelerated erosion, compaction, contamination, and displacement.
- A. Protect or conserve topsoil when conducting surface disturbing activities.
  - B. Provide adequate drainage and revegetation on areas capable of supporting vegetation disturbed during construction or other surface disturbing activities to stabilize the area and control soil erosion.
  - C. Stabilize and/or close and rehabilitate non-system roads where significant resource damage is occurring.
  - D. Use soils and materials data for road and trail design.
  - E. Control livestock and big-game grazing so plant cover is not reduced to less than the amount needed for soil and watershed protection.

- a. Maintain soil erosion losses at or below soil loss tolerance values as defined by the Soil Conservation Service as modified by the Forest Service (ref. Soil Erodibility and Soil Loss Factors for Utah Soils, U.S.D.A., S.C.S., 1977).
- b. Add mulch, fertilizer, and other soil amendments as necessary to reduce soil erosion and increase vegetative growth.
- c. Design continuing mitigation or rest rotation practices and followup maintenance activities to insure that vegetative ground cover exceeds 80 percent of adjacent similar undisturbed sites.
- d. Use appropriate design guides for sediment controlling structures.

III-32

SOIL & WATER  
RESOURCE  
IMPROVEMENTS  
(F03)

01 Rehabilitate disturbed areas, where feasible, that are eroding excessively and/or contributing significant sediment to perennial streams.

- a. Priorities will be set by the Watershed Improvement Needs Inventory (WINI) and Evaluation.
- b. Soil losses should be at or below the soil loss tolerance values (T-factors) as defined by the Soil Conservation Service and/or as modified by the Forest Service.
- c. FSM 2520.

02 Maintain completed watershed improvement projects until project objectives have been attained.

03 Identify, prescribe, and implement appropriate action before, during, and after landslide and/or flood events.

WATER YIELD  
IMPROVEMENT  
(F03)

01 Pursue water yield augmentation when and where research has shown that it is economical and environmentally sound. During the interim, water yield increases will be incidental to other management projects.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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CONTINUATION OF: WATER YIELD IMPROVEMENT (F03)	02 Analyze the manipulation of forest types, when significant projects are proposed by other activities, for water yield benefits and impacts.	
WATER USES MANAGEMENT (F07)	01 Secure favorable flows of water to: <ul style="list-style-type: none"> <li>A. Ensure that stream flows maintain stable and efficient channels and to provide for administrative and protection use, pursuant to 1897 Organic Act.</li> <li>B. Provide for fish and wildlife habitat, recreation and livestock use pursuant to the Multiple Use and Sustained Yield Act of 1960.</li> </ul>	a. FSH 2509.17.
	02 Obtain through the State, where appropriate, water rights for consumptive uses and instream flows as needed for the purposes of National Forest management.	a. FSM 2541.
	03 Maintain instream flows to protect Forest resources and uses. <ul style="list-style-type: none"> <li>A. Protest as applicable, water rights applications or uses of others when such uses will interfere with USDA Forest Service water rights, claims, and resources.</li> <li>B. Special-use permits, easements, rights-of-way, and similar authorization for use of National Forest System lands shall contain stipulations to maintain bypass flows necessary to fulfill National Forest uses and purposes.</li> </ul>	a. FSM 2541.
	04 Prohibit new or expansion of existing spring or other water source development and related facilities when; <ul style="list-style-type: none"> <li>A. Loss of water results in unacceptable impacts on riparian, vegetation, fisheries, or other Forest resources and uses.</li> <li>B. Development and/or facilities would result in unacceptable erosion, road damage, land instability, or disruption or damage of other facilities or resources.</li> </ul>	

ACTIVITIES

DIRECTION

GUIDELINES

SOIL & WATER  
RESOURCE  
IMPROVEMENT  
MAINTENANCE  
(F08)

01 Provide for maintenance of soil and water resource improvement projects to meet objectives.

a. FSM 2512.

GEOLOGIC  
RESOURCE  
MANAGEMENT  
(G00)

01 Complete appropriate order of geologic inventory and as appropriate geotechnical investigation in areas where proposed activities or uses could;  
A. Be endangered by geologically related hazards such as land instability, earthquakes, subsidence, land instability, earthquakes, subsidence, etc.  
B. Or, increase risks of subsidence, land instability, ground water pollution, or diversion.

02 Monitor identified geologic hazards for effects on management activities.

03 Describe, as appropriate, high interest or unique geological, paleontological, biological, archeological, or historical features for public information and, as appropriate, develop interpretive information for these sites.

04 Assure that appropriate geotechnic and/or geologic data are included in design and construction of facilities, or other developments so as to minimize the potential of inducing failure.

a. FSM 2880.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Administer sites with producing facilities and known reserves with consideration of ongoing and potential mineral activities.

02 Avoid or minimize significant and conflicting public or private investments near sites where mineral activities may occur within the foreseeable future.

a. Priority consideration will be given to existing operations and/or leases.

ACTIVITIES

DIRECTION

GUIDELINES

CONTINUATION OF:  
MINERALS  
MANAGEMENT  
GENERAL  
(G00)

03 On classified lands not withdrawn from operations under the general mining laws provide for reasonable protection of the purposes for which the lands were classified and for reclamation of disturbed lands to a condition suitable for the purposes for which the lands were classified. Such lands may include Research Natural Areas, national recreational trails, special interest areas; such as scenic, geologic, or national historic sites, or some other type of specific classification. The status of classified lands with respect to withdrawal must be checked before an operating plan can be approved.

a. 36 CFR 228.

04 On classified (remaining) lands, provide for reclamation of disturbed lands to achieve the planned uses specified in the Forest Plan, when those lands are no longer needed for mineral operations.

MINING LAW  
COMPLIANCE AND  
ADMINISTRATION  
(LOCATABLES)  
(G01)

01 Minimize or as appropriate prevent adverse impacts on surface resources.

a. 36 CFR 228.

02 Review cases of suspected abuse of the mining laws such as occupancy of the land for purposes other than prospecting, mining, and related activities. Initiate appropriate action to resolve abuses.

a. The first action should be administrative. Failure of such action requires examination of claims for validity, followed by appropriate contest proceedings or legal action.

MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO 07)

01 Negative recommendations, denials, or consent for leasing, permitting, or licensing will be based on site specific environmental assessments using appropriate standards and guidelines. Stipulations for these actions should minimize and/or mitigate effects or conflicts with other resource uses and should return disturbed lands to conditions compatible with the emphasis of the management unit or adjacent management unit.

a. Any lease, license or permit may be denied or limited by standard or additional stipulations where proposed activities could result in irreparable damage, may preclude existing uses or be contrary to management direction.

b. Stipulations (Appendix B) will be used as appropriate in leases, licenses, or permits.

c. Oil and gas, geothermal, and CO2 lease occupancy be denied or limited by special stipulation where:  
(1) Slopes are steeper than 35 percent;  
(2) Erosion hazard rating is high and mitigation measures could be ineffective.  
(3) Geologic hazard rating is high  
(4) Key wildlife uses may be impaired.

FOREST-WIDE DIRECTION.

CONTINUATION OF:  
MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO G07)

d. Coal lands will be determined to be suitable for coal leasing through the application of unsuitability and multiple-use criteria (43 CFR 3461 and 43 CFR 3420). Coal leases may be denied or limited by special stipulations where:

- (1) They are not in compliance with the unsuitability criteria or multiple land use decisions established for the unit (Appendix C).
- (2) Surface or transportation facilities needed for operations degrade water quantity or quality.
- (3) Operations would impair the current quality of recreation.
- (4) National Recreation Trails occur.
- (5) Operations would result in unacceptable or unmitigatable impact on wildlife or fisheries.
- (6) Operations could result in aggravating land instability.
- (7) An established need for additional coal cannot be demonstrated.
- (8) Operations and/or production would result in unacceptable and unmitigateable impacts to Human Resource Units. (communities)
- (9) Operations would result in unacceptable or unstable traffic flows.

e. Extraction of coal shall be by underground mining methods.

02 Restrict geophysical activity during periods of heavy recreation use associated with hunting seasons, during key big game use periods, or when unacceptable impacts on other resource uses may be caused.

MINERALS  
MANAGEMENT  
SALEABLES  
(G02 TO 07)

01 Authorize common variety exploration and disposals under terms and conditions to prevent or control adverse impacts on surface resources and uses and properly reclaim the site.

a. Any lease, license or permit may be denied or limited by special stipulations where proposed activities; could result in irreparable damage, may result in precluding existing uses; or be contrary to established management direction.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

SPECIAL-USE  
MANAGEMENT  
(NONRECREATION)  
(J01)

- 01 Act on special-use applications according to the following priorities:
- A. Land and use activity requests relating to public safety, health and welfare, e.g., highways, powerlines and public service improvements.
  - B. Land and use activities contributing to increased economic activity associated with National Forest resources, e.g. oil and gas, and energy minerals.
  - C. Land and use activities that benefit only private users, e.g., road permits, rights-of-way for powerline telephones, waterlines, etc.

- a. An application for permit may be denied if the authorizing officer determines that:
- (1) The proposed use would be inconsistent or incompatible with the purpose(s) for which the lands are managed, or with other uses, or
  - (2) The proposed use would not be in the public interest, or
  - (3) The applicant is not qualified, or
  - (4) Use would be inconsistent with applicable Federal and/or State laws, or
  - (5) The applicant does not or cannot demonstrate technical or financial capability.
  - (6) Existing corridor analysis (Appendix D.) will be used as a basis for evaluating proposed corridors. (New corridor data will be used to update Appendix D).

- 02 Encourage burying utility and lines, except when:
- A. Visual quality objectives of the area can be met using an overhead line.
  - B. Burial is not feasible due to soil erosion or geologic hazard or unfavorable geologic conditions.
  - C. Greater long-term site disturbance would result.
  - D. It is not technically feasible, or economically reasonable.

03 Approve special-use applications for areas adjacent to developed sites only when the proposed use is compatible with the purpose and use of the developed site.

RIGHTS-OF-WAY  
AND LAND  
ADJUSTMENTS  
(J02, 13, 15,  
16, 17, AND 18)

- 01 Acquire rights-of-way for Forest Development Roads and Trails that cross private land.
- 02 Ensure that properties are equal in value on both offered and selected tracts in proposed land exchanges, or made equal in cash payment not to exceed 25% of Federal value.

- a. Act of Oct. 21, 1976, FLPMA.

FOREST-WIDE DIRECTION  
MANAGEMENT

GENERAL

STANDARDS &

ACTIVITIES

DIRECTION

GUIDELINES

CONTINUATION OF:  
RIGHTS-OF-WAY  
AND LAND  
ADJUSTMENTS  
(J02, 13, 15,  
16, 17, & 18)

- 03 Classify lands or interest in lands for acquisition where lands are valuable for NFS purposes according to the following priorities:
  - A. Where lands or rights-of-way are needed to meet resource management goals and objectives.
  - B. Lands which provide habitat for threatened and endangered species of animals and plants.
  - C. Lands having historical or cultural resources, outstanding scenic values or critical ecosystems, when these resources are threatened by change of use or when management may be enhanced by public ownership.

- 04 Classify land for disposal according to the following priorities:
  - A. To simplify administration of NFS lands.
  - B. To state, County, city, or other Federal agency when disposal will serve a greater public interest.
  - C. In small parcels intermingled with mineral or homesteads patents.
  - D. When suitable for development by the private sector, if development (residential, agricultural, industrial, recreational, etc.) is in the public interest.
  - E. When important or unique resource (wetlands, floodplains, essential big-game winter range, threatened or endangered species habitat, historical or cultural resources, critical ecosystems, etc.) effects are mitigated by reserving interests to protect the resource, or by exchange where other critical resources to be acquired are considered to be of equal or greater value.

05 Effect jurisdictional transfers which achieve the following objectives:

- a. Reduce duplication of efforts by users and agencies in terms of time, cost, and coordination.
- b. Improve or maintain user access to the administering agency.
- c. Decrease travel and enhance management.
- d. Improve public understanding of applicable laws, regulations, policies, and procedures.
- e. Create more effective work units.
- f. Reduce administrative cost.

FOREST-WIDE DIRECTION



MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

WITHDRAWALS,  
MODIFICATIONS  
AND REVOCATIONS  
(J)

01 Withdrawals must be for the purpose of protecting specific existing or proposed uses. Initiate action for withdrawal from entry when other applicable laws and regulations will not provide the opportunity for protection of the surface resources and uses.

- A. Retain existing withdrawals needed for National Forest purposes.
- B. Review and comment on the multiple-use effects of existing and proposed withdrawals on National Forest System lands by other agencies.

02 Comply with the intent of withdrawals in the design and implementation of resource development activities.

a. Withdrawals from entry under General Mining Laws will be in conformance with Section 204 of the Federal Land Policy and Management Act of 1976 (PL 94-579).

b. Withdrawals under the Minerals Leasing Act will be the exception owing to the discretion allowed in each case for disposal.

c. Common variety mineral withdrawals are not needed since full authority for disposal is held by the Forest Service.

PROPERTY  
BOUNDARY  
LOCATION  
(J06)

01 Locate, mark, and post landlines according to the following priorities:

- A. Lines needed to meet planned activities.
- B. Lines needed to protect NFS lands from encroachment, and
- C. All other lines.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Close newly constructed intermittent local roads to the public after initial intended use is completed when:

- A. The establishment of public use is undesirable.
- B. The road is unsafe for public travel.
- C. Management direction has previously been established to close the road.

02 Allow commercial or permitted use on Forest Development Roads under the following conditions:

- A. Use is compatible with existing road standards, designs and public safety and user provide commensurate share of road maintenance.
- B. User reconstructs the road to incorporate both existing and proposed traffic and provides commensurate share of road maintenance.

FOREST-WIDE DIRECTION

CONTINUATION OF:  
TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

C. If the road meets design standards but the combined use does not fulfill public safety requirements due to volume of traffic, the road may be administratively managed to control conflicting traffic, unsafe conditions or traffic flows.

03 Encourage the development of Forest Development Roads, when constructed or reconstructed for special purposes to meet existing and potential all purpose needs.

04 Put roads under special-use permit or easement that are needed for the benefit of private uses, and are not needed for public travel or the administration of Forest resources.

05 Consider turning existing Forest Development Roads over to county or State jurisdiction when:

- A. The use is predominately to serve non-Forest resources ,or
- B. The road better compliments county or State jurisdiction than Forest administration, or
- C. Little or no future Forest need for the management of Forest resources is perceived, or
- D. The road is of such high standards that established Forest maintenance is difficult or impossible.

06 Close Forest Development Roads when unacceptable environmental or road damage is occurring for other road use..

07 Where possible, establish cost and commensurate share agreements for access roads constructed for other resource uses..

09 Coordinate transportation planning for Forest Development Roads with Forest Trails to provide continuity and fulfill Forest transportation needs.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

ARTERIAL AND  
COLLECTOR ROAD  
CONSTRUCTION AND  
RECONSTRUCTION  
(L02 TO 09  
L16 TO 18)

01 Construct and reconstruct arterial and collector roads to meet multiple resource needs and the following standards:

- A. Average Travel Speed .....
- B. Number of Lanes .....
- C. Surfacing .....
- D. Width .....
- E. Drainage .....

a. Construction and reconstruction standards

Arterial	Collector
30-35 mph Generally two lanes. All weather, with asphalt or gravel generally. Typically 20 to 24 feet, but some single lane with intervisible 10-foot turnouts. Permanent, but not to impede traffic.	10-30 mph Generally one lane. Generally gravel, sometimes asphalt. Typically 12 to 16 feet, with 10 foot turnouts. Permanent but may impede traffic.

LOCAL ROAD  
CONSTRUCTION AND  
RECONSTRUCTION  
(L11, 12,  
AND 13)

01 Construct and reconstruct local roads to provide access for specific resource activities such as campgrounds, trailheads, timber sales, range allotments, leases, etc., with the minimum amount surface disturbance and fitting the road to the topography.

02 Construct temporary roads for specific resource activities such as timber sales, emergencies, (e.g., fire suppression), or mineral exploration.

- a. Construction and reconstruction standards for local roads are (FSH 7709.56):
  - (1) Travel Speed-Average less than 20 mph.
  - (2) Lanes-Usually single lane except for developed recreation sites.
  - (3) Surface-Varies from asphalt to native surface; majority native surface.
  - (4) Width-Typically 10 thru 14 feet. Turnouts optional depending upon traffic management and usually not intervisible.
  - (5) Drainage-Dips and culverts.
- a. Temporary roads shall not be designated as Forest development transportation facilities.
- b. Forest Development Road and Trail funds shall not be used for temporary road construction and/or rehabilitation.
- c. Temporary roads shall be returned to resource production and use compatible with the management unit emphasis, and within one season after termination of the activity for which the road was constructed.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

ROAD  
MAINTENANCE  
(L19)

01. Maintain roads to minimum requirements as follows:
- A. All arterials - Level 3;
  - B. All open collectors - Level 2/3;
  - C. All open local roads - Level 2; and
  - D. All closed roads - Level 1.

- a. FSM 7730.
- b. Level 1 maintenance include upkeep of drainage structures and vegetation cover necessary to prevent erosion.

02 Maintain structures, bridges, cattleguards, etc., to be structurally sound and safe for use.

TRAIL  
SYSTEM  
MANAGEMENT  
(L23)

- 01 Maintain trails for designated uses and close trails to inappropriate uses.
- 02 Provide a range of trail opportunities in coordination with other Federal, State, or local agencies, and private industry both on an off NFS lands.

- a. FSM 2350, FSM 7703, FSH 2309.18, and 36 CFR 261.12.

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TRAIL  
CONSTRUCTION AND  
RECONSTRUCTION  
(L22)

- 01 Construct or reconstruct trails when needed as part of the transportation system.

- a. Cross drains and conveyance structures are planned to acceptable work standards (FSM 1310).

FA&O CONSTRUCTION  
RECONSTRUCTION  
AND MAINTENANCE  
(L24 AND 25)

- 01 Existing or proposed facility sites will be identified and managed under the Management Prescription for Special Land Designation (SLD).

FIRE PLANNING  
AND  
PRESUPPRESSION  
(P01)

- 01 Provide a level of protection from wild fire that is cost efficient and that should meet objectives of the management unit considering the following:
- A. The values of the resources that are threatened by fire.
  - B. The probability of fire occurrence,
  - C. The fuelbed that fires will probably occur in,
  - D. The weather conditions that will probably influence fires that occur.
  - E. The costs of fire protection programs (FFP AND FFF).
  - F. The environmental, social, economic, political, public safety, cultural, and property concerns; and
  - G. Management objectives for the areas.

- a. Use the predictive model in FSH 5109.19 for this analysis.

FOREST-WIDE DIRECTION

MANAGEMENT  
STANDARDS  
ACTIVITIES  
GUIDELINES

GENERAL  
DIRECTION

INITIAL ATTACK  
AND FIRE  
SUPPRESSION  
(P08)

01 Take appropriate suppression action that meets the management objectives for the unit, using confinement, containment, and control as suppression strategies, considering the following factors:  
A. Values of the resources threatened by the fire (both positive and negative),  
B. Management objectives for the unit(s) threatened,  
C. Fuelbeds the fire may burn in,  
D. current and projected weather conditions that will influence fire behavior,  
E. Natural barriers and fuel breaks,  
F. Social, economic, political, cultural, and environmental concerns,  
G. Public safety,  
H. Firefighter safety; and  
I. Cost of alternative suppression strategies.

a. Use the Escaped Fired Situation Analysis to make this determination, if the proposed suppression strategy is confinement or containment (FSM 5130.31).

III-43

FUEL TREATMENT  
(P11 TO 14)

01. Maintain fuel conditions which permit fire suppression forces to meet protection objectives for the management Unit

VEGETATION  
TREATED BY  
BURNING  
(P15)

01. Use preplanned prescribed fire resulting from planned or unplanned ignitions to accomplish resource management objectives, such as reducing fuel load buildup, range or wildlife habitat improvement, etc.

AIR RESOURCE  
MANAGEMENT  
(P16)

01. Meet State and federal air quality objectives.

a. Reduce or otherwise treat fuels, or break up continuous fuel concentrations, or provide added protection for areas.

INSECT AND  
DISEASE  
MANAGEMENT  
OR SUPPRESSION  
(P35)

01 Prevent or suppress epidemic insect and disease populations that threaten forest and/or range land with an Integrated Pest Management (IPM) approach consistent with resource management objectives.

a. FSM 2121.

FOREST-WIDE DIRECTION

## Management Unit Requirements

The management unit requirements included in this section represent the direction applicable to reach specific objectives for specific areas of land. They supplement and may amend the Forest-wide Direction contained in the previous section of this document. These requirements in various combinations were used as the basis for developing the alternative analyzed in the accompanying Environmental Impact Statement.

A code was assigned to each management unit requirement in order to link the prescription to the land area. The location of management units is illustrated on the Forest Plan Map inserted inside the back cover of this document.

The requirements for each management unit consists of a prescription summary and a set of management requirements. The prescription summary identifies the primary emphasis of the prescription. All prescriptions are multiple-use prescriptions, but each has a primary emphasis.

Management Requirements are presented in three columns: Management Activities, General Direction statements, and Standards and Guidelines.

Management activities are work processes that are conducted to produce, enhance, or maintain levels of outputs, or to achieve administrative and environmental quality objectives. Management activities are identified by a code number and title defined in the Management Information Handbook (FSH 1309.11) dated July 1980. In some cases, management activities were grouped under one activity when it was not appropriate to develop separate requirements. Not all management activities need management requirements. When there are no management requirements listed for an activity, the activity is adequately covered by Forest-wide Direction or direction in laws, regulations, Executive Orders, or Forest Service directives.

General Direction statements specify the actions, measures, or treatments (management practices) to be done when implementing the management activity, or the condition expected to exist after the General Direction is implemented.

Standards and Guidelines are quantifications of the acceptable limits within which the General Direction is implemented.

Table III-3 lists each management unit prescription and briefly states its emphasis. Table III-4 lists the management units, their total acreage, and the acres treated by resource activity area by planning period.

## Management Unit Symbol and Name

### Recreation Emphasis Units

- DRS - Developed Recreation Sites
- UDM - Undeveloped Motorized Recreation Sites
- SPR - Semiprimitive Recreation

### Wildlife Emphasis Units

- KWR - Key Big-Game Winter Range
- GWR - General Big-Game Winter Range

### Range Emphasis Units

- RNG - Range Forage Production

### Timber Management Emphasis Units

- TBR - Wood Fiber Production and Utilization

### Watershed Emphasis Units

- RPN - Riparian
- MWS - Municipal Water Supply
- WPE - Watershed Protection and Improvement

### Minerals Emphasis Units

- MMA - Leasable Minerals Area

### Special Emphasis Units

- RPI - Research Protection and Interpretation Areas
- DCW - Wilderness
- SLD - Administrative Facility and Special Use Sites

### Other Units

- UC - Utility Corridors

Management Prescription & Total Acres	Period	Acres Treated					Outputs			
		Resource Activity					Resource Activity			
		Range	Timber	Wildlife	Minerals	Watershed	Range AUM's	Timber MBF	Wildlife MWFUD's	Recreation MRVD's
DRS - 2,750 Acres	1	0	0	0	0	0	9	----	----	338.8
	2	0	0	0	0	0	10	----	----	436.3
	3	0	0	0	0	0	10	----	----	632.2
UDM -680 Acres	1	0	0	0	0	0	90	----	----	111.8
	2	0	0	0	0	0	100	----	----	144.0
	3	0	0	0	0	0	100	----	----	208.6
SPR - 106,060 Acres	1	2,620	100	0	350	0	5,750	.010	28.6	51.8
	2	1,000	200	25	310	950	5,980	.020	32.7	68.4
	3	400	600	50	840	3,120	6,070	.030	36.7	100.4
KWR - 16,760 Acres	1	0	0	360	0	420	2,280	----	4.5	11.2
	2	0	0	360	0	0	2,370	----	5.2	15.0
	3	0	0	1,020	0	0	2,400	----	5.8	21.7
GWR - 190,460 Acres	1	2,120		850	860	70	25,790	----	51.4	127.5
	2	2,000		790	770	220	26,830	----	58.8	170.9
	3	1,000		2,430	2,080	390	27,220	----	66.0	247.1
RNG - 787,250 Acres	1	27,180	9,700	1,790	3,650	1,140	106,720	.950	212.3	526.9
	2	22,060	12,800	1,830	3,280	800	111,020	1.530	242.9	706.2
	3	16,400	14,700	5,490	8,860	3,432	112,520	.710	272.8	1,021.4
TBR - 145,800 Acres	1	550	22,900	60	680	200	11,840	2.240	39.3	97.6
	2	300	29,600	50	620	120	12,320	3.540	45.0	130.8
	3	300	100,800	160	1,600	468	12,500	4.860	50.5	189.2
RPN - (20,020) Acres	1	0	0	40	30	0	Included Above	Included Above	79.9	Included Above
	2	0	0	50	30	0			90.5	
	3	0	0	4,120	80	0			107.8	
MWS - 11,920 Acres	1	0	0	0	20	0	960	----	3.2	.7
	2	0	0	0	20	0	1,000	----	3.7	1.0
	3	0	0	0	60	0	1,020	----	4.1	1.4
WPE - 14,150 Acres	1	500	0	0	60	2,150	60	----	3.8	.8
	2	400	0	0	60	2,240	60	----	4.4	1.1
	3	300	0	0	100		60	----	4.9	1.6
MMA - 1,060 Acres	1	0	0	0	470	0	0	----	----	----
	2	0	0	0	220	0	0	----	----	----
	3	0	0	0	270	0	0	----	----	----
RPI - 8,650 Acres	1	0	0	0	0	0	30	----	2.3	5.2
	2	0	0	0	0	0	30	----	2.7	6.9
	3	0	0	0	0	0	30	----	3.0	10.0



DCW - 45,000 Acres	1	0	0	0	0	0	40	----	2.1	4.1
	2	0	0	0	0	0	50	----	3.9	3.8
	3	0	0	0	0	0	50	----	5.6	11.8
SLD - 2,030 Acres	1	0	0	0	0	0	0	----	----	----
	2	0	0	0	0	0	0	----	----	----
	3	0	0	0	0	0	0	----	----	----
UC - 1,930 Acres	1	0	0	0	0	0	140	----	2.2	.1
	2	0	0	0	0	0	140	----	2.6	.2
	3	0	0	0	0	0	150	----	2.9	.3

### III-46

#### MANAGEMENT PRESCRIPTION DRS (EMPHASIS IS ON PROVIDING DEVELOPED RECREATION SITES)

Management emphasis is for developed recreation facilities such as campgrounds, picnic grounds, trailheads, visitor information facilities, summer homes areas, ski areas, and water-related support facilities. Proposed sites (sites scheduled for development in the Forest Plan) are managed to maintain the site attractiveness until they are developed.

Facilities such as roads, trails, signs, etc., may dominate or subordinate, but should harmonize and blend with the characteristic landscape. Livestock grazing is generally excluded from developed sites. As appropriate, existing developed sites should be withdrawn from locatable mineral entry, and closed to surface occupancy for leasable and saleable minerals.

The prescription can be considered for application to all existing developed recreation sites and proposed sites identified for development.

(EMPHASIS IS ON DEVELOPED RECREATION SITES)

MANAGEMENT UNIT DIRECTION DRS  
MANAGEMENT REQUIREMENT

MANAGEMENT	DIRECTION	GENERAL GUIDELINES	STANDARDS & ACTIVITIES
VISUAL RESOURCE MANAGEMENT (A04)	RECREATION SITES (A08, 09, 11, AND 13)		01 On-site visual quality objective is partial retention or modification.
RECREATION SITE CONSTRUCTION AND REHABILITATION (A05 AND 06)			01 Develop appropriate facilities where the present facilities are not meeting the demand and where it meets the highest net public benefit.  02 Provide facilities which are accessible to handicapped persons in proportion to the anticipated number of users with handicaps.  03 Facilities proposed for construction or reconstruction which lie within identified 100 year floodplains will be evaluated as to the specific flood hazards and values involved with the unit.  04 Design facilities and access to provide sites protection, efficient maintenance, and user convenience. Design and develop sites to ensure that developed capacity meets the anticipated demand.
MANAGEMENT OF DEVELOPED			05 Design, construct and operate developed sites which are adjacent to our provide access

point into a wilderness to complement wilderness management objectives.

01 Construct, reconstruct and maintain developed sites in accordance with the established Recreation Opportunity Spectrum (ROS) classification for the management unit.

- a. FSM 2330.
  
- a. Construct and reconstruct existing and new developed sites in accordance with the guidelines in FSM 2331.

a. Site Development Scale by ROS Class:

ROS Class	Site Development Scale**
Semiprimitive Motorized	Not to exceed 2
Roaded Natural	Class 3
Rural	Class 4
Urban	Class 5

\*\*FSM 2331.47

MANAGEMENT UNIT DIRECTION DRS  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CONTINUATION OF:  
MANAGEMENT OF  
DEVELOPED

RECREATION SITES  
(A08, 09, 11,  
AND 13)

RECREATION  
MANAGEMENT  
(PRIVATE AND  
OTHER PUBLIC  
SECTOR)  
(A16)

RANGE RESOURCE  
MANAGEMENT  
(D02)

- 02 Strive to manage development scale 3 and 4 sites for full service when at least one of the following are met:
  - A. A campground is designated as a fee site;
  - B. More than 20 percent of theoretical capacity is being utilized;
  - C. A group campground or picnic ground has a reservation system and/or user fee; or
  - D. The unit is a swimming site, a boating site with a constructed ramp, or a staffed visitor information center..
  - a. FSM 2332.
  
- 03 Maintain facilities in safe condition. Replace facilities when rehabilitation costs are 50 percent or more of replacement costs or existing facilities cease to be compatible with site design or ROS classification.
  - a. FSH 2309.11, Sec 122.
  
- 04 Post the past and probable flood heights in inventoried 100 year floodplains to provide the public visible warnings about possible periodic flooding.
  - a. FSM 2520.
  
- 05 Maintain developed sites in accordance with regionally acceptable work standards.
  - a. FSM 2330.
  
- 01 Allow the private sector to provide recreation oriented support services where it is appropriate.
  
  
  
- 01 Manage livestock grazing to reduce conflicts in existing and proposed recreation sites.
  - a. Construct, as needed, fences of appropriate materials around developed sites.
  - b. Exclude livestock from areas that cannot be maintained in Code-A-Site category light, as a result of livestock grazing.

MANAGEMENT UNIT DIRECTION DRS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06,  
AND 07)

01 Manage trees and shrubs to enhance visual quality and recreation opportunities on existing and proposed recreation sites.

02 Remove unsafe and/or dead trees in developed sites. Plant new trees to provide desired tree cover when natural regeneration is insufficient.

a. See Technical Report R-2-1 919810 Tree Hazards: Recognition and Reduction in Recreation Sites.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Manage mineral activities to be compatible with recreation uses and visual quality objectives.

MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO 07)

01 Allow mineral leasing where it is determined that stipulated methods of development and extraction will not adversely affect recreation values to an significant degree.

MINERALS  
MANAGEMENT  
SALEABLES  
(G02 TO G07)

01 Authorize common variety exploration and disposals under terms and conditions that prevent or control adverse impacts on surface resources and uses and properly reclaim the renewable resources.

a. Any lease, license or permit may be denied or limited by special stipulations where proposed activities; could result in irreparable damage, may result in precluding existing uses; or be contrary to established management direction.

WITHDRAWALS,  
MODIFICATIONS  
AND REVOCATIONS  
(J04)

01 Withdraw as appropriate from mineral entry.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 TO 20)

01 Design, construct, and maintain roads to assure they are compatible insofar as possible with developed recreation sites use unit objectives.

a. FSM 2300.

INITIAL ATTACK  
AND FIRE  
SUPPRESSION  
(P08)

01 Control wildfires at all intensity levels.

MANAGEMENT UNIT DIRECTION DRS  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

AIR RESOURCE  
MANAGEMENT  
(P16)

01 Manage facilities in and adjacent to recreation sites to maintain acceptable levels of air quality.

NOISE ABATEMENT  
(P23)

01 Restrict uses that cause noise levels to that which should provide desirable recreation opportunities.

a. Noise levels within these units will generally be restricted to 30 decibels or less except for noises generated by normal conservation and developed recreation activities.

MANAGEMENT PRESCRIPTION UDM  
(EMPHASIS IS ON UNDEVELOPED MOTORIZED RECREATION SITES)

Management emphasis is on providing high quality dispersed recreation opportunities in areas characteristically receiving moderate to heavy levels of use. Visual resources are managed so that activities of man remain visually subordinate or are not evident. Range, timber, wildlife, and mineral resource activities and use may occur subject to maintaining appropriate ROS user experience or setting characteristics visual quality objectives, not permanently exceeding threshold levels for noise and air quality, or seriously impairing recreation use.

These units generally occur along arterial and collector roads, although they may occur along local roads or trails and generally near water bodies.

(EMPHASIS IS ON UNDEVELOPED MOTORIZED RECREATION USE)

MANAGEMENT UNIT DIRECTION UDM  
MANAGEMENT REQUIREMENTS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

VISUAL RESOURCE  
MANAGEMENT  
(A04)

01 On-site visual quality objective is partial retention or modification.

RECREATION SITE  
CONSTRUCTION AND  
REHABILITATION  
(A05 AND 06)

01 Inventory dispersed sites as potential developed recreation sites, and as appropriate reclassify as Developed Recreation Sites (DRS) management units when substantial demand exists and based on an orderly development program.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Emphasize semiprimitive nonmotorized, semiprimitive motorized, and roaded natural appearing recreation opportunities.  
  
02 Close specific land ares or travel routes either permanently or seasonally to maintain compatibility with adjacent area management, or prevent resource damage, for economic reasons, to prevent conflicts of use, and provide for user health and safety.

03 Manage motorized vehicle use (including snowmobiles) on and off Forest Development Roads and Trails.

a. Title Code 36 CFR, part 261.

04 Provide facilities, as appropriate, include development Level one or two campgrounds. Trailheads, local roads, parking lots, and signing may also be provided.

a. FSM 2330, FSM 7730, FSH 2309.18 (Trails Handbook), FSH 7109.11A and 11B (Sign Handbook).

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Manage livestock use to be compatible with recreation use. Locate structural and design non-structural improvements to meet visual quality objectives.

SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06,  
AND 07)

01 Manage tree stands using commercial or noncommercial methods to maintain or enhance recreation values, visual quality, visitor safety or control insects and disease.

a. "Tree Hazards: Recognition and Reduction in Recreation Sites" Technical Report R2-1 (1981).

02 Implement vegetation plans in Level 2 development sites.

MANAGEMENT UNIT DIRECTION UDM

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES



CONTINUATION OF:  
SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06,  
AND 07)

03 Plant new trees to provide desired cover when natural reproduction is insufficient.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Manage mineral activities to be compatible with recreation uses and visual quality objectives.

SPECIAL-USE  
MANAGEMENT  
(NONRECREATION)  
(J01)

01 Permit special uses which are complementary and compatible with the kind and level of development within the unit.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Design, construct, and maintain roads to assure they are compatible insofar as possible with Undeveloped Motorized Recreation management unit objectives. a. FSM 2300.

III-54

MANAGEMENT PRESCRIPTION SPR  
(EMPHASIS IS ON SEMIPRIMITIVE RECREATION USE)

Management emphasis is for providing semiprimitive motorized and nonmotorized recreation opportunities. Recreation opportunities such as hiking, horseback riding, hunting, cross-country skiing, vehicular travel, etc., are available. Some units, or areas within units may be permanent restrictions on human use may be applied to provide for the protection of the physical, biological, and social resources.

Investments in compatible resource uses such as timber harvest, livestock grazing, wildlife habitat, mineral exploration and development, special uses, etc., may occur as long as they meet the planned VQO and maintain a high quality semiprimitive recreation opportunity. When the approved activity ceases, roads, structures, and appurtenances will be rehabilitated as closely as possible to reflect the previous, undisturbed condition.

III-55

(EMPHASIS IS ON SEMIPRIMITIVE RECREATION USE)

MANAGEMENT UNIT DIRECTION SPR

MANAGEMENT REQUIREMENTS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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III-56

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

- 01 Manage for semiprimitive recreation opportunities.
  - A. Close all or part of the unit to motorized use when such use is incompatible with the recreation resource activities and/or uses of the unit.
  - B. Open specific closed areas to travel routes seasonally as appropriate with specific authorization to accomplish resource management activities and/or uses.
  - C. Open the unit or selected roads and/or trails for motorized recreation when such use is compatible with the planned ROS Class of the unit.

a. FSM 2350.

- 02 Provide facilities such as foot and horse trails, Level 1 campgrounds, and necessary signing as appropriate for the protection of resources.

a. FSM 2330, FSM 7730, FSH 2309.18 (Trails Handbook), FSH 7109.11A and 11B (Sign Handbook).

- 03 Manage site use and occupancy to maintain sites so as not to exceed Code-A-Site category "Heavy Impact".

a. See Code-A-Site research paper, PNW-209 dated 1976.

RECREATION  
MANAGEMENT  
(PRIVATE AND  
OTHER PUBLIC  
SECTOR)  
(A16)

- 01 Consider allowing private sector to provide recreation oriented support services.

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05  
AND 06)

- 01 Manage wildlife and fish habitat to be compatible with the recreation use. Locate structural and design non-structural improvements to meet visual quality objectives.

RANGE RESOURCE  
MANAGEMENT  
(D02)

- 01 Manage livestock use to be compatible with recreation use. Locate structural and design non-structural improvements to meet visual quality objectives.

MANAGEMENT UNIT DIRECTION SPR  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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<p>SILVICULTURAL EXAMINATION AND PRESCRIPTION (E03, 06, AND 07)</p>	<p>01 Manage tree stands using commercial or noncommercial methods to maintain or enhance recreation opportunities, visual quality, visitor safety or control insects and disease.</p> <p>02 Use mechanical, chemical, or burning treatments to alter or perpetuate timber stands and increase herbaceous yield or cover as appropriate in areas where harvest methods are impractical or demand does not exist.</p>	
<p>MINERALS MANAGEMENT GENERAL (G00)</p>	<p>01 Allow mineral activities that are designed to cause the least impact and facilitate final reclamation.</p>	
<p>SPECIAL USE MANAGEMENT (NON- RECREATION) (J01)</p>	<p>01 Permit special uses which are complementary and compatible with the objectives of the management unit and which do not change the ROS classification.</p>	
<p>LOCAL ROAD CONSTRUCTION AND RECONSTRUCTION (L11, 12, AND 13)</p>	<p>01 Design and locate local roads and/or trails to minimum standards and to complement other resources and to facilitate final reclamation.</p>	
<p>TRAIL SYSTEM MANAGEMENT (L22 AND 23)</p>	<p>01 Trails design, construction, and maintenance will be compatible with semiprimitive recreation opportunities.</p> <p>02 Manage National Recreation Trails to emphasize foot and horseback travel. Do not allow mechanized vehicle use.</p>	<p>a. The VQO for National Recreation Trails should be based on maintaining a recreation visitor sensitivity level one classification.</p> <p>b. FSM 2350, 7703.</p>

MANAGEMENT PRESCRIPTION KWR  
(EMPHASIS IS ON KEY BIG-GAME WINTER RANGE)

Management emphasis is on providing winter forage and cover for big-game species in areas that must be available and unencumbered for wildlife use each year during the critical winter period. Vegetative treatments are applied to increase forage production of grass, forb, and especially browse species and/or to create and maintain thermal and hiding cover. This may include prescribed burning, seeding, spraying, planting, and mechanical treatments.. Browse stands re regenerated to maintain a variety of age classes and species.

Conflicting uses are not permitted on a continuing basis, but may be permitted outside the critical season if there is no long-term degradation. Livestock grazing that is compatible with wildlife habitat is permitted.

New roads other than short-term (temporary) roads are located outside of the management unit. Short-term roads will be rehabilitated to provide for wildlife use within one season after completed use. Prohibit motorized use to prevent unacceptable stress on big game during critical use periods.

Acquire key big-game winter range or wildlife habitat easements within or adjacent to the National Forest.

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(EMPHASIS IS ON KEY BIG-GAME WINTER RANGE)

MANAGEMENT UNIT DIRECTION KWR  
MANAGEMENT REQUIREMENTS

MANAGEMENT

GENERAL

STANDARDS &

ACTIVITIES	DIRECTION	GUIDELINES
MANAGEMENT OF DEVELOPED RECREATION SITES (A08, 09, 11, AND 13)	01 None permitted on NFS lands.	
DISPERSED RECREATION MANAGEMENT (A14 AND 15)	01 Manage recreational activities so they do not conflict with wildlife use of habitat.	<p>a. Close management units to vehicular travel and to snowmobile use during the critical use season.</p> <p>b. Do not provide parking or trailhead facilities during winter.</p>
WILDLIFE AND FISH RESOURCE MANAGEMENT (C01)	01 Provide big-game forage, cover, and habitat to help achieve the wildlife population objectives identified in interagency herd unit plans.	<p>a. Maintain at least 30 percent of shrub plants in mature age, and at least 10 percent in young age classes.</p> <p>b. Maintain at least two shrub species on shrub lands capable of growing two or more shrub species.</p>
RANGE RESOURCE MANAGEMENT (D02)	01 Manage livestock grazing to favor big-game habitat.	a. Establish proper use criteria for livestock use that should maintain or enhance habitat for wildlife. Limit livestock use to this use level.
TIMBER RESOURCE MANAGEMENT (E00)	01 Forest habitat types within this unit will be managed to provide big-game forage, thermal cover, and security in association with the other vegetative habitat types.	
MINERALS MANAGEMENT GENERAL (G00)	01 Modify, delay, or deny mineral leasing, exploration and/or surface occupancy, where applicable, if it causes unacceptable stress on big game or unmitigated damage to their habitat.	<p>a. Prohibit activities during critical periods of big-game use.</p> <p>b. Approved activities must be short-term and prompt reclamation must be assured.</p>

MANAGEMENT UNIT DIRECTION KWR  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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SPECIAL USE MANAGEMENT (NON- RECREATION) (J01)	01 Prohibit and/or eliminate special uses that conflict with wintering animals.  02 Authorize only those uses that would enhance or improve winter range condition.	
RIGHTS-OF-WAY AND LAND ADJUSTMENTS (J02, 13, 15, 16, 17, AND 18)	01 Acquire private lands or obtain wildlife habitat easements needed for big-game winter range.	
TRANSPORTATION SYSTEM MANAGEMENT (L01 AND 20)	01 Use road or area closures to maintain habitat effectiveness.  02 Prohibit new permanent roads in the unit.  03 Allow short-term (temporary) roads where the use would not conflict with wintering big game.	a. Prohibit activities during critical periods of big-game use.  b. Approved activities must be short-term and prompt reclamation must be assured.
INITIAL ATTACK AND FIRE SUPPRESSION (P08)	01 Control wildfires at all intensity levels.	

MANAGEMENT PRESCRIPTION GWR  
(EMPHASIS IS ON GENERAL BIG-GAME WINTER RANGE)

Management emphasis is on providing general big-game winter range. These are areas wildlife traditionally use. Treatments of various types are applied to increase forage production and plant species composition. This may include chaining, cutting, prescribed burning, seeding, spraying, planting, and other treatments. Selected browse species are regenerated to maintain a variety of age classes.

Investments in compatible resource activities may occur. Livestock grazing is generally compatible and is managed in favor of big-game habitat. Structural range improvements will be designed, where possible, to benefit wildlife. Range structures will be designed to minimize adverse wildlife impacts.

Permanent roads and special uses may be permitted. Short-term or temporary roads are obliterated and rehabilitated within one year after intended use. Motorized use is managed as appropriate to prevent unacceptable stress on big-game animals during the primary use season.

Specific cover opening ratios, opening width, and stand design are maintained in pinyon-juniper chaining areas.

(EMPHASIS IS ON GENERAL BIG-GAME WINTER RANGE)

MANAGEMENT UNIT DIRECTION GWR  
MANAGEMENT REQUIREMENTS



MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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VISUAL RESOURCE  
MANAGEMENT  
(A04)

01 Meet Forest Direction Visual Quality Objectives except where habitat improvement activities occur. Treated sites must be returned to the planned VQO within 10 years.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Manage recreational activities so they do not conflict with wildlife use of habitat.

a. Restrict snowmobile use to designated routes if conflicts with wintering animals occur.

b. Restrict vehicular travel on non-roaded areas if conflicts with habitat needs develop.

WILDLIFE AND  
FISH RESOURCE  
MANAGEMENT  
(C01)

01 Provide big-game habitat needed to help achieve the big-game population objectives identified in interagency herd unit plans.

a. Maintain at least 30 percent of shrub plants in mature age, and at least 10 percent in young age classes.

b. Maintain at least two shrub species on sites capable of growing two or more shrub species.

c. Maintain habitat capability at a level at least 50 percent of potential for big game.

d. Activities or uses which induce human activity within the area may be modified, rescheduled, or denied if the combination of accumulated impacts on vegetation, behavior, and /or mitigation reduce effective habitat use below 80 percent of base year 1980 capacity of this unit.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Manage livestock grazing to complement big-game habitat.

a. Establish proper use criteria that should maintain or enhance habitat for wildlife. Limit livestock use to this level.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Modify, delay, or deny mineral leasing, exploration and/or surface occupancy, where applicable, if they cause unacceptable stress on big game or unmitigated damage to their habitat.

a. Prohibit activities during critical periods of big-game use.

b. Approved activities must be short-term and prompt reclamation must be assured.

MANAGEMENT UNIT DIRECTION GWR  
MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

SPECIAL USE  
MANAGEMENT NON-  
RECREATION)  
(J01)

01 As appropriate, permit special uses if they do not conflict with big-game wintering.

RIGHTS-OF-WAY  
AND LAND  
ADJUSTMENTS  
(J02, 13, 15,  
16, 17, AND 18)

01 Acquire private lands or obtain wildlife habitat easements needed for big-game winter range.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Allow new roads to meet management needs. Obliterate and rehabilitate temporary roads within one season after planned use ends.

a. New roads may be constructed when;  
(1) There is no acceptable alternative to build the road outside the unit, and the road is essential to achieve priority goals and objectives of contiguous management units, or to provide access to land administered by other government agencies or to contiguous private land.  
(2) Winter road use will not significantly disturb wintering big-game animals.  
(3) Roads cross the winter range in the minimum distance feasible to facilitate the needed use.

02 Close and/or restrict road use as appropriate to reduce stress on big-game animals.

MANAGEMENT PRESCRIPTION RNG  
(EMPHASIS IS ON PRODUCTION OF FORAGE)

Emphasis is on production of forage and cover for domestic livestock and wildlife. Intensive grazing management systems are generally favored. Range condition is improved or maintained through range and/or silvicultural improvement practices, livestock management through a grazing system, and coordination with other resource activities. Some periodic heavy forage utilization may occur. Opportunities for investments in structural and non-structural improvements to increase forage production is moderate to high.

Nonstructural restoration practices include a full spectrum of treatments such as plowing, seeding, cutting, chaining, burning, spraying with herbicides, crushing, pitting, furrowing, and fertilization.

Investments are made in compatible resource activities. Dispersed recreation opportunities vary between semiprimitive nonmotorized and roaded natural appearing. Management activities are evident, but harmonize with the natural setting.

(EMPHASIS IS ON PRODUCTION OF FORAGE)

MANAGEMENT UNIT DIRECTION RNG  
MANAGEMENT REQUIREMENTS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

- 01 Semiprimitive nonmotorized, semiprimitive motorized, roaded natural and rural recreation opportunities may be provided.
- 02 Temporarily close dispersed area camping sites to recreation use where resource damage is occurring or management of livestock is seriously impaired.

- a. Specific vehicular travel restrictions if any based on vehicular travel use management (FSM 2355).
- a. Where soil erosion and/or compaction inhibits plant growth and ground cover is less than 30 percent.
- b. Where dispersed camping prevents livestock watering and/or range use.

WILDLIFE AND  
FISH RESOURCE  
MANAGEMENT  
(C01)

- 01 Balance wildlife use with grazing capacities and habitat.

RANGE RESOURCE  
MANAGEMENT  
(D02)

- 01 Improve or maintain range condition to fair or better.
- 02 Balance livestock obligations and use with grazing capacities.

- a. FSH 2209.15.
- a. Firm up capacities by evaluation methods identified in allotment management plans or if not completed by standards specified in FSH 2209.21 and/or increasing forage production to meet obligations through range improvements.

TIMBER  
RESOURCE  
MANAGEMENT  
(E00)

- 01 Maintain and manage non-commercial forested inclusions to provide a high level of forage production, wildlife habitat, and diversity.
- 02 Use mechanical, chemical, or prescribed fire to alter timber stands and increase herbaceous yield or cover in areas where harvest methods are impractical or demand does not exist.
- 03 Manage aspen stands or mixed fir habitat types at the appropriate ecological stage that provides high herbaceous yield and cover.

MANAGEMENT UNIT DIRECTION RNG

MANAGEMENT

GENERAL

STANDARDS &

III-III  
65

ACTIVITIES

DIRECTION

GUIDELINES

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MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Provide appropriate mitigation measures to assure continued livestock access and use.

02 Those authorized to conduct developments will be required to replace losses through appropriate mitigations, where a site-specific development adversely affects long-term production or management

MANAGEMENT PRESCRIPTION TBR  
(EMPHASIS IS ON WOOD-FIBER PRODUCTION AND HARVEST)

Emphasis is on management for the production and use of wood-fiber for a variety of wood products. The harvest methods by Forest cover type are single tree and group selection and shelterwood in Englemann spruce-subalpine fire, Douglas-fire, ponderosa pine, mixed conifers, and clearcutting in aspen. Harvesting will be accomplished with methods including cable, conventional crawler tractor, or rubber-tired skidders. Precommercial thinning and intermediate harvest will be used to increase or maintain fiber production.

Dispersed recreation opportunities vary between semiprimitive non-motorized and roaded natural appearing.

Wildlife habitat diversity may be enhanced by vegetative manipulation. Livestock grazing may be permitted. This prescription could alter water yield through vegetation management, as well as decreased evapotranspiration and maximize snow retention in small openings on low energy slopes.

(EMPHASIS IS ON WOOD FIBER PRODUCTION AND HARVEST)

MANAGEMENT UNIT DIRECTION TBR.

MANAGEMENT REQUIREMENTS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Semiprimitive nonmotorized, semiprimitive motorized, roaded natural and rural recreation opportunities may be provided.

02 Prohibit recreation use (including snowmobiles, vehicular travel, cross-county skiing etc.) where needed to protect forest plantations.

RANGE  
IMPROVEMENT  
AND  
MAINTENANCE  
(D03, 04, 05  
AND 06)

01 Protect regeneration from unacceptable livestock damage.

a. Proper livestock management methods will be included in allotment management plans and annual operating plans to protect regeneration. Permittees will be held responsible for damages resulting from negligence.

02 Utilize transitory forage that is available when demand exists, and where investments in regeneration can be protected.

a. Vary utilization standards with grazing system and ecological condition. Specify standards in the Allotment Management Plan.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Locate, design and construct the minimum Forest Development Road necessary to provide a stable road base to serve short- and long- term timber needs, under the timber sale program.

02 To the extent possible, give emphasis to and coordinate road locations for timber sales that will benefit future fuelwood sales and other timber activities.

INITIAL ATTACK  
AND FIRE  
SUPPRESSION  
(P08)

01 Control wildfires in Engelmann spruce types and in young ponderosa pine stands.

MANAGEMENT PRESCRIPTION RPN  
(EMPHASIS IS ON RIPARIAN AREA MANAGEMENT - NOT  
MAPPED)

Emphasis is on management of riparian areas, and all the component ecosystems. These components include the aquatic (including fish) ecosystem, the riparian (characterized by distinct vegetation), and adjacent ecosystems that remain within approximately 100 feet measured horizontally from edge of all perennial streams and springs, and from the shores of lakes and other still water bodies, i.e., from seeps, bogs, and wet meadows. All of the components are managed together as a land unit comprising an integrated riparian area, and not a separate component.

The goals of management are to (1) maintain waterflows to provide free and unbound water within the soil needed to create the distinct vegetative community, (2) provide healthy self-perpetuating plant communities, (3) meet water quality standards, (4) provide habitats for viable populations of wildlife and fish, (5) provide stable stream channels and still water body shorelines, and (6) restore riparian habitats that have been lost through the downcutting of stream channels and wet meadows. The aquatic ecosystem may contain fisheries, habitat improvements, and channel stabilizing facilities that maintain or improve wildlife or fish habitat requirements.

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(This Management Unit is not mapped)

(EMPHASIS IS ON RIPARIAN AREA MANAGEMENT

MANAGEMENT UNIT DIRECTION RPN  
MANAGEMENT

GENERAL

STANDARDS &



ACTIVITIES

DIRECTION

GUIDELINES

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Semiprimitive nonmotorized, semiprimitive motorized, roaded natural and rural recreation opportunities may be provided.

01 Limit use where the riparian area is being unacceptably damaged.

WILDLIFE  
HABITAT  
IMPROVEMENT  
AND MAINTENANCE  
(C02, 04, 05  
AND 06)

01 Provide habitat diversity through vegetation treatments, and/or structural developments in conjunction with other resource activities, designed to maintain or approve wildlife or fisheries habitat.

02 Provide habitat for viable populations of native vertebrate species of fish and wildlife within existing ranges.

03 Maintain a current fish habitat inventory in cooperation with State wildlife agencies.

04 Provide for instream flows to support a sustained-yield of natural fisheries resources.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Provide for proper stocking and livestock distribution to protect riparian ecosystems.

02 Avoid trailing livestock along the length of riparian areas except where existing stock driveways occur. Rehabilitate existing stock driveways where damage is occurring in riparian areas. Relocate them outside riparian unit if possible and when necessary to achieve riparian area goals.

SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06, AND 07)

01 Manage forest cover types to perpetuate tree cover and provide healthy stands, high water quality and wildlife and fish habitat.

02 Avoid locating log landing and decking areas within the riparian unit.

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MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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WATER QUALITY  
MANAGEMENT  
(F00)

- 01 Vegetate disturbed soils in sites where adverse impacts would occur according to the following priorities:
  - Aquatic ecosystems;
  - Riparian ecosystems; and
  - Riparian areas outside of aquatic and riparian ecosystems.
- 02 Minimize surface disturbing activities that alter vegetative cover, result in stream channel instability or loss of channel cross-sectional areas, or reduce water quality.

RIPARIAN  
FLOOD PLAIN  
& WETLANDS  
MANAGEMENT  
(F00)

- 01 Prior to implementation of project activities, delineate and evaluate riparian areas and or wetlands that may be impacted.
- 02 Obtain 404 permits when needed for proposed activities causing disturbance to flood plains and wetlands.

- a. FSM 2526.
- b. Where site-specific development adversely affects long-term productivity or management, those authorized to conduct development will be required to replace loss through appropriate mitigations.

SOIL & WATER  
RESOURCE  
IMPROVEMENTS  
(F03)

- 01 Prevent or remove unacceptable debris accumulations that reduce stream channel stability and capacity.
- 02 Avoid channelization of natural streams. Where channelization is necessary for flood control or other purposes use stream geometry relationships to reestablish meanders, width/depth ratios, etc. consistent with each major stream type.
- 03 Treat disturbed sites resulting from resource development or use activities, to reduce sediment yields to the natural erosion rates in the shortest possible time.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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CONTINUATION OF:  
SOIL & WATER  
RESOURCE  
IMPROVEMENTS  
(F03)

04 Stabilize streambanks which are damaged beyond natural recovery in a reasonable period with appropriate methods or procedures.

05 Minimize significant soil compaction and disturbance in riparian ecosystems. Allow use of heavy construction equipment during period when the soil is less susceptible to compaction or rutting.

06 Maintain or enhance the long-term productivity of soils within the riparian ecosystem.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Avoid and mitigate detrimental disturbance to the riparian area by mineral activities. Initiate timely and effective rehabilitation of disturbed sites.

02 Where possible, locate mineral activities outside the riparian unit.

a. Locate drill sites and mud pits outside the riparian area unless alternate locations have been reviewed and rejected. If location is unavoidable, seal and dike all pits to prevent leakage.

b. Reclaim disturbed site as soon as possible after use is discontinued.

c. Revegetate or establish vegetative cover to levels that will provide soil surface protection and prevent erosion..

d. Provide surface protection from storm-flow and snowmelt runoff events.

03 Design and locate settling ponds to prevent washout during high water. Locate settling ponds outside of the active channel. Restore channel changes to hydraulic geometry standards for each stream type.

a. Permit diversion activities within the riparian unit where technology is available to maintain water quality standards, sediment threshold limits, instream flow standards, vegetation, and fish and wildlife cover.

ACTIVITIES

DIRECTION

GUIDELINES

SPECIAL USE  
MANAGEMENT (NON-  
RECREATION)  
(J01)

01 Permit special uses which are complementary and compatible with the kind and level of development within the unit.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Locate new roads and trails outside riparian areas unless alternative routs have been reviewed and rejected.

a. Do not parallel streams when road location must occur in riparian areas except where absolutely necessary. Cross streams at points that best complement riparian and aquatic ecosystems as well as road and stream geometry. Locate crossing (fords) at points of low bank slope and firm surfaces.

02 Minimize detrimental disturbance to the riparian unit by construction and maintenance activities. Initiate timely and effective rehabilitation of disturbed sites and restore riparian areas so that a vegetation ground cover or suitable substitute protects the soil from erosion and prevents increased sediment yield.

INITIAL ATTACK  
AND FIRE  
SUPPRESSION  
(P08)

01 Restrict mechanical fireline construction.

a. Restrict heavy equipment line construction in riparian areas. Avoid aquatic and riparian ecosystems with this equipment.

III-73

MANAGEMENT PRESCRIPTION MWS  
(EMPHASIS IS ON MUNICIPAL WATER SUPPLY)

Management emphasis is on producing water for municipal uses. These units include portions of some select watershed areas and some springs or other water sources dedicated to the production of municipal water. The unit(s) is managed to maintain the hydrologic integrity of the watershed or water source for the protection of water quality and quantity. On these units, maximizing herbaceous ground cover and minimizing surface disturbing activities is the overall direction. Some limited land uses or activities that do not degrade the water quality of disrupt the watershed or source areas may occur.

(EMPHASIS IS ON MUNICIPAL WATER SUPPLY)

MANAGEMENT UNIT DIRECTION MWS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Close all or portions of the unit to vehicular travel except as authorized.

02 Allow light dispersed recreation, such as hiking, but not overnight camping.

a. Require compliance with the "Pack In, Pack Out" policy.

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05,  
AND 06)

01 Permanent wildlife openings or other habitat improvements may be installed, provided they can be done without adversely affecting water quality.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 These units may be closed to livestock grazing.

TIMBER RESOURCE  
MANAGEMENT  
(E00)

01 Provide for harvest of forest products when the activity would improve water production and/or does not adversely affect water quality.

MUNICIPAL  
WATERSHED  
MANAGEMENT  
(F00)

01 Prolong stream flow where feasible to increase water yields.

GEOLOGIC  
RESOURCES  
MANAGEMENT  
(G00)

01 Design activities to minimize negative or emphasize positive effects on geologic features concerning recharge areas, depth and extent of the water resource, and surface use in the management of municipal water systems.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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MINING LAW  
COMPLIANCE AND  
ADMINISTRATION  
(LOCATABLES)  
(G01)

01 Avoid or minimize and mitigate detrimental disturbance to the MWS unit by mineral activities. Initiate timely and effective rehabilitation of disturbed sites.

MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO 07)

01 Allow mineral leasing where it has been determined that stipulated methods of mining will not affect the watershed values to any significant degree.

02 Allow oil and gas leasing where appropriate using the "Controlled or limited Surface Use" stipulation which allows uses within specific areas of the lease to be strictly controlled or surface use entirely excluded as necessary.

SPECIAL USE  
MANAGEMENT (NON-  
RECREATION)  
(J01)

01 Permit only those special uses that will not impair water quality or quantity.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Allow new roads only if needed to meet MWS management emphasis or temporary roads to meet limited resource needs. Provide erosion protection on temporary roads before each winter season.

MANAGEMENT PRESCRIPTION WPE  
(EMPHASIS IS ON WILDERNESS PROTECTION/IMPROVEMENT)

Management emphasis is for watershed protection and improvement in areas where watershed treatment (i.e., contour trenching and furrowing) have been, or should be, applied, and where other use restrictions are implemented to protect on-site and downstream values from flooding and sedimentation.

On completed watershed projects where grazing is restricted, maintaining sufficient ground cover and minimizing surface disturbing activities will be the general management objective. Investments to protect and maintain past watershed projects will be made. Other uses and activities that do not damage the watershed will be permitted.

On areas in the 10 year watershed program where the surface cover is inadequate to protect the soil and results in excessive soil erosion rates, emphasis is placed on management practices and restoration projects which increase vegetative cover and control surface runoff. Priorities for watershed improvement should be determined through the Forest's Watershed Improvement Needs Inventory (WINI) and Evaluation Process.

Also included, but not mapped, are some areas that have received damage by landslide and flood events. Units receiving damage by such events should be entered on the Watershed Improvement Needs Inventory list and evaluated against all other potential projects for priority of treatment.

(EMPHASIS IS ON WATERSHED PROTECTION/IMPROVEMENT)

MANAGEMENT UNIT DIRECTION WPE



MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

VISUAL RESOURCE  
MANAGEMENT  
(A04)

01 Short-term VQO is rehabilitation, in the long term, it should meet the adopted VQO.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Provide for current recreation uses that do not conflict with watershed improvement objectives.

02 Close treated or proposed watershed improvement areas to vehicular travel (except over snow).

- a. Close to motorized vehicles as needed.
- b. On units where structural watershed improvements have been made, vehicular travel use will be restricted (except over snow travel).

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05  
AND 06)

01 Provide big-game forage and habitat needs through manipulation of habitat or wildlife structures providing they do not result in damage to the watershed.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Prohibit livestock use on areas treated for watershed improvement until vegetation has become successfully established and watershed improvement objectives have been met.

02 Restrict livestock use on units identified as having excessive soil erosion.

03 Manage grazing, where authorized, to maintain our improve vegetative cover.

- a. Determine suitability for use through Inter-disciplinary team evaluation.
- a. Sites exceeding soil loss tolerance value as determined using the universal soil loss equation as modified by the USFS, and having a downward soil trend as determined by range analysis procedures (R-4 Handbook 2209.20).

SOIL & WATER  
RESOURCE  
IMPROVEMENTS  
(F03)

01 Rehabilitate excessively eroding sites by applying the appropriate watershed improvement practices.

- a. Base priorities on watershed Improvement Need Inventory (WINI) and Forest evaluation process.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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SOIL & WATER  
RESOURCE  
IMPROVEMENT  
MAINTENANCE  
(F09)

01 Maintain completed watershed improvement projects until project objectives have been obtained.

a. FSM 2523.04 and Forest Supplement No. 4.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Restore structural watershed improvements impacted by minerals activities, where appropriate.

SPECIAL USE  
MANAGEMENT (NON-  
RECREATION)  
(J01)

01 Permit special uses which are compatible with the objectives of the unit, and allow appropriate motorized access.

02 Structural watershed improvements damaged by surface disturbing activities will be rehabilitated.

MANAGEMENT PRESCRIPTION MMA  
(EMPHASIS IS ON LEASABLE MINERALS DEVELOPMENT)

Management emphasis is on making land surface available for existing and potential major mineral developments. This prescription is applied where the land surface is or will be used for facilities needed for the extraction of leasable minerals over an extended period. The areas associated with known, potential, development sites are included in this unit. Additional areas may be added to this unit as mines or fields are located and developed. As the developments are removed and restoration is completed, these areas may be changed to other appropriate management units.

In units where mineral development is pending, renewable resource activities strive to be compatible with the management goals of adjacent management units. Long-term investments, such as timber planting, generally are not made. However, short-term investments, such as range and wildlife revegetation projects, may be made on these units.

(EMPHASIS IS ON LEASABLE MINERAL DEVELOPMENT)

MANAGEMENT UNIT DIRECTION MMA

MANAGEMENT REQUIREMENTS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

VISUAL RESOURCE  
MANAGEMENT  
(A04)

01 VQO is modification, except after dark the VQO may be maximum modification owing to artificial lighting.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Manage dispersed recreation opportunities:  
(1) On potential MMA units consistent or compatible with prescriptions from adjacent management units;  
(2) On existing MMA units to avoid conflicts with mineral activities and provide for public safety.

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05  
AND 06)

01 Manage to the extent possible potential or existing long-term impacts on potential or existing units consistent or compatible with wildlife and fish habitat prescriptions from adjacent management units.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Manage the forest resource on potential units and existing units consistent or compatible with range prescriptions from adjacent management units. On existing units, manage forage with emphasis on establishment of vegetative cover and long range rehabilitation to support appropriate range prescriptions.

SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06,  
AND 07)

01 On potential units manage forest cover types consistent or compatible with prescription from adjacent management units unless a specific use requires special forest cover management.

02 Maintain forest cover types on undisturbed sites with emphasis on long range establishment of stands compatible with adjacent management units. As appropriate, rehabilitate disturbed lands using forest cover types.

03 Utilize forest products through both commercial and noncommercial methods.

18-III

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO 07)

- 01 Coordinate the various leasable mineral activities to minimize or eliminate conflicts.
- 02 Upon completion of the planned surface use, restore disturbed sites to their predisturbed conditions unless other-wise directed in the document authorizing the use.

SPECIAL USE  
MANAGEMENT (NON-  
RECREATION)  
(J01)

- 01 Coordinate developments that may conflict with the intended purpose of existing or potential units to minimize or eliminate the conflict.
- 02 Issue special-use permits for off-lease facilities consistent with policy and guidelines.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

- 01 Reduce or remove transportation facilities to a kind and standard compatible with the transportation section of the Forest Plan when mineral activity is complete and the unit is rehabilitated.

## MANAGEMENT PRESCRIPTION RPI

(EMPHASIS IS ON RESEARCH, PROTECTION, & INTERPRETATION OF LANDS & RESOURCES)

Management emphasis for these units is to manage unique ecological, geological, paleontological, archeological, or historical sites or features of the Forest for research, protection, and/or interpretation of land and resources.

Units with an interpretive emphasis are made available for their general use and enjoyment by the public. The objective is to protect the features in their current and/or restored condition while making them available for study and viewing. Other resource use may be made of these units as long as they do not conflict with the purpose for which they exist. Activities that might cause impairment or occupancy of the unit for any reason other than interpretive are usually prohibited. This interpretive or viewing emphasis include sites such as The Grove of Aspen Giants, Pinhook Battleground Historical Site, Scad Valley Botanical (Proposed), World Record Pinyon Pine, Hammond Canyon, and the Great Basin Experimental Range.

The protective emphasis units are set aside from other uses for protection of the specific features that exist and to maintain as much as possible their near natural conditions (unmodified by man) so long-term changes can be monitored.

The objective is on protection, research, study, observations, monitoring and educational activities that are non-destructive and non-manipulative. In Research Natural Areas unmodified conditions are maintained as a source to compare with manipulated conditions outside of these units. Protected units that are designed normally restrict grazing by domestic livestock. Further, no timber harvest, recreation facilities, roads, trails (except for research or study purposes), water impoundment structures, special uses, surface occupancy for mining of hard rock or leasable minerals, or administrative structures (except for that needed for research or protection purposes) will be authorized. Facilities needed to protect the unit from other uses, such as fences, will be permitted. Designated areas on the Forest with this emphasis include: Elk Knoll Research Natural Area; proposed Research Natural Areas (RNA's): (1) Nelson Mountain, (2) Cliff Dwellers Pasture, and (3) Mount Peale, pending further study as to their suitability as RNA's; and specific unique sites (unmapped) of ecological, archeological, paleontological, unique rare plant fossils, etc. Proposed Research Natural Areas that are not selected as RNA's will be incorporated into the surrounding management unit.

(Research, Protection, & Interpretation Units may or may not be mapped depending on their need for protection.)

(EMPHASIS IS ON RESEARCH, PROTECTION, & INTERPRETATION OF LANDS & RESOURCES)

MANAGEMENT UNIT DIRECTION RPI

MANAGEMENT REQUIREMENTS

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

CULTURAL  
RESOURCE  
MANAGEMENT  
(A02)

01 Manage cultural, historic, and paleontologic resources to allow research and/or interpretive activities, when possible, while protecting significant attributes of units from natural or human caused degradation.

a. FSM 2361 and FSM 2726.

VISUAL RESOURCE  
MANAGEMENT  
(A04)

01 The VQO on all units is generally preservation.

RECREATION SITE  
CONSTRUCTION AND  
REHABILITATION  
(A05 AND 06)

01 Permit, as appropriate, construction of developed recreation or interpretive facilities.

a. FSM 2361.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Semiprimitive nonmotorized, semiprimitive motorized, roaded natural and rural recreation opportunities may be provided.

a. Prohibit or restrict motorized vehicle use as appropriate.

02 Provide, as appropriate, signing for interpretation and protection of specific Special Interest Areas.

b. Limit or restrict camping in existing or proposed units as necessary.

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05,  
AND 06)

01 Prohibit any direct wildlife habitat manipulation that will detract from those values for which the unit is established.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Protect these areas from livestock use unless the objectives for the RPI unit allow grazing use.

a. No livestock grazing is permitted in Research Natural Areas.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06,  
AND 07)

Prohibit any timber management activities that would impair research, educational values, or otherwise reduce the value of the unit.

SOIL RESOURCE  
MANAGEMENT  
(F00)

01 Manage soil and water resource activities to be compatible with the values of the unit.

02 Allow instrumentation to measure precipitation and climate variables needed for research study purposes.

SOIL & WATER  
RESOURCE  
IMPROVEMENTS  
(F03)

01 Prohibit water developments or watershed protection activities that would detract from the purpose for which the unit was established.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Manage mineral activities to be compatible with RPI unit objectives.

MINING LAW  
COMPLIANCE AND  
ADMINISTRATION  
(LOCATABLES)  
(G01)

01 Allow mineral activities where it has been determined that stipulated methods of extraction will not affect the RPI unit values.

MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO 07)

01 Allow oil and gas leasing where appropriate using the "Controlled or Limited Surface Use" stipulation which allows uses within specific areas of the lease to be strictly controlled or surface use entirely excluded as necessary.

a. Prohibit seismic or prospecting activities in Research Natural Areas.

SPECIAL USE  
MANAGEMENT (NON-  
RECREATION)  
(J01)

01 Use special use permits or cooperative agreements as appropriate to authorize and document scientific activity.

a. FSM 4063.37 and FSM 2720.



MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

<p>CONTINUATION OF: SPECIAL USE MANAGEMENT (NONRECREATION) (J01)</p>	<p>02 Permit use as appropriate for scientific and educational purposes. 03 Discourage or prohibit any uses which contribute to impairment of the values for which the unit is established.</p>	
<p>WITHDRAWALS, MODIFICATIONS AND REVOCATIONS (J04)</p>	<p>02 Withdraw the RPI unit from mineral entry where needed to protect the unit values.</p>	
<p>PROPERTY BOUNDARY LOCATION (J06)</p>	<p>01 Mark boundaries where appropriate to ensure integrity of the unit.</p>	
<p>TRANSPORTATION SYSTEM MANAGEMENT (L01 AND 20)</p>	<p>01 Generally, transportation system facilities are permitted where the facility is compatible with the purpose for which the unit is established.</p>	<p>a. Prohibit roads in Research Natural Areas.</p>
<p>TRAIL SYSTEM MANAGEMENT (L23)</p>	<p>01 Where appropriate, develop trails for interpretation and/or self study. 02 Limit trails in RNA's to those needed for access to conduct research and for educational purposes.</p>	
<p>INITIAL ATTACK AND FIRE SUPPRESSION (P08)</p>	<p>01 Take appropriate suppression action that meets the management objectives for the area, using confinement, containment, and/or control suppression strategies.</p>	
<p>LAW ENFORCEMENT (P24 TO 27)</p>	<p>01 Use special closures when necessary to protect the unit or features from actual or potential damage.</p>	<p>a. Issue closure order under provisions of 36 CFR 261.50 (FSM 4063.3).</p>

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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FOREST AND RANGE  
RESEARCH  
(D10, E33, F19)

- 01 Cooperate with the Intermountain Forest and Range Experiment Station to accomplish research objectives.
- 02 Protect surface resource conditions to prevent alteration of research projects.

MANAGEMENT PRESCRIPTION DCW  
(EMPHASIS IS ON DARK CANYON WILDERNESS MANAGEMENT)

Emphasis is for the protection of the wilderness character and perpetuation of essentially pristine biophysical conditions inside the boundaries of Dark Canyon Wilderness. Human travel is principally on trails within the Peavine Corridor which is an intrusion into the unit. Within and adjacent to the corridor, the recreation experience would be semiprimitive motorized. The balance of the unit should provide the opportunity for primitive recreation experience. Designated campsites may display evidence of recurring use. However, use would be within acceptable environmental limits.

Appropriate levels of domestic livestock grazing are authorized on suitable grazing lands, and appropriate facilities for the management of livestock may be authorized. Scientific practices utilizing non-mechanized equipment may be authorized for up to one season. Significant archeologic and historic sites would be enhanced, restricted, or protected from human activities and where feasible from natural deterioration.

The fact that nonwilderness activities or uses can be seen or heard from areas within this wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area.

(EMPHASIS IS ON DARK CANYON WILDERNESS MANAGEMENT)

MANAGEMENT UNIT DIRECTION DCW

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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CULTURAL  
RESOURCE  
MANAGEMENT  
(A02)

01 Do not provide interpretive facilities at cultural, historic or paleontologic sites. Where appropriate, restore or enhance these resources for recreation, scenic, scientific, educational, and conservation purposes.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Emphasize primitive recreation opportunities for isolation, solitude, and self-reliance.

02 Manage use to provide a low incidence of contact with other groups or individuals and to prevent unacceptable changes to the biophysical resources.

a. Use and capacity levels are:  
Trail encounters are usually less than six other parties per day.  
Campsite encounters are usually less than three other parties per day.

03 Restrict use on and/or rehabilitate dispersed sites where unacceptable environmental damage is occurring.

a. Close sites that cannot be maintained in Code-A-Site categories light to moderate.

RECREATION  
MANAGEMENT  
(PRIVATE AND  
OTHER PUBLIC  
SECTOR)  
(A16)

01 Manage outfitter-guide operations in harmony with activities of non-guided visitors and include them in calculations of level-of-use capacities. Permit camping only in sites specified in outfitter-guide permits.

WILDERNESS AREA  
MANAGEMENT  
(B02)

01 Utilize a permit system as necessary to manage use levels and patterns to prevent damage or degradation of wilderness character.

02 Control use near seeps and springs or other water sources to maintain water quality and quantity.

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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WILDLIFE RESOURCE  
MANAGEMENT  
(C01)

01 Forest-wide habitat prescription for management indicator and vertebrate wildlife species may not necessarily be met.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Manage forage uses and limit range improvements to be compatible with wilderness character.

SOIL & WATER  
RESOURCE  
IMPROVEMENTS  
(F03)

01 Where it will not impair the wilderness character, restore soil disturbances caused by human use (past mining, trail construction and use, camping, etc.) to soil loss tolerance levels commensurate with the natural ecological processes for treatment area.

a. Maintain sites in Code-A-Site categories light to moderate.

MINERALS  
MANAGEMENT  
GENERAL  
(G00)

01 Manage mineral activities in accordance with the 1964 Wilderness Act and Utah Wilderness Act of 1984.

SPECIAL USE  
MANAGEMENT  
(NONRECREATION)  
(J01)

01 Permit only those uses authorized by wilderness legislation, which cannot be reasonably met on nonwilderness lands.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L01 AND 20)

01 Convert roads not needed for authorized activities to trails, or restore the road area to the predisturbed conditions.

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
CONTINUATION OF: TRANSPORTATION SYSTEM MANAGEMENT (L01 AND 20)	02 Construct or reconstruct and maintain trails only when needed to meet wilderness objectives.	a. FSH 2309.18 and FSM 2320.
	03 Provide low visual impact signs at trail terminals and trail junctions only. Include only mileage, trail identification, and identification of terminal points.	a. FSH 7109.11A and 11B, FSM 2380 and FSH 2320.
		b. Use untreated routed wood signs on butt treated posts.
FA&O CONSTRUCTION RECONSTRUCTION AND MAINTENANCE (L24 AND 25)	01 Maintain and/or construct only administrative facilities or structures needed for management of wilderness.	
INITIAL ATTACK AND FIRE SUPPRESSION (P08)	01 Use containment, confinement, or control on human unplanned ignitions at all intensity levels.	
	02 Manage natural unplanned ignitions to allow fire to play a more natural role in maintaining ecosystems.	
AIR RESOURCE MANAGEMENT (P16)	01 Protect air quality values from adverse effects from air pollution.	a. FSM 2120.
NOISE ABATEMENT (P23)	01 Control man-caused noise levels below that which will provide suitable wilderness opportunities.	a. Man-caused noise levels at use sites generally will be restricted to 30 decibels or less except for noises generated by normal conservation and primitive recreation activities.
INSECT AND DIS- EASE MANAGEMENT/ SUPPRESSION (P35)	01 Control natural insect and disease outbreaks in wilderness only when justified by predicted loss of resource values outside of wilderness.	a. FSM 3430.

MANAGEMENT PRESCRIPTION SLD  
(EMPHASIS IS ON SPECIAL LAND DESIGNATION)

Management emphasis is on making lands available for existing and potential specialized uses. Sites that may be considered for application of this prescription include Ranger or Guard Stations and other administrative sites, electronic sites, and similar special land uses.

The specific direction, Standards and Guidelines are specified in the documents that establish each specific area. Generally, other resource development and use activities within these units strive to be compatible with the management goals of the adjacent management units. However, this is often limited by the special activity or use authorized on the unit.

(EMPHASIS IS ON MANAGEMENT OF SPECIAL LAND DESIGNATIONS)

MANAGEMENT UNIT DIRECTION SLD

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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VISUAL RESOURCE  
MANAGEMENT  
(A04)

01 Manage generally for a partial retention VQO.

DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

01 Manage dispersed recreation opportunities:  
A. On inventoried units, consistent or compatible with  
prescriptions from adjacent management units;  
B. On existing units, to avoid conflicts with the authorized  
special use activities.

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05  
AND 06)

01 Manage, to the extent possible, potential existing long-term  
impacts on potential or existing units consistent or compatible with  
wildlife and fish habitat prescriptions from adjacent management  
units.

RANGE RESOURCE  
MANAGEMENT  
(D02)

01 Manage the forage resource on potential units and existing  
units consistent or compatible with range prescriptions from  
adjacent management units. On existing units manage forage with  
emphasis on establishment of vegetative cover and long range  
rehabilitation to support appropriate range prescriptions.

SILVICULTURAL  
PRESCRIPTIONS  
(E03, 06, AND 07)

01 On potential units manage forest cover types consistent or  
compatible with prescription from adjacent management units  
unless a specific use requires special forest cover management.

MINING LAW  
COMPLIANCE AND  
ADMINISTRATION  
(LOCATABLES)  
(G01)

01 Manage mineral activities to be compatible with the  
authorized use.



MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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MINERALS  
MANAGEMENT  
LEASABLES  
(G02 TO 07)

01 Allow mineral leasing where it has been determined that stipulated methods of mining will not affect the authorized use to any significant degree.

02 Allow oil and gas leasing where appropriate using the "Controlled or Limited Surface Use" stipulation which allows uses within specific areas of the lease to be strictly controlled or surface use entirely excluded as necessary.

MINERALS  
MANAGEMENT  
SALEABLES  
(G02 TO 07)

01 Close the unit to sale or other use of saleable minerals.

SPECIAL-USE  
MANAGEMENT  
(NONRECREATION)  
(J01)

01 Approve special-use applications for areas adjacent to existing SLD units only when the proposed use is compatible with the purpose and use of the existing unit.

WITHDRAWALS  
MODIFICATIONS  
AND REVOCATIONS  
(J04)

02 Withdraw the unit from mineral entry as needed to assure the authorized use can be continued.

MANAGEMENT PRESCRIPTION UC  
(EMPHASIS IS ON LOCATION OF UTILITY CORRIDORS)

Emphasis is on providing transportation corridors for major cross-country pipelines, electrical transmission lines, and telephone lines. Management activities within these linear corridors strive to be compatible with the management goals of the adjacent management units.

(EMPHASIS IS ON LOCATION AND MANAGEMENT OF UTILITY CORRIDORS)

MANAGEMENT UNIT DIRECTION UC

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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DISPERSED  
RECREATION  
MANAGEMENT  
(A14 AND 15)

- 01 Manage dispersed recreation opportunities to avoid conflicts with the permitted uses of the unit.
- 02 Restrict vehicular travel as appropriate.

WILDLIFE  
HABITAT  
IMPROVEMENT AND  
MAINTENANCE  
(C02, 04, 05  
AND 06)

- 01 Manage to the extent possible consistent or compatible with wildlife and fish habitat prescriptions from adjacent management units.

RANGE RESOURCE  
MANAGEMENT  
(D02)

- 01 Manage the forage to be compatible with range prescriptions from adjacent management units. Manage forage with emphasis on maintenance or improvement of vegetative cover and long range rehabilitation.
- 02 Provide special management practices to restrict livestock trailing or bedding along corridors.

SILVICULTURAL  
EXAMINATION  
AND  
PRESCRIPTION  
(E03, 06,  
AND 07)

- 01 Manage forest cover types to be compatible with prescriptions from adjacent management units unless a specific use requires special forest cover management.
- 02 Utilize forest products through both commercial and noncommercial methods.

RIGHTS-OF-WAY  
AND LAND  
ADJUSTMENTS  
(J02, 13, 15,  
16, 17, AND 18)

- 01 Considerations of proposed future corridor designations should follow the process and definitions established in Appendix D of the Forest Plan.

a. Utility corridors are excluded from Wilderness (WDN) and Research Natural Areas.

b. Avoid the following management units unless studies that the impact of the corridor can be mitigated:

- 1. Developed Recreation Sites (DRS).

MANAGEMENT  
ACTIVITIES

GENERAL  
DIRECTION

STANDARDS &  
GUIDELINES

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CONTINUATION OF:  
RIGHTS-OF-WAY  
AND LAND  
ADJUSTMENTS  
(J, 13, 15,  
16, 17, AND 18)

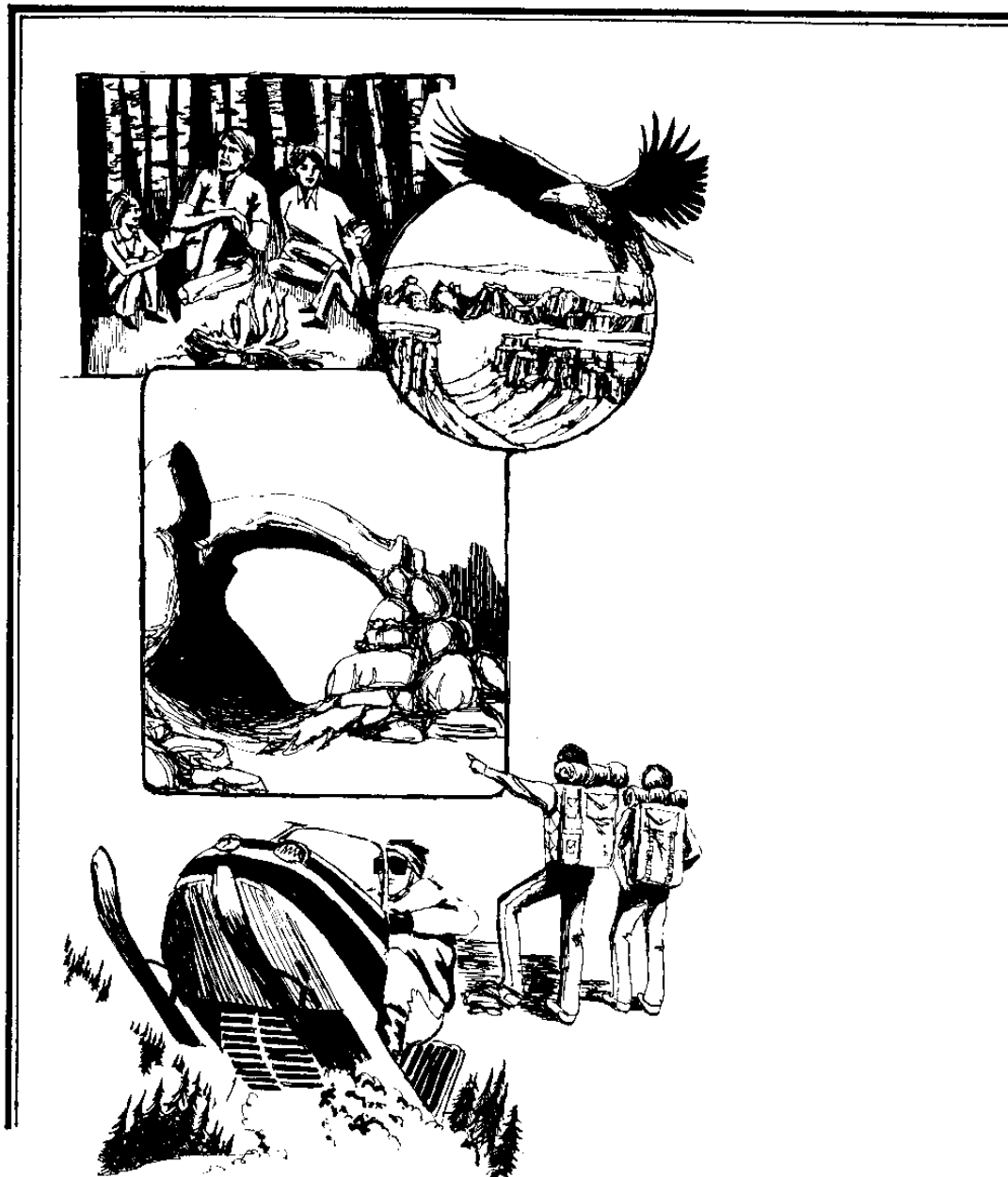
2. Riparian (RPN).
  3. Research, Protection, and Interpretation (RPI), and Municipal Water Supply (MWS).
  4. Administrative Sites and Special Use (SLD).
  5. Semiprimitive Recreation (SPR).
- c. FSM 1922.

TRANSPORTATION  
SYSTEM  
MANAGEMENT  
(L AND 20)

01 Avoid the establishment of service roads for maintenance.



# CHAPTER IV IMPLEMENTATION OF THE FOREST PLAN



# **CHAPTER IV IMPLEMENTATION OF THE FOREST PLAN**

## **Implementation Direction**

### **Consistency with Other Management Instruments**

During implementation of this Forest Plan, the Manti-LaSal National Forest will be guided by existing and future laws, regulations, policies, and guidelines. The Forest Plan is designated to supplement, not replace, direction from these sources except in specific instances.

This Forest Land and Resource Management Plan supersedes all previous management plans. Outstanding and future permits, contracts, cooperative agreements, Allotment Management Plans, and other instruments for use, development, and occupancy will be brought into conformance as soon as legally and reasonably possible.

### **Budget Proposals**

The Forest Plan provides the management direction for developing multi-year implementation programs. The Forest Plan's scheduled practices, shown in the Forest Activity Schedule (Appendix A), are translated into multi-year program budget proposals which identify the needed expenditures. These processes complement the Forest planning process as vehicles for requesting and allocating the funds needed to carry out the planned management direction. The Forest's proposed annual program budget is the basis for the requested funding. Upon approval of a final budget for the Forest, the Annual Program of Work is finalized and carried out. The accomplishment of the Annual Program is the incremental implementation of the management direction of the Forest Plan.

### **Environmental Analysis**

Analysis of environmental consequences of site-specific actions should be done in conformance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations (40 CFR 1500-1508). Future environmental analyses associated with the above processes should be tiered to the Forest Plan and EIS. Information appropriate for project-related decisions rather than land use decisions, will normally be utilized in such environmental analysis.

Projects and activities permitted within the Forest Plan should be subjected to NEPA evaluation as they are planned for implementation (Forest Service Manual FSM 1952). If project scoping shows that: (1) the Management Unit Requirements and Standards and Guidelines can be complied with, and (2) little or no environmental effects are expected beyond those identified and documented in the Forest Plan EIS; the analysis could result in a categorical exclusion. A Decision Notice should be used to document the decision (FSM 1951). If project scoping identifies significant issues or concerns not covered in the Forest Plan, then an Environmental Assessment or an Environmental Impact Statement would be prepared. The project file, with the NEPA evaluation and decision document, should be available for public review, but this will not necessarily be documented in the form of an Environmental Assessment or Environmental Impact Statement.

# Monitoring and Evaluation Program

This monitoring and evaluation is designed to provide feedback to planners and the Forest Supervisor. It will provide Forest Managers with information primarily on Forest Plan implementation and the effects of implementation.

More specifically this program will determine:

- If the Forest is achieving the goals and objectives of the Forest Plan as predicted.
- If the Standards and Guidelines are being applied as specified in the Forest Plan.
- If the effects of implementation are as predicted.
- If the Forest's program and management are resolving the planning issues.
- If the cost of implementation of the Forest Plan and work force needed is as predicted.

The monitoring program that follows (Table IV-1) is comprised of the following components.

1. MIH Code - The numerical identifier of the item to be monitored.
2. Activity, Practice or Effect to be Measured - A specific statement of what will be monitored.
3. Monitoring Technique - A description of the technique and sources of information to be employed. To the extent possible, existing reporting systems and standard methods will be used.
4. Expected Precision-The accuracy of exactness with which data is collected. Precision is qualitatively rated as high, moderate or low.  
  
Expected Reliability - A measure of how accurately the monitoring reflects the situation. A qualitative and class system is used to rate reliability (high, moderate, low).
5. Measurement Frequency - The schedules of samples stated in parts of a year or years. The stated frequencies may vary on a site-specific basis.
6. Reporting Period - The recurring interval between reports summarizing monitoring results for a particular activity or practice. The sampling period should be long enough for specialists to capture significant information. The stated reporting periods may vary on a site-specific basis.
7. Variation Which Would Cause Further Evaluation and/or Change Management Direction - A statement describing the tolerance limits within which actual performance can vary from predicted performance. When these limits are exceeded, further evaluation is triggered.

In addition to the specific monitoring shown on Table IV-1, the Unit, Functional, or Activity review system (FSM 1440) will be used to assure that the integrity of the Forest Plan and Management Units is maintained.



TABLE IV-1

MONITORING AND EVALUATION PROGRAM

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<u>Recreation Resource</u>						
A07	Developed Site Condition	RIM facility condition and routine inspections/analysis.	Data sources and monitoring techniques for all activities are expected to contain sufficient accuracy and confidence from which to make reliable comparisons.	Annually	Annually	Facility condition below RIM condition Class 2.
A07	Vegetative Management	Photo points at selected key sites and/or locations/analysis.	Same	3-5 Years	3-5 Years	Code-A-Site category as specified in individual unit Standards and Guidelines, Chapter III, IMP.
A07	Developed Site Use	<u>Public Sector</u> Recreation Information Management (RIM) Use and benchmark double sampling at indicator sites.	Same	Annually	3 Year	Use is more than $\pm 10$ percent of the Recreation Opportunity Spectrum (ROS) social setting criteria for the ROS Class except as specified in individual unit Standards and Guidelines, Chapter III, IMP.
		<u>Private Sector</u> Permittee occupancy plan/analysis.	Same	Annually	3 Year	Organization site or activity is reported vacant.
A02	Dispersed Campsite Condition	Code-A-Site inspection/analysis.	Same	10% sample triennially of indicator sites.	3 Year	Sites in facility Code-A-Site Category extreme impact will be rehabilitated. Sites that cannot be maintained in facility Code-A-site categories light, moderate, heavy impact will be closed. See individual unit Standards and Guidelines, Chapter III, IMP.
A08	Dispersed Area Use	RIM use by sampling/evaluation methods including road and trail traffic counters.	Same	Annually	3 Year	Use is more than $\pm 10$ percent of the ROS social setting criteria for the ROS Class except as specified in individual unit Standards and Guidelines, Chapter III,

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<b>Recreation Resource (Continued)</b>						
A02	Trail Condition	Trail condition surveys and project trail inspections/analysis.	Same	5% sample annually of Forest Trail mileage.	3 Year	Departure from Regional Acceptable Work Standards.
A01	Vehicle Travel	Area and travel corridor inspections/analysis.	Same	20% sample annually of vehicular travel use areas.	3 Year	Use conflicts with management goals for individual management units; lowering of Visual Quality Objective; unacceptable resource damage.
<b>Cultural Resources</b>						
A03	Project compliance with Forest Direction management requirements on ground disturbing projects.	Cultural resource professional field evaluation of randomly selected projects.	Data sources and monitoring techniques for all activities are expected to contain sufficient accuracy and confidence from which to make reliable comparisons.	Annually	Annual	Cultural resource properties being damaged/destroyed directly/indirectly by project activities.
A03	Protection of significant cultural resource properties.	Field condition evaluation of significant cultural resource properties; use of base year photography and records.		Biannual during 3rd and 4th quarters of year.	Biannual during 3rd and 4th quarters of year.	Cultural resource properties being damaged/destroyed by unauthorized and/or controllable natural agents.

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Visual Resource

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A02	Compliance with Visual Quality Objectives	One sensitivity Level I travel route, use area, or water body inspection and evaluation.	Data sources and monitoring techniques for all activities are expected to contain sufficient accuracy and confidence from which to make reliable comparisons.	Annual	Annual	Corridor or area contains more than 5 percent of the view area which does not conform to the Visual Quality Objective
		Evaluation of a minimum of 10 percent of the previous year's land, water, and/or vegetation disturbing projects.		Annual	2 year	Failure to meet intended Visual Quality Objective of the management unit

IV-4

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Wilderness Resource

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B03	Wilderness Campsite Condition	Code-A-Site inspection/analysis.	Data sources and monitoring techniques for all activities are expected to contain sufficient accuracy and confidence from which to make reliable comparisons.	Annual	3 Year	When sites cannot be maintained in Code-A-Site category moderate impact.
B03	Amount and Distribution of Use.	Analysis of trail registration, trail counts and trailhead counts with periodic intensive sample verification.		Annual	3 Year	Use exceeds more than $\pm 10$ percent of the ROS evidence of human criteria for the Primitive ROS Class as described in the Standards and Guidelines, Chapter III, LMP.

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Wildlife and Fish

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C01	MIS Population Trends	Interagency field reviews and/or obtain State record or survey as follows:				
	a. Mule Deer and Elk	Aerial reconnaissance on winter ranges.	M	Annual	5 Year	Twenty percent
		Browse and pellet transects.	M	Annual	5 Year	Twenty percent change in winter range-land carrying capacity.
		Trend studies.	H	5 Year	5 Year	Ten percent.
		Herd composition.	M	Annual	5 Year	Ten percent.

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<b>Wildlife and Fish (Continued)</b>						
	b. Macroinvertebrates (For baseline stations or as needed for select project activities.)	R-4 GAWS Analysis	H			
		(BCI) Biotic Condition Index.	M/H	5 Year	5 Year	Twenty percent.
		(BCI) Habitat Condition Index.	H	5 Year	5 Year	Twenty percent.
	c. Golden Eagle	Active nest site survey.	M	5 Year	5 Year	Twenty percent.
	d. Blue Grouse	Harvest record.	M	Annual	5 Year	Twenty percent.
		Spring territory survey.	M	Annual	5 Year	Twenty-five percent.
		Summer brood counts.	H	Annual	5 Year	Twenty-five percent.
	e. Abert Squirrel	Survey percent ponderosa pine in mature class.	H	10 Year	10 Year	Ten percent.
C01	Habitat Improvement Accomplishment	Attainment and wildlife report.		Annual	Annual	Twenty percent.

Range						
D07	Allotment Carrying Capacity	Grazing impact and use studies.	H/M	According to approved AMP normally 3 years of data per allotment.	As specified in AMP at the end of evaluation period.	Obligation $\pm$ 10 percent of carrying capacity.
D07	Long-term Range Trend	Long-term permanently located range trend studies for collection of plant composition, ground cover, and soil stability.	H/M	According to approved AMP.	When Completed	If significant differences in trend occurs.

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MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
Range (Continued)						
D02	Range Condition	Range analysis.	M/M	Normally every 20 years from previous	When Completed	When basic data is inadequate for use in making land management planning or range management decisions.
D02	Range Allotment Inspection, Administration and Use Reporting	Allotment field inspection.	M/M	Annual field inspection on 50 percent of the allotments.	Annually	When inspections show a need for closer checks on maintenance and repair of range improvements when permittees are not following plan of use or allotment management plan.
D03	Range Forage Treatment Practices	Site analysis transects.	M/M	During 2nd and 5th year growing season after project.	After 2nd and 5th year studies.	In major change occurs such as fire, flood, etc., on field inspections show project did not accomplish objective

Timber						
E03 436	Adequate restocking of lands within 5 years of final harvest.	Silvicultural exam.	H/H	5 Year	Annual	5th Year Stocking Standards FSH 2409.268 --5.31-4.
E01 411	Maximum size of opening created by clearcutting.	Review of timber sale map and document.	H/H	Project Basis	10 Year	Clearcut sizes either restrict timber practices or adversely affect visuals or other resource values.
E02	Harvest practices in retention, partial retention and riparian areas.	Review of timber sale prescriptions and post sale surveys.	M/M	As needed on project basis.	10 Year	Violation of Visual Quality Objectives or riparian area damage.
E06	Timber Sale Action Program.	Review 5-year Action Plan as ascertain that timber sales will be offered on scheduled and volume will not exceed 10 year sale quantity.	H/M	Annual	Annual	Timber sales are not progressing as scheduled or annual volume is not being offered or sold if offered.
IV-7						

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
Timber (Continued)						
E03 E04	Reforestation and timber stands improvement accomplishment.	Review of T.S.I. and reforestation accomplishment reports.	H\H	Annual	Annual	Failure to meet targets or accomplish KV needs in timber sale plans.
E41	Fuelwood consumption and supply.	Determine supply by fuels inventories and acres available; demand by permits issued.	H\M	On project basis.	Annual	Supply is not meeting or projected supply not to meet demand within 10 years.
E07	Verify classification of suitable and unsuitable lands.	Examine lands during silvicultural exams, timber sale and inventories to ground truth capabilities.	M\M	On project basis as prior to Forest Plan update.	10 Year or Forest Plan update.	If over 10 percent of suitable land was found to be incorrectly identified.

Soils

F01 250	Soil Survey Activities	Progress reviews, Annual Accomplishment Report, MBO process.	H\H	Annual	Annual	Twenty percent below scheduled completion dates or annual targets.
F09 291	Maintaining Soil Productivity Forest-wide	From Activity Reports and Annual Reviews evaluate management activities and their effects on soil productivity, both beneficial and adverse. Note all lands taken out of production.	M\M	Annual	Annual	Net decline in total soil productivity maintained as summarized from evaluations in Project Impact below.
	Project impact evaluation for any soil disturbing activities that have potential of altering soil productivity.	Project monitoring plans. Techniques, if not specified in project monitoring plans, could include measurements of ground cover, soil temperatures,	M\M	Per project monitoring plans or a 10 percent sample of activities.	Annual or per project plan.	Erosion in excess of soil tolerance limits. Other effects that would reduce soil productivity by 10 percent or more. Effects which differ significantly from project objectives.
				IV-8		

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<b>Soils (Continued)</b>						
		nutrient status, degree of soil displacement, and soil structural changes as appropriate. Document field measurements and take photographs.				
291	Sequential photo points of vehicular travel damage.	Standard methods.	M\M	Annual	As Needed	Upon evidence of excessive damage, reevaluate closure and travel maps.
<b>Water</b>						
F09	292					



292	Compliance with State Water Quality Standards	Other agencies, private sector, and select Forest Service stations or sites as per approved Water Quality Monitoring Plan.				
F03 264, 265	Baseline		M/M	Selected Streams	3-5 Years	If results are in violation of State Water Quality Standards.
	A sampling of Project Activities		M/M	Before and after project.	At completion of project.	Reevaluate activity if degradation of water quality occurs.
	Changes in riparian areas due to land management.	Sequential photo points and site analysis.	H/M	3-5 Years	3-5 Years	Forest Riparian Management Standards.
	Watershed Improvement Accomplishment	Annual attainment Reports.	H	Annual	Annual	Twenty-five percent planned acreage.

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<b>Minerals</b>						
G01 G02	Number of reports prepared	Records	H\H	Annual	Three times a year.	When the number of projects varies by over 50 percent from what is normally expected for the year.
G01	Landslide Movement	On-side Inspections	H\H	Variable	Variable	When it has been determined that a slide may cause surface structure damage or be a safety hazard to people.
G03 G04 G05	Number of plans/leases completed or administered.	Records	H\H	Annual	Three times a year.	When the number of projects varies by over 33 percent from what is normally expected for the year.
G06 G05 G03 G04	Compliance with terms of completed plans.	Environmental Assessments, site inspections.	H\H	Variable according to the project.	Annual	When non-compliance is found for any particular project.
G01	Subsidence and Hydro-logic Monitoring	Aerial photography/surveying/computer analysis.	H\H	Annual	Annual	Ten years after mining operation closes down, significant changes in surface resources occur.
<b>Protection - Air Quality</b>						
290	Whether Utah and Colorado State Air Quality Standards and Guidelines are met.	Compliance with weather forecast, burning index and visual observation of smoke dispersal.	M/M	Ongoing	Any Violation	Adverse public reaction or settling of smoke into inhabited areas or any violation of State standards

Protection - Fire

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P08	Number of wildfire and acres burned.	Frequency by size, distribution, intensity levels and acres burned.	H/H	Annual	5 Year	Twenty percent increase in cumulative 5 year average in any of the factors.
P02	Fire Prevention Program	Number and size of person-caused fires.	H/H	Annual	5 Year	Twenty percent increase in cumulative 5 year average.

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<b>Protection - Fire (Continued)</b>						
P11	Fuel Treatment Program	On-site inspection, accomplishment reports, management attainment reports.	M/M	25 percent of sites.	Annual	Failure to treat at least 90 percent of activity fuels created during the year.
P12	Vegetation treated by burning.	On-site inspection, visual estimates of effects and objective accomplishments.	M/M	At completion of each project.	5 Year	±25 percent of resource objectives.
<b>Protection - Forest Pest Management</b>						
P34	Depredations by insects and disease.	Surveys by Forest Pest Management Specialists.	M/M	Annual	Annual	Increased or high pest damage.
		Plantation survival counts, port harvest timber sale reviews, silvicultural exams and range inspections.	M/M	Continuing	Annual	Infection/Infestation approaches epidemic levels.
P35	Effectiveness of dwarf mistletoe suppression projects to protect regeneration.	Field Review	H/H	Follow-up projects.	5 Year	Infection of regeneration in precommercial thinned areas.
<b>Lands</b>						
J15	Land purchase and acquisition	Land Adjustment Plan; Management Attainment Report	Data sources and monitoring techniques for all activities are expected to contain sufficient accuracy and confidence from	Annually Reviewed	Annual	±50 percent of planning period target.
J13	Land Exchanges	Land Adjustment Plan Management Report		Annually Reviewed	Annual	±50 percent of planning period target

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<b>Lands (continued)</b>						
J18	Rights-of-Way Acquisition	Land Adjustment Plan; Management Attainment	which to make reliable comparisons.	Annually Reviewed	Annual	±50 percent of planning period target.
J10	Occupancy Trespass	On-site inspection and landline location; Management Attainment Report.	Same	Continuously	Annual	±25 percent of planning period target.
J06	Landline Location	Survey; Management Attainment Reports	Same	Annually Reviewed	Annual	±10 percent of planning period target.
J01	Special Use Permits, applications, amendments, transfers, and administration.	Land Use Reports	Same	5 percent of permits annually.	Annual	± 25 percent of Regional Acceptable Work Standard and Forest Direction
J22	Effects of management practices on adjacent or intermingled non-National Forest on Forest Plan goals and objectives.	Annual Interagency meetings, meetings with State and County governments, grazing associations.	Same	Continuing	Annual	Identification of significant problem in Forest Plan implementation as a result of non-Forest land management activity.
<b>Facilities</b>						
L2-18, 29	Road and bridge construction and reconstruction.	Accomplishment report and on-site inspection using approved project plans.	H	20 Percent Annually	5 Year	A 20 percent deviation from projected quantities.
L19	Road Maintenance	Road logs and condition surveys.	M	Continuous	5 Year	A 20 percent downward trend in the condition of road system.
L19	Road Closures	Review closures orders.	H	3 Year	3 Year	Closure order outdated.

TABLE IV-1 (Continued)

MIH Reference Code	Activity, Practice and/or Effect to be Measured	Data Source and/or Monitoring Technique	Expected Precision/Reliability	Measurement Frequency	Reporting Period	Variation Which Would Cause Further Evaluation and/or Change in Management Direction
<u>Facilities (Continued)</u>						
	Road Obliterations	TIS inventory	M	Continuous	5 Year	Deviation greater than 20 percent annually or 10 percent on a 5 year average.
L24 L25	Buildings	Inspection Reports	M	Annual	5 Year	Administrative failure to reduce the number of buildings previously undetected structural deficiency or health or safety hazard.
L28	Dam Administration	Inspections	H	Annual	Annual	Administrative failure to followup on unsafe dams

# Revision and Amendment

The need to amend a forest plan is derived from several sources, including the following:

1. Recommendations of the Interdisciplinary Team based on findings that emerge from monitoring and evaluating implementation of the forest plan (36 CFR 219.12(k); FSM 1922.6).
2. Decisions by the Forest Supervisor that existing or proposed permits, contracts, cooperative agreements, and other instruments authorizing occupancy and use should be considered for approval but not consistent with the forest plan (36 CFR 219.10(e)).
3. Changes in proposed implementation schedules necessary to reflect differences between funding levels contemplated in the plan and funds actually appropriated.
4. Changes necessitated by resolution of administrative appeals.
5. Changes to correct planning errors found during plan implementation.
6. Changes necessitated by changed physical, social, or economic conditions.

Based upon advice and recommendation of the Interdisciplinary Team, the Forest Supervisor shall: determine whether proposed changes in a forest plan are significant or nonsignificant; make the determination in accordance with the requirements of 16 U.S.C. 1604(f), 36 CFR 219.10(e) and (f), 36 CFR 219.12(k), and sections 1922.33a and 1922.33b that follow; document the determination of significance or nonsignificance in a decision document; and provide appropriate public notification prior to implementing the changes. Written findings of Forest Officers regarding the consistency of projects or activities with the forest plan and the determination of the significance of an amendment are an integral part of the decision-making process; and as such appealable under 36 CFR 211.18, not as preliminary planning decisions, but as an important element of the final decision.

Nonsignificant amendments to a forest plan can result from damage such as:

1. Actions that do not significantly alter the multiple-use goals and objective for long-term land and resource management.
2. Adjustments of Management Unit boundaries or Management Requirements resulting from further site-specific analysis when the adjustments do not cause significant change in the long-term multiple use goals and objectives for land and resource management.
3. Occasions when a decision is made to proceed with consideration of a project or activity that is not consistent with the plans and the change is minor.
4. Minor changes in Standard and Guidelines.
5. Short-term fluctuations in an implementation schedule or changes in planned annual output(s).

The following examples are indicative of changes that may cause a significant amendment to a forest land and resource management plan:

1. Changes that have an important effect on the entire plan or affect land and resources throughout a large portion of the planning area such as large, forest-wide increases or decreases in source demands.
2. Changes that would significantly alter the long-term relationship between levels of multiple use goods and services originally projected (36 CFR 219.10(e)). This category would include changes in implementation schedules created by sustained differences between proposed budgets and actual appropriations.

When a significant change needs to be made to the forest land and resource management plan, the Forest Supervisor must prepare an amendment.

Documentation of a significant amendment and the analysis of it should focus on the issue(s) that have triggered the need for the change. In developing and obtaining approval of a significant amendment to the forest plan, follow the same procedures as are required for developing and approving the forest plan (36 CFR 219.10(f)).

The National Forest Management Act requires revision of forest plans at least every 15 years; however, a plan may be revised sooner if physical conditions or demands on the land and resources have changed sufficiently to affect overall goals or uses for the entire forest. The Regional Forester will monitor amendments periodically, and at least annually. If at any time plan revision appears to be appropriate or needed, the Forest Supervisor will be required to prepare the needed documentation. This Forest Plan will be revised no later than October 1, 2000.

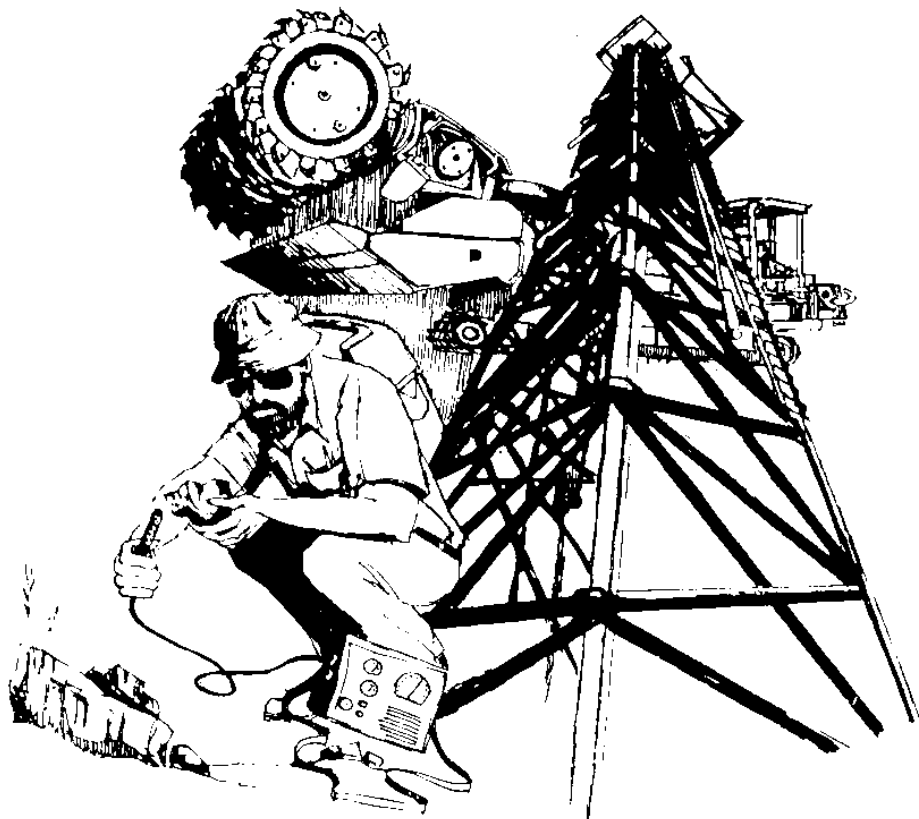
Forest plan revision will follow procedures set forth in 36 CFR 219.12 after obtaining approval of the Chief to schedule a revision.





# CHAPTER V

## INDEX



# CHAPTER V

## INDEX

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# APPENDIX A

## ACTIVITY SCHEDULES

The Activity Schedules are listed by Resource Elements and Support Service Elements. The index to Resource Elements is as follows. The index to the Support Service Elements follows on page A-42.

### Resource Elements

Activity Schedules for Resource Elements are listed as follows:

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Cultural Resource Activity Schedule .....	A-3
Dark Canyon Wilderness Management Activity Schedule .....	A-5
Wildlife and Fish Habitat Improvement Activity Schedule .....	A-6
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Minerals and Geology Activity Schedule .....	A-41

## RECREATION ACTIVITY SCHEDULE

The Ten-Year Activity Schedule for Recreation Construction and Reconstruction schedules activity development for large projects and small projects at recreation sites, and trail and trailhead projects.

TABLE A-1

### RECREATION CONSTRUCTION/RECONSTRUCTION ACTIVITY SCHEDULE

Project Name or Description	Ranger District	MIH Code	Unit of Measure	Output Units	Year	Management Area
<b>DEVELOPED RECREATION SITES- LARGE PROJECT PROGRAM</b>						
Old Folks Flat-Phase II	Price	A06	PA0T	310	1986	DRS
Ferron Reservoir Complex	Ferron	A06	PA0T	280	1991	DRS
Dalton Springs	Monticello	A06	PA0T	65	1995	DRS
<b>DEVELOPED RECREATION SITES- SMALL PROJECT PROGRAM</b>						
Joes Valley Reservoir-Phase II	Ferron	A06	PA0T	240	1987	DRS
Twelve Mile Flat	Sanpete	A06	PA0T	140	1988	
Devil's Canyon	Monticello	A06	PA0T	250	1990	DRS
Buckboard	Monticello	A06	PA0T	160	1992	DRS
Spring City	Sanpete	A06	PA0T	50	1995	
<b>TRAILHEAD CONSTRUCTION</b>						
Dark Canyon	Monticello	L12/A05	Trailhead	1	1989	TBR
Fish Creek NRT	Price	L12/A06	Trailhead	1	1993	SPR
Transmountain	Moab	L12/L05	Trailhead	1	1995	RNG
<b>TRAIL RECONSTRUCTION</b>						
Fish Creek NRT-Bridges	Price	L22	Bridge	2	1987	SPR
Mill Canyon Loop-Bridge	Price	L22	Bridge	1	1989	UDM
Clark's Lake Loop	Moab	L22	Miles	1	1991	RNG
Silver/Gooseberry	Price	L22	Miles	3	1993	SPR
Woodenshoe/Dark Canyon	Monticello	L22	Miles	7	1995	DCW



## CULTURAL RESOURCE ACTIVITY SCHEDULE

The following table (A-2) gives projected minimum outputs for the next ten years in cultural resource management in ten categories of major measurable cultural resource actions. These categories reflect the guidelines of the National Forest Management Act. Five of the categories entail written plans and the other five are more concerned with "action" elements of management. An explanation of the categories is shown below:

OVERVIEW (Measure: Documents)	Initial comprehensive overview, five-year review, or ten-year update.
PROTECTION PLANS (Measure: Documents)	Site-specific or area-specific plans about protection measures such as patrolling or fencing, and on-going problems such as erosion or vandalism.
MAINTENANCE PLANS (Measure: Documents)	Site-specific or area-specific plans about salvage operations needed, stabilization work to be done, etc.
INTERPRETATION PLANS (Measure: Documents)	Site-specific or area-specific plans about location development of places suitable for public education (VIS).
ANALYSIS REPORTS (Measure: Documents)	Detailed analysis reports about settlement patterns, artifact distribution, and so forth, that can be used for future management decisions and/or research designs.
SURVEY (Measure: Documents)	New survey, or extensive recheck on old areas needing updating.
SITE EVALUATION (Measure: Sites)	New recording, testing for significance, or extensive recheck of previously recorded sites needing updating.
NOMINATION (Measure: Sites)	Completed draft National Register of Historic Places nomination forms sent to the Regional Archeologist.
LEGAL PROTECTION (Measure: Days)	Blocks of time to make the minimum days spent in patrol, evidence gathering, case preparation, testifying, salvage excavation, etc.
MAINTENANCE (Measure: Days)	Blocks of time to make the minimum days spent in actual salvage stabilization, erosion control, photo trend plots, visitor interpretive development, etc.

Table A-2 is generalized, and not location-specific to allow for protection of the resource and later detailed description in the separate cultural resource overview.

Plans for the overview, protection, maintenance, and interpretation are to be staggered during subsequent years, so as not to overburden writing in any one year. Analysis reports can be relatively brief.

A-?

## DARK CANYON WILDERNESS MANAGEMENT ACTIVITY SCHEDULE

The Dark Canyon Wilderness Management Activity Schedule lists activities needed to provide information to develop the wilderness management program and to perpetuate, manage, or control existing uses. The schedule shows the period when work should be accomplished. The trail program for Dark Canyon Wilderness includes construction or reconstruction of two miles per year over the 10-year planning period as well as routine maintenance on all trails.

TABLE A-3

DARK CANYON WILDERNESS MANAGEMENT ACTIVITY SCHEDULE

Activity	Fiscal Year	
	Starting	Ending
Complete Legal Description	1986	1987
Boundary Signing and Posting	1986	1994
Peavine Corridor Management Standards	1986	1987
Special-Use Permit Analyses and Use Standards	1993	1994
Range and Recreation Livestock Vegetation Condition and Boundary Survey	1987	1993
Archeological Site Surveys Complete	1987	1988
Social Contracts Survey	1986	1991
Fire Planning and Occurrence	1986	1987
Water Sources Survey	1987	1989
Natural and Scenic Areas Survey	1989	1991
Code-A-Site Inventory	1989	1991
Minerals and Energy Inventory Update	1986	1988
Inventory and Evaluation of Man-Made Features	1987	1992
Inventory and Mapping of Physiology	1987	1993
Air Quality Inventory	1988	1990
Brochure	1994	1995
Trailhead Identification	1986	1990
Trail Identification and Maintenance Survey	1987	1989
Trail Signing	1986	1989

## WILDLIFE AND FISH HABITAT IMPROVEMENT ACTIVITY SCHEDULE

An activity schedule has been developed to improve wildlife and fish habitat on the Manti-Lasal National Forest, Table A-4, and the Flatwater Fisheries Improvement Activity Schedule, Table A-5. The Utah State Comprehensive Wildlife Plan helps set priorities for the Plan. Through the State Comprehensive Plan and cooperative Interagency Biological Unit plans, habitat management is a joint effort between the Forest and UDWR. This activity schedule will continue the cooperation effort in maintenance and/or improvement of wildlife and fish resources.

The scheduled treatments include but are not limited to:

Mahogany Treatment - Most curleaf mahogany stands are mature or decedent and out of reach of big-game animals, pruning in the spring can cause resprouting, regenerating the plant, and providing forage.

Pinyon-Juniper Treatment - Many old pinyon-juniper chainings were not properly designed for big-game use. These chainings are being invaded by young trees and will lose their value. Treatment includes redesigning the area chained to provide for big-game use and control of young trees by various methods.

Aspen Perpetuation Treatment - Many aspen stands are succeeding to conifer trees, some stands have completely converted to conifer. As they convert these stands lose their foraging value. Others are decedent and in need of regeneration. Treatment methods include methods of controlling the conifer and stimulating sprouting of the aspen for regeneration.

Oak Treatment - Some oak stands are located on key big-game winter ranges some of these stands are decedent. Treatment would open these stands up and stimulate forage production.

Serviceberry Treatment - Many serviceberry stands are decedent and producing very little available forage for big-game animals. Treatment methods would regenerate the stand and create available forage.

Water Development and/or Guzzlers - Some areas of unused range are capable of producing more forage for big game. Springs or guzzler construction would result in providing water, thus allowing additional use by big game.

Stream Improvement - Many reaches of streams do not provide optimum habitat for fish. Stream improvement would improve the habitat in these reaches by providing needed standard structures.

Bank Stabilization and Riparian (Willow Planting) - Many reaches of stream are not providing optimum fish habitat due to unstable streambanks and lack of shade. These treatments would provide bank stability and shade.

Oxygenation - Provide oxygen during the winter months to enable survival of fish.

Conservation Pool - Obtaining a minimum pool depth to enable survival of fish during winter months.

Reconstruction - Rebuilding a breached or older dam to bring the reservoir to a safe standard.

Many additional treatments need to be accomplished for the many species of wildlife on the Forest. The following activity schedule is ambitious, bust is not able to extend beyond the Management Indicator and high interest species, due to the level of funding.

TABLE A-4

## WILDLIFE AND FISH HABITAT IMPROVEMENT ACTIVITY SCHEDULE

Ranger District/ Project Name or Description	MIH Code	Unit of Measure	Output Units	Year	Management Area
SANPETE RANGER DISTRICT					
Aspen Treatment	C02-081	Acre	500	1986	RPN
Stream Improvement	C03-082	Structure	10	1986	RNG
Aspen Treatment	C02-081	Acre	500	1987	RPN
Oak Creek Stream Improvement	C03-082	Structure	3	1987	RPN
North Fork Manti Stream Improvement	C03-082	Structure	3	1988	RPN
Aspen Treatment	C02-081	Acre	400	1988	RNG
Aspen Treatment	C02-081	Acre	250	1989	RNG
Aspen Treatment	C02-081	Acre	200	1989	RNG
Oak Harvest Treatment	C02-081	Acre	400	1990	GWR
Stream Improvement	C02-082	Structure	7	1990	RPN
Stream Improvement	C03-082	Structure	3	1991	RPN
Pinyon-Juniper Treatment	C02-081	Acre	100	1991	GWR
Oak Treatment	C02-081	Acre	150	1992	GWR
Aspen Treatment	C02-081	Acre	200	1992	RNG
Pinyon-Juniper	C02-081	Acre	100	1993	GWR
Aspen Treatment	C02-081	Acre	200	1993	RNG
Aspen Treatment	C02-081	Acre	500	1994	RNG
Aspen Treatment	C02-081	Acre	150	1994	RNG
Stream Improvement	C03-082	Structure	25	1995	RPN
FERRON RANGER DISTRICT					
Pinyon-Juniper Control	C02-081	Acre	150	1986	KWR
Serviceberry Treatment	C02-081	Acre	100	1986	KWR
Serviceberry Treatment	C02-081	Acre	180	1987	KWR
Aspen Treatment	C02-081	Acre	200	1987	RNG
Aspen Treatment	C02-081	Acre	200	1987	TBR
Mixed Browse Treatment	C02-081	Acre	100	1988	KWR
Serviceberry Treatment	C02-081	Acre	100	1988	GWR
Aspen Treatment	C02-081	Acre	100	1988	RNG
Curleaf Mahogany Treatment	C02-081	Acre	80	1989	KWR
Plow and Seed	C02-081	Acre	100	1989	KWR
Aspen Treatment	C02-081	Acre	400	1989	RNG/TBR
Aspen Treatment	C02-081	Acre	300	1989	RNG
Sagebrush Treatment	C02-081	Acre	40	1989	KWR
Water Development (Bird Guzzler)	C03-082	Structure	1	1990	GWR
Pinyon-Juniper Treatment	C02-081	Acre	200	1990	GWR
Aspen Treatment	C02-081	Acre	391	1990	SPR
Aspen Treatment	C02-081	Acre	200	1990	RNG
Pinyon-Juniper Treatment	C02-081	Acre	600	1991	GWR
Water Development	C03-081	Structure	1	1991	GWR
Aspen Treatment	C02-081	Acre	400	1991	RNG

TABLE A-4 (Continued)

## WILDLIFE AND FISH HABITAT IMPROVEMENT ACTIVITY SCHEDULE

Ranger District/ Project Name or Description	MIH Code	Unit of Measure	Output Units	Year	Management Area
FERRON RANGER DISTRICT (Continued)					
Pinyon-Juniper Treatment	C02-081	Acre	150	1992	GWR
Serviceberry Treatment	C02-081	Acre	15	1992	GWR
Sagebrush Treatment	C02-081	Acre	20	1992	KWR
Curleaf Mahogany Treatment	C02-081	Acre	50	1992	KWR
Aspen Treatment	C02-081	Acre	200	1992	GWR
Pinyon-Juniper Control	C02-081	Acre	200	1993	GWR
Aspen Treatment	C02-081	Acre	200	1993	RNG
Pinyon-Juniper Control and Seed	C02-081	Acre	150	1994	KWR
Water Development	C03-081	Structure	3	1994	GWR
Aspen Treatment	C02-081	Acre	300	1994	RNG
Plow and Seed	C02-081	Acre	150	1995	KWR
Water Development (Bird)	C03-081	Structure	1	1995	GWR
Aspen Treatment	C02-081	Acre	200	1995	RNG
Fish Structures	C02-082	Structure	4	1986	RPN
Fish Structures	C02-082	Structure	4	1987	RPN
Fish Structures	C02-082	Structure	4	1988	RPN
Fish Structures	C02-082	Structure	4	1989	RPN
Fish Structures	C02-082	Structure	4	1990	RPN
Fish Structures	C02-082	Structure	4	1991	RPN
Fish Structures	C02-082	Structure	4	1992	RPN
Fish Structures	C02-082	Structure	4	1993	RPN
Fish Structures	C02-082	Structure	4	1994	RPN
Fish Structures	C02-082	Structure	4	1995	RPN
PRICE RANGER DISTRICT					
Water Development (Guzzler)	C03-081	Structure	2	1986	RNG
Fish Bank Stabilization (Willow Planting)	C02-082	Acre	5	1986	SPR
Serviceberry Treatment	C02-081	Acre	100	1986	RNG
Curleaf Mahogany Treatment	C02-081	Acre	60	1987	GWR
Aspen Treatment	C02-081	Acre	180	1987	TBR
Stream Improvement	C02-082	Structure	5	1987	RNG
Aspen Treatment	C02-081	Acre	200	1988	RNG
Water Development (Guzzler)	C03-081	Structure	1	1988	RNG
Curleaf Mahogany Treatment	C02-081	Acre	60	1988	GWR
Pinyon-Juniper Control	C02-081	Acre	30	1988	GWR
Water Development (Guzzler)	C03-081	Structure	2	1989	GWR
Pinyon-Juniper Control	C02-081	Acre	100	1989	GWR
Aspen Treatment	C02-081	Acre	200	1989	RNG
Oak and Pinyon-Juniper	C02-081	Acre	200	1990	GWR
Aspen Treatment	C02-081	Acre	100	1990	RNG

TABLE A-4 (Continued)

## WILDLIFE AND FISH HABITAT IMPROVEMENT ACTIVITY SCHEDULE

Ranger District/ Project Name or Description	MIH Code	Unit of Measure	Output Units	Year	Management Area
PRICE RANGER DISTRICT (Continued)					
Willow Planting	C02-082	Acre	15	1991	RPN
Stream Improvement	C03-082	Structure	15	1991	RPN
Bank Stabilization	C02-082	Acre	7	1991	RPN
Aspen Treatment	C02-081	Acre	200	1991	RNG
Aspen Treatment	C02-081	Acre	250	1992	RNG
Willow Planting	C02-082	Acre	10	1992	RPN
Bank Stabilization	C02-082	Acre	7	1993	RPN
Stream Improvement	C03-082	Structure	10	1993	RPN
Willow Planting	C02-082	Acre	6	1993	RPN
Aspen Treatment	C02-081	Acre	200	1993	RNG
Stream Improvement	C03-082	Structure	5	1994	RPN
Willow Planting	C02-082	Acre	20	1994	RPN
Aspen Treatment	C02-081	Acre	100	1994	RNG
Stream Improvement	C03-082	Structure	5	1995	RPN
Willow Planting	C02-082	Acre	5	1995	RPN
Bank Stabilization	C02-082	Mile	4	1995	RPN
Aspen Treatment	C02-081	Acre	175	1995	RNG
MOAB RANGER DISTRICT					
Pinyon-Juniper Control	C02-081	Acre	250	1986	RNG
Water Development (Guzzler)	C03-081	Structure	1	1986	RNG
Water Development (Guzzler)	C03-081	Structure	1	1987	RNG
Fence Riparian Area	C03-082	Mile	1/4	1987	RNG
Pinyon-Juniper Control	C02-081	Acre	200	1988	RNG
Aspen Treatment	C02-081	Acre	200	1988	RNG
Oakbrush Treatment	C02-081	Acre	200	1989	RNG
Stream Improvement	C03-082	Structure	10	1989	RPN
Aspen Treatment	C02-081	Acre	200	1990	RNG
Water Development (Guzzler)	C03-081	Structure	1	1990	RNG
Fence Riparian Area	C03-082	Mile	1/4	1991	RPN
Pinyon-Juniper Control	C02-081	Acre	200	1992	GWR
Stream Habitat Improvement	C02-082	Structure	10	1992	RPN
Aspen Treatment	C02-081	Acre	200	1993	RNG
Oakbrush Treatment	C02-081	Acre	200	1994	RNG
Water Development (Guzzler)	C03-081	Structure	1	1994	RNG
Water Development (Slickrock Guzzler)	C03-081	Structure	2	1995	RNG

TABLE A-4 (Continued)

## WILDLIFE AND FISH HABITAT IMPROVEMENT ACTIVITY SCHEDULE

Ranger District/ Project Name or Description	MIH Code	Unit of Measure	Output Units	Year	Management Area
MONTICELLO RANGER DISTRICT					
Aspen Treatment (Big Flat)	C02-081	Acre	200	1986	RNG
Pinyon-Juniper Control (25% of Project)	C02-081	Acre	100	1986	RNG
Pinyon-Juniper Treatment (Dry Wash)	C02-081	Acre	190	1987	RNG
Riparian Rehabilitation	C02-082	Mile	1.5	1987	RPN
Pinyon-Juniper Control (25% of Project)	C02-081	Acre	145	1988	RNG
Water Development (Dry Mesa)	C03-081	Structure	1	1988	RNG
Aspen Treatment (Deadman)	C02-081	Acre	250	1989	RNG
Water Development (Davis Pocket)	C03-081	Structure	1	1989	RNG
Aspen Treatment (Harts Draw)	C02-081	Acre	250	1990	RNG
Water Development (Horse Flat)	C03-081	Structure	1	1990	RNG
Aspen Treatment (Cottonwood)	C02-081	Acre	200	1991	RNG
Water Development (Cottonwood)	C03-081	Structure	1	1991	RNG
Pinyon-Juniper Control (25% of Project)	C02-081	Acre	375	1991	RNG
Aspen Treatment (Blue Creek)	C02-081	Acre	200	1992	RNG
Water Development (Dry Mesa)	C03-081	Structure	1	1992	RNG
Water Development (Davis Pocket)	C03-081	Structure	1	1993	RNG
Pinyon-Juniper Control (25% of Project)	C02-081	Acre	360	1993	RNG
Aspen Treatment (Blue Creek)	C02-081	Acre	300	1994	RNG
Pinyon-Juniper Control (25% of Project)	C02-081	Acre	100	1994	RNG
Aspen Treatment (Harts Draw)	C02-081	Acre	250	1995	RNG
Fence Riparian (Indian Creek)	C03-082	Mile	215	1995	RNG
Restore Riparian Vegetation (Indian)	C02-081	Mile	.5	1995	RNG
Pinyon-Juniper Control (25% of Project)	C02-081	Acre	350	1995	RNG



TABLE A-5

## FLATWATER FISHERIES IMPROVEMENT ACTIVITY SCHEDULE

Ownership FS or P*	Project Name or Description	Ranger District	MIH Code	Unit of Measure	Output Units	Year	Management Area
FS	Gooseberry Oxygenation	Price	C03	Acre	57	1986	RPN
FS	Potter's Pond Oxygenation	Ferron	C03	Acre	8	1986	RPN
P	Huntington Reservoir Conservation Pool	Price	C03	Acre	138	1987	RPN
P	Julius Flat Reservoir Conservation Pool	Ferron	C03	Acre	32	1988	RPN
P	Loggers Reservoir	Sanpete C03	Acre	20	1988	RPN	
P	Emery (Larson) Conservation Pool	Ferron	C03	Acre	13	1989	RPN
P	Deep Lake Reconstruction	Sanpete	C03	Acre	10	1989	RPN
P	Rigley Reservoir Conservation Pool	Ferron	C03	Acre	8	1989	RPN
FS	Blue Lake Reconstruction	Moab	C03	Acre	4	1989	RPN
P	Warner Construction	Moab	C03	Acre	5	1990	RPN
FS	Clark's Lake Reconstruction	Moab	C03	Acre	2	1990	RPN
P	Racetrack Reconstruction	Monticello	C03	Acre	2	1991	RPN
P	Lower WPA Reconstruction	Sanpete	C03	Acre	3.5	1991	RPN
P	Marys Lake Conservation Pool		Ferron	C03	Acre	5	1992
RPN							
FS	Medicine Lake Reconstruction	Moab	C03	Acre	2	1992	RPN
FS	Beaver Dam Reservoir Reconstruction	Price	C03	Acre	2	1993	RPN
FS	Academy Mill Reconstruction Diversion	Ferron	C03	Acre	5	1994	RPN
P	Marys Lake Oxygenation	Ferron	C03	Acre	4	1994	RPN

\* FS = Forest Service

P = Permittee

RANGE IMPROVEMENT ACTIVITY SCHEDULE

Table A-6 lists the planned range improvement projects by allotments and fiscal year. Project scheduling could vary some due to available funding, permittee coordination and participation, allotment plan changes and/or consolidation, project effectiveness analysis ranking based on Forest Direction, Standards and Guidelines, detailed project planning with Environmental Assessments, and coordination with other uses and activities. In addition to the projects listed in the table, an estimated 120 acres (Forest-wide) will be treated annually for the control of noxious weeds.



D-1	1986	Sagebrush Control, Unit 3	Beaver Dams S&G	109	D03						370		RNG	
		Sagebrush Control, Unit 4	Beaver Dams S&G	109	D03						175		RNG	
		Tall Larkspur Control	Manti Canyon C&H	104	D03						50		RNG	
			East Boundary Fence	Manti Mountain C&H	105	D05	.5							
			Clear Creek Birch Creek Unit Fence	Twelve Mile C&H	108	D05	3							
			Twelve Mile Allotment Boundary Fence	Twelve Mile C&H	108	D05	1							
		1987	Tall Larkspur Control	Manti Canyon C&H	104	D03						50		RNG
			Six Mile Plow and Seed	Six Mile C&H	106	D03						600		RNG
			Tall Larkspur Control	Twelve Mile C&H	108	D03						58		RNG
			Water Development, 80' Section 31	Beaver Dams S&G	109	D05				2				
			Water Development	Lasson C&H	103	D05				2				
			Sagebrush Control and Seeding Unit fence Construction	Lasson C&H	103	D03						95		RNG
			Loveridge Flat Sage Control	Manti Canyon C&H	104	D05	3.5							
				Black Mountain Forbrush	111	D03						400		RNG
			Tall Larkspur Control	Cove S&G	108	D03						58		RNG
			Patton Brush Burn and Seed	Twelve Mile C&H	104	D03						200		RNG
		1989	Sage Valley Plow and Seed Trough Construction (Middle and West Unit)	Manti Canyon C&H	142	D03						300		RNG
				Walis C&H	105	D05				2				
				Brush Control (Chain)	Manti Mountain C&H	108	D03						375	
			Timber Canyon Fence	Twelve Mile C&H		D05	1							
			Salina Creek, Center Clear Creek, Jump Creek, Windy Ridge (Ponds)	Island Lake S&G	118	D05					4			
		1990	S. Gooseberry Ridge Plow and Seed	Island Lake S&G	102	D03						75		RNG
			Aspen Prescribed Burn	Fairview C&H	119	D03						180		RNG
			Yearns Revegetation	Jones Ridge S&G	104	D03						600		RNG
			Unit Division Fence	Manti Canyon C&H	104	D05	2							
			60' Water Development	Manti Canyon	119	D05				1				
		1991	Sagebrush Spray/Burn	Jones Ridge S&G	119	D03						100		RNG
	Peavine - Step Flat Fence		Jones Ridge S&G	108	D05	15								
	Twelve Mile Plow, Furrow, and Seed		Twelve Mile C&H	108	D03						594		RNG	
	1992	Black Mountain Trough, 100'	Twelve Mile C&H	120	D03				3					
		Loveridge Flat Trough, 100'	Loveridge Flat S&G											
		Chris Canyon Trough, 100'												
		Loveridge Flat Ponds		120	D05					7				
		Aspen Rejuvenation	Loveridge Flat S&G	120	D03						300		RNG	
		Aspen-Fir Prescribed Burn (North Unit)	Loveridge Flat S&G											
			Fountain Green S&G	136	D03						450		RNG	

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TABLE A-6 (Continued)

RANGE IMPROVEMENT  
ACTIVITY SCHEDULE

RANG- ER  DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE						MANGEMENT AREA	
						FENCE	CATTLE- GUARD	WATER DEVELOPMENT			FORAGE TREATMENT ACRES		OTHER
								SPRINGS	TROUGHS	STOCK- PON			

D-1	1992	Oak and Sagebrush Control	Six Mile C&H	106	D03						250	RNG	RNG	
		Bradley Trough, 100'	Fountain Green S&G	136	D05				1				RNG	RNG
	1993	Sagebrush Control	Fountain Green S&G	130	D05					1		70	RNG	
		Cattleguards, 14'	Twelve Mile C&H	108	D03			2						
	1994	North Flat Trough, 100'	Six Mile C&H	106	D05									
		South Flat Trough, 100'	Fountain Green S&G	136	D05					1				
		Unit Division Fence	Fountain Green S&G	136	D05					1				
		Burnt Hills Revegetation	Wales C&H	142	D05	2						600	RNG	RNG
		Unit Division Fences	Manti Canyon C&H	104	D03									RNG
		Head Box and Trough	Wales C&H	142	D05	4								RNG
		Pipeline and Trough	Deep Canyon S&G	135	D05					1				
		Plow and Drill Seed	Deep Canyon S&G	135	D05					1				
		Prescribed Burn Aspen	Geep Canyon S&G	135	D03							200	RNG	
		Seed Aspen (Hand)	New Canyon S&G	122	D03							60	RNG	RNG
	1995	Water Trough, 60'	New Canyon S&G	122	D03							90	RNG	
		Heliotrope Allotment Boundary	Jones Ridge S&G	119	D05					1				
		Fence												RNG
		Bub Petty Trough, 100'	Lasson C&H	103	D05	1.5								RNG
			Black Mountain											RNG
			Forbrush	111	D05									RNG
Black Hole Spring Trough,		Cove S&G												
100'		Black Mountain	111	D05										
Stock Ponds		Forbrush											RNG	
		Cove S&G	111	D05						5				
1996	Top Black Mountain Revegeta-	Black Mountain									460	RNG		
	tion	Forbrush	111	D03										
	Oak Creek Face Unit Division	Cove S&G												
	Fence	Black Mountain	102	D05	1									
	Dry Canyon Drift Division	Forbrush											RNG	
	Fence	Cove S&G	102	D05	1/4								RNG	
	Oak and Sagebrush Control		106	D03							800	RNG	RNG	
	Lower Ranch Troughs, 70'	Fairview C&H	111	D05										
1996	Top Black Mountain Trough	Fairview C&H											RNG	
		Six Mile C&H	111	D05					1					
D-2	1986	Buck Flat Ferron C&H	Forbrush	203	D05	3							RNG	
		Indian Creek S&G	Cove S&G	217	D05									
	Common Use Boundary Fence	Black Mountain										TBR		
	Last Water - Meadow Gulch	Forbrush												
	Unit Fence	Cove S&G	203	D05	3							RNG		
	Woodtick Point Common Use		203	D05	2								RNG	
	Fence	Ferron C&H	213	D05								RNG	RNG	
		Indian Creek S&G												
		Ferron C&H												
		Ferron C&H												
		Duck Fork S&G												

RANG- ER  DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE						MANGEMENT AREA		
						FENCE	CATTLE- GUARD	WATER DEVELOPMENT			FORAGE TREATMENT ACRES		OTHER	
								SPRINGS	TROUGHS	STOCK- PONDS				
D-2	1986	Trail Canyon Sagebrush Control	Trail Mountain C&H	206	D03						400		RNG	
	1987	Pine Spring Headbox and Fence	East Mountain C&H	201	D05					1				RNG
		Pine Spring Unit Sagebrush Control	East Mountain C&H	201	D03							400		RNG
		Wasatch No. 2 Water Dev.	Heliotrope S&G	216	D05					1				TBR
		Cowboy Hollow Chain and Seed	Emery C&H	202	D03							200		RNG
		Swasey Creek Trail Crossing	Horn C&H	204	D05									SPR
		Dry Basin Water Line	Horn C&H	204	D05				2					1 Culvert
		Veratrum Control Potters Canyon	Potters S&G	224	D03							50		
	1988	Reeder Canyon Plow and Drill	Clay Banks S&G	211	D03							200		RNG
		Reeder Canyon Plow and Drill	Reeder Ridge S&G	226	D03							250		RNG
		Julius Flat Sagebrush Control	Blue Lake S&G	209	D03							250		RNG
		Horse Creek Aspen Treatment	Heliotrope S&G	216	D03							112		RNG
	1989	Cove Unit Spring	East Mountain C&H	201	D05					1				
		Wagon Road Ridge S&G - Horn Mountain C&H Common Use	Wagon Road Ridge S&G	230	D05									
		Boundary Fence	East Mountain C&H	201	D03							400		RNG
	1990	Roans Canyon Sagebrush Control	East Mountain C&H	201	D03									
		Slide Lake Common Use	Little Petes Hole S&G	219	D05									RNG
		Boundary Fence Log Worm	Emery C&H	202	D05									SPR
		Greens Hollow Trough	Emery C&H	202	D03							200		RNG
		Julius Flat Sagebrush Control	Olsen Bench S&G	221	D05									RNG
	1991	Point of Olsen Bench Trough	Horn C&H	204	D05									RNG
		Cowcamp Waterline and Trough	Horn C&H	204	D05					3				3 Mile Pipeline
		Cowcamp Waterline and Trough	Horn C&H	204	D05									RNG
Cowcamp Waterline and Trough		Horn C&H	204	D05									WPE	
Veratrum Control Potters Canyon		Potters S&G	224	D03							100		RNG	
Potters Canyon Plow and Drill		Potters S&G	224	D03							250		RNG	
Grimes Wash Sagebrush Control		East Mountain C&H	201	D03							400		RNG	
1992	Heliotrope-Emery-Ferron Common	Heliotrope	216	D03									RNG	
	Use Boundary Fence	Duck Fork S&G	213	D03							100		RNG	
	Harmonica Lake Plow and Drill	Trail Mountain C&H	206	D05									WPE	
	Battleground Water Development	Ridley Ridge S&G	227	D05									RNG	
	Ridley Ridge Troughs	Ridley Ridge S&G	227	D05									RNG	
	Peavine Flat Aspen Treatment	Peavine Flat	223	D03							170		RNG	
	Woodtick Point Rip and Seed	Duck Fork S&G	213	D03							100		RNG	
	South Sage Flat Sagebrush Control	Ferron C&H	203	D03							150		GWR	
McEwan Flat Sagebrush Control	Ferron C&H	203	D03							600		RNG		
Clear Reeder Canyon Jeep Trail	Clay Banks S&G	211	D05									2 Miles of Jeep Trail	TBR	

TABLE A-6 (Continued)

RANGE IMPROVEMENT  
ACTIVITY SCHEDULE

RANG- ER	DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE					MANGEMENT AREA		
							FENCE	CATTLE- GUARD	WATER DEVELOPMENT				FORAGE TREATMENT ACRES	OTHER
									SPRINGS	TROUGHS	STOCK- PONDS			
D-2	1993	Danish Knoll Plow and Drill	Wagon Road Ridge S&G	231	D03						400		RNG	
		Danish Knoll Plow and Drill	Little Petes Hole S&G	219	D03						200		WPE	
	1994	Flat Canyon Sagebrush Control	Trail Mountain C&H	206	D03						120		MMA	
		Dairy Unit Sagebrush Control	Ferron C&H	203	D03						300		RNG	
	1995	Point of Trail Sagebrush Control	Horn Mountain C&H	204	D03						200		SPR	
		Tarweed Control Bulger Canyon	Fly Bulger S&G	214	D03						300		WPE	
		Beaver Creek Waterline	Blue Lake S&G	209	D05			1					RNG	
		Hogan Basin Water Trough	Reeder Ridge S&G	226	D05				1				SPR	
		Olsen Bench Plow and Drill	Olsen Bench SG	221	D03						400		RNG	
		North Dragon Sagebrush Control	Horn C&H	204	D03						200		RNG	
	1996	McEwan Flat Sagebrush Control	Lake Fork S&G	218	D03						80		RNG	
		Cherry Flat Plow and Drill	Buck Ridge S&G	219	D03						300		RNG	
		Singleton Flat Sagebrush Control	Ferron C&H	203	D03						200		RNG	
		McEwan Flat Pond	Lake Fork S&G	218	D05					1			RNG	
	1986	1986	Poison Ridge Tarweed Control	Poison Ridge	337	D03						130		SPR
			Poison Ridge Plow and Seed	Poison Ridge	337	D03						160		SPR
		Buggywheel Spring	Poison Ridge	303	D05					1			RNG	
		Poison Ridge Rabbitbrush Control	Poison Ridge	337	D03						600		SPR	
		Dairy Reseed Pond	Lake Fork	303	D05			1					RNG	
		Red Ledge Trough	Cedar Knoll	354	D05					3			GWR	
Lasson-Cedar Knoll Drift Fence		Cedar Knoll	354	D05		.3						GWR		
Bennion Water Developments and Pipelines		Bennion	307	D05			6	18				RNG		
Blind Canyon Brush Control		Lake Fork	303	D03						200		RNG		
Water Hollow Ram Development		Water Hollow	347	D05			1	2 OR 6				Hydraulic Ram		
1987	Bean Ridge Tarweed Control and Seeding	Bean Ridge	304	D03						60		RNG		
	Bean Ridge Rabbitbrush Control	Bean Ridge	304	D03						50		RNG		
	Granger Ridge Ponds	Granger Ridge	326	D05					5			SPR		
	Winter Quarters Tarweed Control	Winter Quarters	350	D03						80		RNG		

TABLE A-6 (Continued)

RANGE IMPROVEMENT  
ACTIVITY SCHEDULE

RANG- ER  DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE						MANGEMENT AREA		
						FENCE	CATTLE- GUARD	WATER DEVELOPMENT			FORAGE TREATMENT ACRES		OTHER	
								SPRINGS	TROUGHS	STOCK- PONDS				
D-3	1988	Bennion Tarweed Control	Bennion	307	D03						220		RNG	
	1989	Bennion Rabbitbrush Control and Seeding	Bennion	307	D03							400		RNG
		Cedar Knoll Water Development	Cedar Knoll	354	D05				1					RNG
		Bennion Rabbitbrush Control	Bennion	307	D03							500		RNG
		Horse Creek Water Development	Horse Creek	327	D03				2					SPR
	1990	Red Spring Water Development and Pipeline	Water Hollow	347	D03				1					RNG
		Cedar Knoll Brush Control and Seeding	Cedar Knoll	354	D03							100		GWR
		Cedar Knoll Brush Control (Burn)	Cedar Knoll	354	D03							200		GWR
		"C" Canyon Water Development	"C" Canyon	352	D05			3	3					SPR
	1991	French Creek Water Developments	French Creek	325	D05			2	2					SPR
		Driveway Brush Chaining and Seeding	Driveway	320	D03							800		RNG
		Eccles Water Development	Eccles Canyon	324	D05			4	4					RNG
		Cedar Knoll Brush Railing	Cedar Knoll	354	D03							270		GWR
		Spring Creek Veratrum Control	Spring Lake	342	D03							200		RNG
	1992	"C" Canyon Spray, Flow, and Seeding	"C" Canyon	352	D03							500		SPR
		Clear Creek Brush Control and Seed	Clear Creek	316	D03							400		GWR
		"C" Canyon Rabbitbrush Spray	"C" Canyon	352	D03							400		SPR
	1993	Bean Ridge Water Development	Bean Ridge	304	D05			2						SPR
		Winter Quarters Water Development	Winter Quarters	350	D05			4						RNG
		"C" Canyon Rabbitbrush Spary	"C" Canyon	352	D03							400		SPR
	1994	Tucker Brush Control	Tucker	346	D03							200		GWR
		Seeley Canyon Water Development	Seeley Canyon S&G	330	D05			1	1					RNG
		East Gooseberry Water Development	East Gooseberry S&G	323	D05			3	3					RNG
Mountain Lion Water Development		Mountain Lion S&G	335	D05			4	4					RNG	
1995	Winter Quarters Rabbitbrush Control	Winter Quarters S&G	350	D03							200		RNG	
	Seeley Canyon Water Development	Seeley Canyon	330	D03							100		RNG	
	Seeley Tarweed Control	Seeley Canyon	330	D03							200		RNG	
	Seeley Brush Control	Driveway	320	D05			1	1					RNG	
	Driveway Water Development	Granger Ridge	326	D03							25		SPR	
	Granger Ridge Tarweed Control	Granger Ridge	326	D03							410		SPR	



ACTIVITY SCHEDULE

RANG- ER	DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE						MANGEMENT AREA	
							FENCE	CATTLE- GUARD	WATER DEVELOPMENT			FORAGE TREATMENT ACRES		OTHER
									SPRINGS	TROUGHS	STOCK- PONDS			
D-3	1996	Boulger Veratrum Cont.	Boulger	353	D03						100		RNG	
		Booths Canyon Revegetation	Booths Canyon	309	D03						50		RNG	
		Cabin Hollow Water Develop- ment	Cabin Hollow	314	D05			3	3					RNG
		Lake Rolfson Brush/Weed Control	Lake Rolfson	332	D03							100		RNG
		Cabin Hollow Brush Control	Cabin Hollow	314	D03							200		RNG
		Water Hollow Brush Control	Water Hollow	346	D03							560		RNG
D-4	1986	Lackey Fan FS-BLM Boundary Fence	LaSal	407	D05	2*							*BLM also doing half of project.	RNG
		PJ Control North Beaver	Beaver C&H	402	D03									RNG
	1987	Cold Spring Unit Fence	Mason Draw	408	D05	1.0					400		RNG	
		Beaver Creek Forest Boundary Fence	Chicken Creek	405	D05	1.2*							*BLM also doing half of project.	RNG
	1988	Beaver Creek Forest Boundary Fence	LaSal	407	D05	.8							RNG	
		Andy Mesa Unit Fence	Castle Valley	404	D05	2.0							RNG	
		Chicken Creek Ponds	Chicken Creek	405	D05					6			RNG	
	1989	PJ Control North Beaver	Beaver C&H	402	D03						400		RNG	
		Dorry Canyon Unit Fence	Squaw Spring	412	D05	2							RNG	
	1990	Fisher Mesa Chaining	Castle Valley	404	D03						800		RNG	
		Fisher Mesa	Castle Valley	404	D05					10			RNG	
	1991	Burkholder Draw-Porcupine Rim Unit Fence	Mason Draw	408	D05	2							RNG	
		Sinbad Ridge Unit Fence	Sinbad	410	D05	1.5							RNG	
	1992	Chicken Creek Trough Reconstruction	Chicken Creek	405	D05				2				RNG	
		Sinbad Ridge Ponds	Sinbad	410	D05					12			RNG	
		Meloy Park Water Development	Mason Draw	408	D05				1				RNG	
		Burkholder Draw Water Development	Mason Draw	408	D05				3				RNG	
	1993	Hideout Mesa	S. Paradox	411	D05					6			RNG	
		Dry Draw Ponds	S. Paradox	411	D05					3			RNG	
		Gold Basin Drift Fence	Brumley Ridge	403	D05	.5							RNG	
	1994	Warner Road Spring Develop- ment Ext. Pipeline 1/2 Mile	Bald Mesa	401	D05				1				RNG	
		PJ Control - Slaughter Flat	Squaw Spring	412	D03						400		GWR	
	1993	Paradox Creek Lion Creek Drift Fence and Cattleguard	N. Paradox	411	D05	1	1						RNG	
		Deer Spring Cattleguard	LaSal	407	D05		1						RNG	
	1994	Hideout Mesa Chaining	S. Paradox	411	D03						600		RNG	
		Boren Mesa Ponds	Brumley Ridge	403	D05					5			RNG	
		PJ Control Dorry Canyon	Squaw Springs	412	D03						400		RNG	

TABLE A-6 (Continued)

RANGE IMPROVEMENT  
ACTIVITY SCHEDULE

RANG- ER	DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE					
							FENCE	CATTLE- GUARD	WATER DEVELOPMENT			FORAGE TREATMENT ACRES
									SPRINGS	TROUGHS	STOCK- PONDS	
D-4	1993	1993	North-South Hollow Ponds	Bald Mesa	401	D05					6	200
			N. Beaver Sagebrush Treatment	Beaver	402	D03						
1995	1995	1995	South Mesa Ponds	Brumley Ridge	403	D05					5	300
			Death Trap PJ Chaining	Beaver	402	D03						
1996	1996	1996	Burkholder Draw PJ Chaining	Mason Draw	408	D03						300
			PJ Control Amasa Back	Squaw Springs	412	D03						
D-5	1986	1986	Black Canyon FS-BLM	Squaw Springs	412	D05	.5*					
			Boundary Fence	S. Paradox	411	D05						
1986	1986	1986	Hop Creek-Willow Basin Fence	West Mountain	516	D05						
			Mule Canyon Spring	West Mountain	516	D05			1			
1987	1987	1987	North Causeway Spring	West Mountain	516	D05	1.5					
			West Mountain North-South Division Fence	West Mountain	516	D05						
1987	1987	1987	Banks Spring	West Mountain	516	D05	1.3					1
			Causeway Reservoir #2	West Mountain	516	D05						
1987	1987	1987	S. Causeway Reservoir #1	Verdure	515	D05	1.3					1
			Verdure Unit Fence	Verdure	515	D03						
1987	1987	1987	Verdure Ragweed Spray	Twin Springs	514	D05	1.5					
			Kigalia Pt. #1 Water Development	Twin Springs	514	D05						
1987	1987	1987	Unnamed Sp. #2 N1/2 Sec. 13	Twin Springs	514	D05	1.5					
			Unnamed Sp. Sec. 13	Twin Springs	514	D05						
1987	1987	1987	Unnamed Sp. Sec. 19	Twin Springs	514	D05	1.5					
			West Mountain North-South Division Fence	West Mountain	516	D04						
1987	1987	1987	Mule Canyon PJ Chain	West Mountain	516	D03	1.5					580
			Mule Canyon Res. #1	West Mountain	516	D05						
1987	1987	1987	Mule Canyon Res. #2	West Mountain	516	D05	1.5					
			Kigalia Point Water Development #2	Twin Springs	514	D05						
1987	1987	1987	Kigalia Point Troughs	Twin Springs	514	D05	1.5					
			Unnamed Spring Sec.1	Verdure	515	D05						
1988	1988	1988	Pond Verdure	Verdure	515	D05	2					
			Trough and Pipeline Verdure	West Mountain	516	D05						
1988	1988	1988	Banks Pipeline	West Mountain	516	D05	2					
			North-South Division Fence	West Mountain	516	D05						
1988	1988	1988	Mule Spring #2	Twin Springs	514	D03	2					150
			JN Pasture Maintenance	Twin Springs	514	D03						
1988	1988	1988	Brushy Knoll Maintenance	Blue Creek	503	D05	2					300
			Spring Development	Blue Creek	503	D05						
1988	1988	1988	Spring Development	Verdure	515	D03	2					
			Revegetation Riparian Area	Verdure	515	D03						

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TABLE A-6 (Continued)

RANGE IMPROVEMENT  
ACTIVITY SCHEDULE

RANG- ER	DIS- TRICT	FISCAL YEAR	PROJECT NAME AND DESCRIPTION	ALLOTMENT NAME	FR NO.	MIH CODES	IMPROVEMENT TYPE					
							FENCE	CATTLE- GUARD	WATER DEVELOPMENT			FORAGE TREATMENT ACRES
									SPRINGS	TROUGHS	STOCK- PONDS	

D-5	1989	Develop Spring (Forester Sp.)	Blue Creek	503	D05			1			
		Maple Spring Pipeline	West Mountain	516	D05			1			
		Trough Canyon Spring	West Mountain	516	D05			1			
		Oakbrush Control	Gold Queen	508	D03						200
	1990	Harts P-J Burn	Harts Draw	510	D03						800
		Move Division Fence									
	1990	Bulldog-Rag Canyon	Bulldog	504	D05	1					
		Blue Creek Pt. P-J Reveg.	Blue Creek	503	D03						200
	1990	Lakes Division fence	Lakes	511	D05	3					
		Brush Basin P-J Burn	Camp Jackson	505	D03						500
	1991	Milk Ranch Pt. P-J Control	Babylon	501	D03						250
		Chippean Sp. Development	Chippean	506	D05			1			
	1991	Ranger Spring Development	Lakes	511	D05			1			
		Pond Construction	Lakes	511	D05					5	
	1991	P-J Revegetation - Verdure Rim	Lakes	511	D03						300
		Pond Construction	South Peak	513	D05					2	
	1991	Pond Construction	Cottonwood	507	D05					2	
		Oakbrush Control	Verdure	515	D03						200
	1991	Aspen Rejuvenation	Blue Creek	503	D03						200
		S. Cottonwood F-J Treatment	Gooseberry	509	D03						400
	1992	New Fence - Hart Rim	Harts Draw	510	D05	.5					
		P-J Chain - Lower Harts	Harts Draw	510	D03						200
	1992	Spring Development	South Peak	513	D05				1		
		Spring Development	Lakes	511	D05				1		
	1992	Sagebrush Treatment	Lakes	511	D03						300
		Stevens Canyon P-J Reveg.	Cottonwood	507	D03						300
	1992	Johnson Creek P-J Maintenance	Camp Jackson	505	D03						250
		Milk Ranch Pt. Reveg. Mtnc.	Babylon	501	D03						250
	1993	Chipean Pt. Reveg. Mtnc.	Chippean	506	D03						200
		Spring Development	South Pak	513	D03				1		
	1993	Spring Development	Lake	511	D05				1		
		Oak Treatment	Lakes	511	D05						200
	1993	Oak Treatment	South Peak	513	D03						200
		Dwarf Pond Construction	Babylon	501	D03					1	
	1993	Dwarf P-J Revegetation	Babylon	501	D05						300
		Vega Canyon Revegetation	Cottonwood	507	D03						150
	1994	Milk Ranch Pt. Reveg. Mtnc.	Babylon	501	D03						250
		N. Milk Ranch Reveg. Mtnc.	Babylon	501	D03						250
	1994	Recapture P-J Maintenance	Camp Jackson	505	D03						200
		S. Cottonwood Chain Mtnc.	Gooseberry	509	D03						400
	1995	Sage Spray	Gold Queen	508	D03						100
		Dry Mesa Chain Maintenance	Twin Springs	514	D03						500
	1996	Mormon Pasture Pt. Chain Mtnc.	Cottonwood	507	D03						500
		N. Creek Sage Treatment	North Creek	512	D03						300

## TIMBER ACTIVITY SCHEDULE

The Timber Activity Schedule contains the following which summarizes timber resource information for the Forest.

- Timber Land Classification (Table A-7), is a summary table and graphic display (Figure A-1) of the timber land use classification and inventory for the Plan.

- Comparison with Previous Plan (Table A-8), is a comparison summary of this Plan with the previous Plan.

- Allowable Sale Quantity and Timber Sale Program Quantity (Table A-9).

- Allowable Sale Quantity (Figure A-2), displays the allowable sale quantity base harvest schedule and sustained yield.

- Present and Future Forest Condition (Table A-10), displays the condition of the present and future Forest type suitable for harvest, and the age class distribution.

-Silvicultural Practices (Table A-11) expresses an annual average for the first decade.

-Ten-Year Timber Sale Activity Schedule (Table A-12A and Table A-12B).

It should be noted that ponderosa pine stands that were harvested under an accelerated harvest in the late 1960's through early 1970's are rapidly reaching commercial size. Analysis may show that a commercial harvest is needed during this decade to protect past investments, and maintain a thrifty stand. This may cause an upward adjustment in the programmed and allowable cut.

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TABLE A-7

TIMBERLAND CLASSIFICATION

	<u>M Acres</u>	<u>Percent</u>
I. Non-Forest Land	644.7	48.3
II. Forest Land	(689.8)	(51.7)
A. Forest Land not Suited for Timber Production	(321.7)	(24.1)
1. Land not capable of producing 20 cubic feet/acre/year.	252.6	18.9
2. Land withdrawn from timber production.	9.4	.7
3. Land not physically suited (irreversible)		

damage likely to occur.)	22.6	1.7
4. Land with inadequate current information.	37.1	2.8
<b>B. Tentatively Suited Forest Land</b>	<b>(368.1)</b>	<b>(27.6)</b>
1. Land not suited for timber production due to high logging costs.	235.4	17.7
2. Net land suited for timber production.	<u>132.7</u>	<u>9.9</u>
<b>III. Total Land</b>	<b>1,334.5</b>	<b>100.0</b>

FIGURE A-1

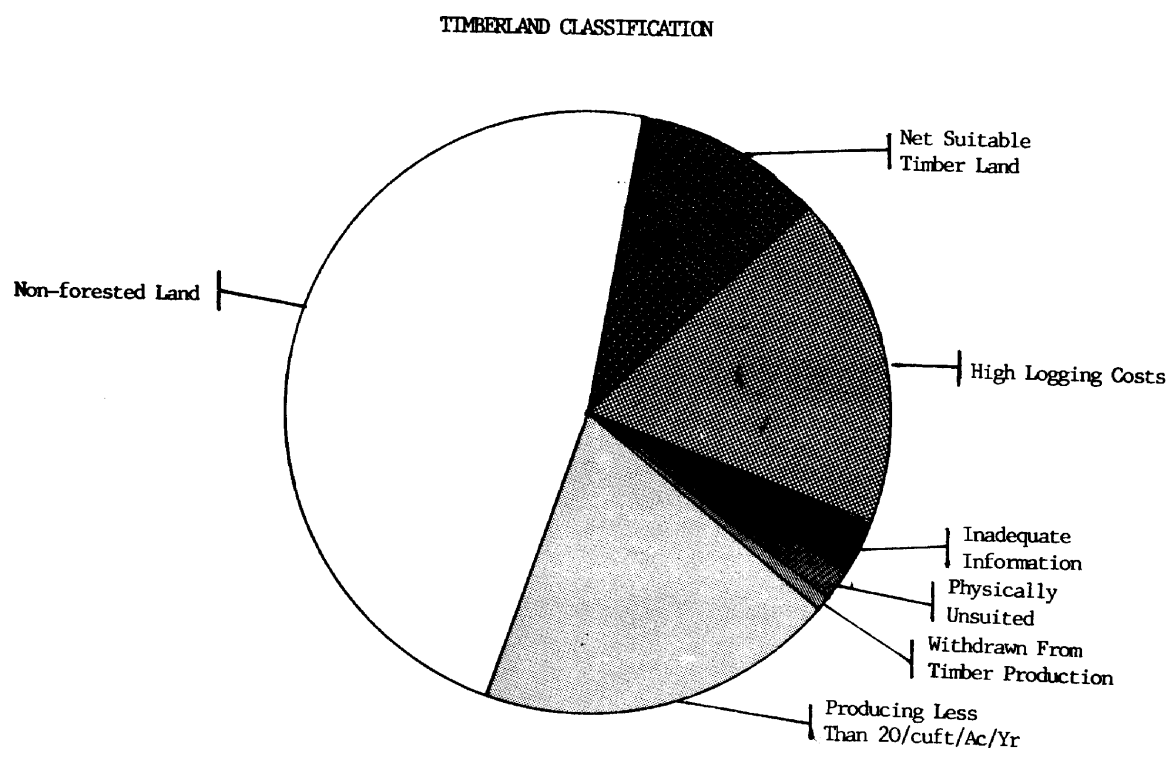


TABLE A-8

COMPARISON WITH PREVIOUS PLAN  
(PART A)

	Previous Plan Acres*	This Plan Acres	Percent Change(%)***
Area Summary			
Net National Forest	1,263,800	1,334,461	+6%*
Total Forest Land	1,339,326	1,413,461	+9%*
Total Productive Forest Land/Capable Forest Land	400,100	411,874	
Total Comm. Forest Land/Available Productive Forest Land	390,689	368,055	
Total Non-Productive/Not Capable Forest Land	270,500	523,143**	
Total Non-Forest	593,200**	399,444	
Technologically Not Suitable		34,408	
Productive Forest Land Not Available			
Productive Reserved	- 0 -	9,411	
Productive Deferred	9,411	9,411	

\* Previous Plan did not include San Pitch Division.

\*\* Total Pinyon-Juniper type acreage included in this figure.

\*\*\* Percent change from previous Plan.

## (PART B)

	Previous Plan Commercial Forest Land		This Plan Suitable and Available Productive Forest Land	
	Acres		By Use Category	Acres
Standard	135,400		Suitable - Ponderosa Pine	49,942
			- Mixed Conifer	39,785
Special	11,100		- Aspen	42,930

Marginal	244,189	High Logging Costs*	
		-Ponderosa Pine	51,967
		-Mixed Conifer	88,109
		-Aspen	95,322

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\*Not economically efficient to log.

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TABLE A-9

ALLOWABLE SALE QUANTITY AND TIMBER SALE PROGRAM QUANTITY  
(ANNUAL AVERAGE FOR FIRST DECADE)

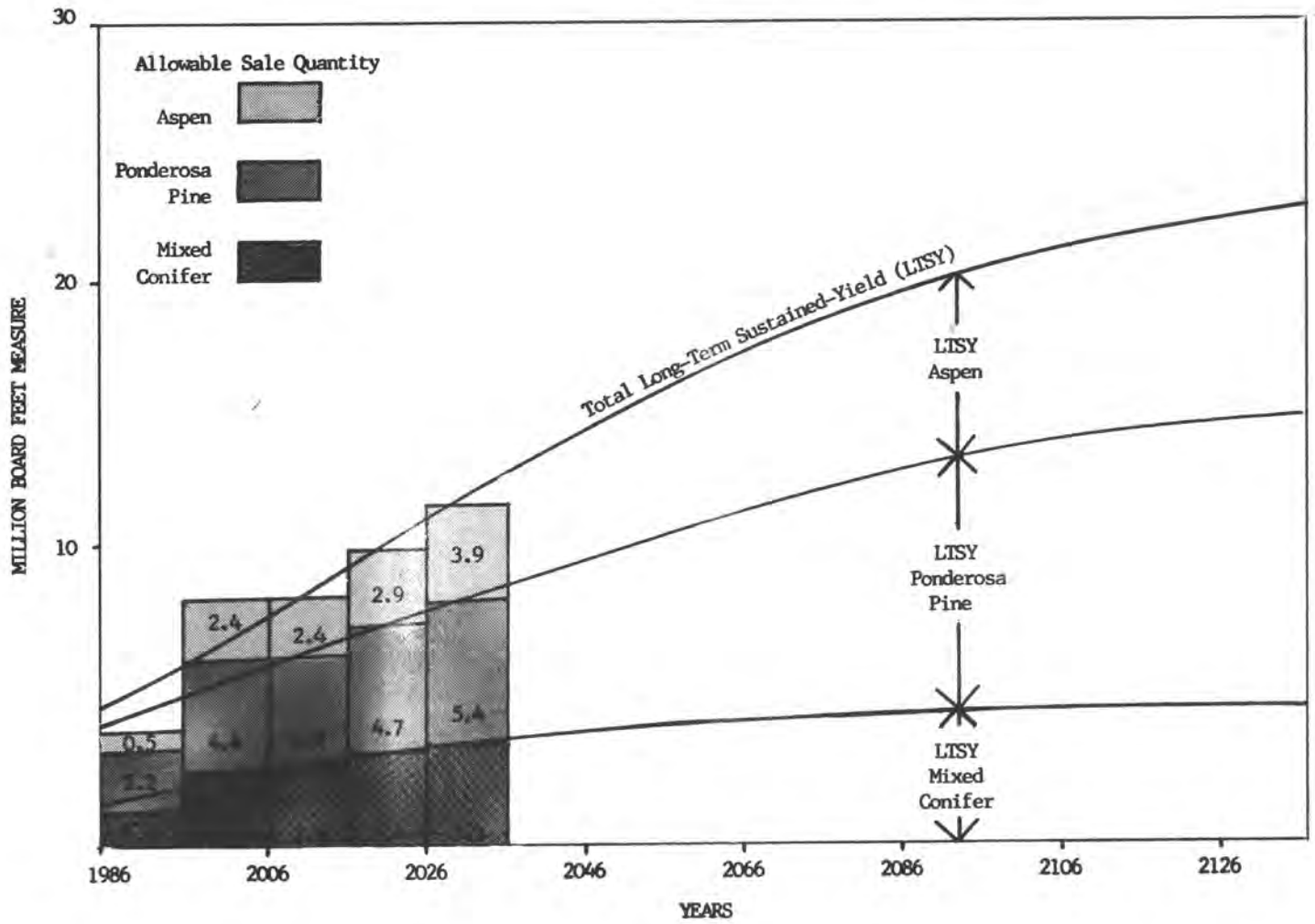
<u>Harvest Method</u>	<u>Allowable Sale Quantity</u>	
	<u>Sawtimber</u> (MMBF)	<u>Other Products</u> (MMBF)
Regeneration Harvest:		
Clearcut	3.8	0
Shelterwood and Seed Tree		
-Preparatory Cut	1.42	0
-Seed Cut	.47	0
-Removal Cut	.11	0
Selection	0	0
Intermediate Harvest:		
Commercial Thinning	.78	0
Salvage/Sanitation	0	2.5
Totals	3.16	2.5

	<u>Additional Sales</u>	
	<u>Sawtimber</u> (MMBF)	<u>Other Products</u> (MMBF)
Total For All Harvest Methods	0	0

Allowable Sale Quantity	3.16 (MMBF)	2.50 (MMBF)
Timber Sale Program Quantity	3.16 (MMBF)	2.50 (MMBF)

FIGURE A-2

LONG-TERM SUSTAINED-YIELD OVER 150-YEAR HORIZON  
 ALLOWABLE SALE QUANTITY BY SPECIES OVER 50-YEAR HORIZON



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TABLE A-10

## PRESENT AND FUTURE FOREST CONDITIONS

	<u>Unit of Measure</u>	<u>Suitable Land</u>
Present Forest: Growing Stock	MMCF	4,778.0
	MMBF	2,140.2
Live Cull	MMCF	- - -
	MMBF	15.0
Salvable Dead	MMCF	120.0
	MMBF	20.0
Annual Net Growth	MMCF	84.0
	MMBF	14.9
Annual Mortality	MMCF	31.4
	MMBF	5.8
Future Forest: Growing Stock	MMCF	5,500.0
Annual Net Growth	MMCF	150.0

Rotation age	Years	120 to 140	
Age Class Distribution Acres	Age Class	Present Forest	Future Forest
(Suitable Lands)	Mature Sawtimber	264,721	165,625
	Immature Sawtimber	92,292	110,416
	Seed-Saps	11,042	92,014

TABLE A-11

SILVICULTURAL PRACTICE  
(ANNUAL AVERAGE IN FIRST DECADE FOR SUITABLE ACRES)

Practice	Acres
Regeneration Harvest	
Clearcut	80
Shelterwood	
-Preparation Cut	300
-Seed Cut	100
-Removal Cut	28
Intermediate Harvest	
Commercial Thin	165
Timber Stand Improvement	725
Reforestation	78

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TABLE A-12A

TIMBER SALE ACTIVITY SCHEDULE  
(Major Sales)

Sale Name	Ranger District	Acres	Mgmt. Code	--- Road ---		----Species----		Year	Volume MMBF/Year	Total Major Sales MMBF/Year
				Construction Coll.	Local	Conifer	Aspen			
Four-Mile I	Sanpete	160	RNG	1.00	----	----	.60	1986	.60	
Roc Creek	Moab	220	TBR	----	----	2.00	----	1986	2.00	
North Elks	Monticello	220	TBR	----	----	1.00	----	1986	1.00	3.60
Four-Mile II	Sanpete	130	RNG	1.00	----	----	.60	1987	.60	
Rt. Fork Boulger	Price	40	TBR	----	----	.40	----	1987	.40	
Chimney Park	Monticello	200	TBR	----	----	.50	----	1987	.50	1.50
Timber Canyon	Sanpete	110	RNG	----	----	.80	----	1988	.80	
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1988	.25	
Deadman	Monticello	200	TBR	----	----	.50	----	1988	.50	1.55
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1989	.25	
Spring City Tunnel	Sanpete	90	RNG	----	.50	.70	----	1989	.70	
Cap	Ferron	250	TBR	----	----	.50	----	1989	.50	
Rolfson Reservoir	Price	40	TBR	----	----	.20	----	1989	.20	
Sawmill Pond	Moab	360	TBR	----	1.00	2.00	----	1989	2.00	
Drift Trail	Monticello	200	TBR	----	----	.50	----	1989	.50	4.15
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1990	.25	
Ephraim Canyon	Sanpete	800	RNG	.50	----	1.50	.50	1990	2.00	
Seeley Creek	Price	40	TBR	----	----	.30	----	1990	.30	

Duck Lake	Monticello	250	TBR	----	----	.50	----	1990	.50	3.05
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1991	.25	
Birch Canyon	Sanpete	800	RNG	.50	----	2.00	.40	1991	2.40	
Browns Canyon	Ferron	250	TBR	----	----	.35	----	1991	.35	
Clear Creek	Price	60	TBR	----	----	.40	----	1991	.40	
Sinbad Ridge I	Moab	140	TBR	2.00	----	2.40	----	1991	2.40	
Gooseberry G.S.	Monticello	400	TBR	----	----	.70	----	1991	.70	6.50
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1992	.25	
Cap	Ferron	250	TBR	----	----	.50	----	1992	.50	
Patton Reservoir	Sanpete	1,000	RNG	----	----	2.50	.50	1992	3.00	
Trough Springs I	Price	30	TBR	----	----	.20	----	1992	.20	
Duck Lake II	Monticello	500	TBR	----	----	.70	----	1992	.70	4.65
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1993	.25	
Burnt Hill	Sanpete	800	RNG	----	----	2.00	.40	1993	2.40	
Rt. Fork Swen's	Price	30	RNG	----	----	.20	----	1993	.20	
Guard Station	Monticello	150	TBR	.50	----	.50	----	1993	.50	3.35
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1994	.25	
Winter Qtrs. Ridge	Price	30	RNG	----	----	.20	----	1994	.20	
Sinbad Ridge II	Moab	140	TBR	1.00	----	2.50	----	1994	2.50	
Ute Corral	Monticello	190	TBR	----	----	.50	----	1994	.50	3.45
Spoon Creek	Ferron	25	RNG	----	----	----	.25	1995	.25	
Trough Springs II	Price	30	TBR	----	----	.20	----	1995	.20	
Little Notch I	Monticello	250	TBR	----	----	.40	----	1995	.40	.85
Total Major Sales		8,560				27.65	5.00			32.65

TABLE A-12B

TIMBER SALE ACTIVITY SCHEDULE  
(Total Sales, Including Major Sales)

Sales/ Ranger District	Acres	Volume MMBF/Year									
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total Major Sales	8,560	3.60	1.50	1.55	4.15	3.05	6.50	4.65	3.35	3.45	.85
Small Sale Program											
Sanpete	200	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Ferron	400	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
Price	200	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Moab	320	.10	.20	.20	.10	.20	.10	.20	.20	.10	.20
Monticello	200	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Total Small Sales	1,320	.60	.70	.70	.60	.70	.60	.70	.70	.60	.70
Fuelwood Program											
Sanpete	2,000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ferron	1,200	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
Price	840	.50	.50	.40	.40	.40	.40	.40	.40	.40	.40
Moab	200	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Monticello	200	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Total Fuelwood Sales	4,440	2.30	2.30	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
Total All Sales	14,320	6.50	4.50	4.45	6.95	5.95	9.30	7.55	6.25	6.25	3.75

## SOIL ACTIVITY SCHEDULE

TABLE A-13

<u>Year</u>	<u>Location</u>	<u>Acres</u>	<u>Intensity level</u>
1985	Manti Division	233,613	Order 3
1986	Manti Division	233,600	Order 3
1987	Final correlation and manuscript for the Manti Division SRI.		
1988	Submit Manti Division SRI manuscript and maps for publication. Initiate Order 3 Soil Survey on the Monticello District.		
1989	Monticello District	184,563	Order 3
1990	Monticello District	184,563	Order 3
1991	Submit Monticello District SRI manuscript and maps for publication.		
1992-1995	Conduct Order 1 and Order 2 mapping as needed for project work and update existing Order 3 Soil Surveys as necessary.		



## WATERSHED ACTIVITY SCHEDULE

The Watershed Activity Schedule contains the following watershed programs:

- Watershed Condition Survey (Table A-14) provides a list and schedule of the watersheds for which condition, flood frequency, and sediment yields will be calculated.
- Watershed Improvement (Table A-15) provides a list of the projects included in the Watershed Improvement Needs Inventory (WINI) and a schedule for their implementation.
- Determination of Instream Flow Needs (Table A-16) provides a list and schedule for determining the instream flow needs for Forest purposes on major watersheds.

TABLE A-14

WATERSHED CONDITION SURVEY  
(Includes Estimates of Flood Frequencies and Sediment Yields)

Ranger District	Item	No.	Watershed Name	No.	Subwatershed Name	Survey Area (Acres)	Date to Complete the Survey
Price	Done	04	Huntington Canyon	All	-----	126,700	1984
Price	In Progress	02	Price River	All	-----	80,000	1985
Ferron	1	05	Straight Canyon	502	Lowry Water	34,300	1986
Ferron	2	05	Straight Canyon	600	Below Joes Valley	16,600	1986
Sanpete	3	03	San Pitch	All	-----	167,000	1987
Sanpete and Price	4	01	Upper Spanish Fork	All	-----	81,300	1988
Monticello	5	10	Indian Creek	All	-----	91,000	1989
Monticello	6	12	San Juan	All	-----	133,000	1989
Ferron	7	05	Straight Canyon	501	Seeley Canyon	22,800	1990
Ferron	8	05	Straight Canyon	500	Reeder Canyon	8,500	1990
Moab	9	18	Paradox Creek	All	-----	47,000	1991
Ferron	10	06	Ferron Canyon	All	-----	115,000	1992
Sanpete	11	16	Chicken Creek	All	-----	49,000	1993
Ferron	12	07	Muddy Creek	All	-----	85,000	1993

Moab	13	08	Moab	All	-----	78,000	1994
Moab	14	09	Delores River	All	-----	45,000	1995
Monticello	15	13	Montezuma Creek	All	-----	30,000	1996

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TABLE A-15 WATERSHED IMPROVEMENT A-31

WINI Inventory Project Number	Ranger District	Project Name	Watershed	Subwatershed Containing The Project	Subwatershed Evaluations		Project Field Evaluation Phase Date	Plan and Environmental Assessment (Year)	Treat- ment (Year)	Acres for Treatment	Management Area
					Date	Area					



2-23	2	Battlegrounds	05 Straight Canyon					1985	1985	600	GWR
3-21	3	Rolfson Canyon	04 Huntington Canyon	408 Rolfson Canyon	1984	2,501		1984	1986		WPE
3-22	3	Staker #1	04 Huntington Canyon	409 Staker Canyon			1984	1985	1987	300	WPE
3-24	3	Staker #2	04 Huntington Canyon	409 Staker Canyon	1984	2,400	1984	1985	1987	50	WPE
3-25	3	Jordan #1	04 Huntington Canyon	410 Jordan Canyon			1985	1986	1988	500	WPE
3-26	3	Jordan #2	04 Huntington Canyon	410 Jordan Canyon	1985	5,400	1985	1986	1989	700	WPE
3-15											
3-14	3	North Hughes 2 & 3	04 Huntington Canyon	412 North Hughes	1985	1,400	1985	1986-1987	1990	320	WPE
2-2	2	Bacon Rind	05 Straight Canyon	401 Bacon Rind	1986	1,870	1986	1987	1990	300	WPE
2-31	2	Swales	05 Straight Canyon	301 Reid & Neilson Swale	1986	2,210	1986	1987-1989	1991	650	WPE
2-36	2	Clay Banks	05 Straight Canyon	301 Cox Swale 419 Clay Banks, Swale	1986	3,900	1987	1988-1990	1992	320	WPE
1-15	1	Hogaard	03 San Pitch	502 Manti Canyon	1987	18,000	1988	1989	1992	420	RNG
3-19	3	Lake Canyon	04 Huntington Canyon	501 Left Fork Huntington	1988	30,000	1989	1990	1993	70	WPE
1-20	1	Blue Meadows	03 San Pitch	413 Six Mile Canyon	1988	16,500	1989	1990	1993	420	RNG
3-9	3	Fish Creek	02 Price River	600 Price River	1989	39,500	1990	1991	1994	220	SPR
5-1	5	Round Mountain	10 Indian Creek	412 Davis Canyon	1990	7,441					
				411 Stevens Canyon	1990	8,160					
			12 San Juan	418 S. Cottonwood Canyon	1990	8,150	1979	1980-1992	1994	300	WPE
3-28	3	Seeley Canyon	04 Huntington Canyon	410 Seeley Canyon	1991	5,400	1991	1992	1995	300	WPE
1-21	1	Six Mile #3	03 San Pitch	413 Six Mile Canyon	1988	16,500	1991	1992	1995	50	RNG
1-18	1	Six Mile #1	03 San Pitch	413 Six Mile Canyon	1988	16,500	1991	1992	1995	30	RNG
1-19	1	Six Mile #2	03 San Pitch	413 Six Mile Canyon	1988	16,500	1991	1992	1995	45	RNG
3-13	3	Boulger Reservoir	04 Huntington Canyon	402 Boulger Canyon	1991	3,990	1991	1992	1995	94	
2-3	2	Boulger Canyon #1	05 Straight Canyon	402 Boulger Canyon	1992	2,160	1992	1993	1996	94	WPE
2-4	2	Boulger Canyon #2	05 Straight Canyon	402 Boulger Canyon	1992		1992	1993	1996	330	WPE
2-9	2	Lowry Water	05 Straight Canyon	502 Lowry Water	1992	34,300	1992	1993	1996	96	WPE
2-26	2	Danish Knoll	05 Straight Canyon	415 Seeley Creek	1993	10,600	1993	1994	1997	110	WPE
3-31	3	Blind Canyon South	04 Huntington Canyon	600 Huntington Canyon	1993	80,000	1993	1994	1997	410	
3-31	3	Blind Canyon South	04 Huntington Canyon	600 Huntington Canyon	1993	80,000	1993	1995	1998	520	
2-6	2	Fly Canyon	05 Straight Canyon	502 Lowry water	1994	34,300	1994	1996	1999	45	WPE
2-15	2	Sanpete Mountain	05 Straight Canyon	412 Reeder Canyon	1994	3,690					
			03 San Pitch	407 Canal Canyon	1994	5,710	1994	1996	1999	135	WPE
2-17	2	Black Canyon	05 Straight Canyon	405 Black Canyon	1995	8,260	1995	1996	1999	192	TBR
2-5	2	Cedar Creek	05 Straight Canyon	405 Black Canyon	1995	8,260					
			03 San Pitch	420 Cedar Creek	1995	1,730	1995	1996	1999	110	
2-33	2	The Cove	06 Ferron Canyon	401 Bear Creek Cove Creek	1996	870	1996	1997	2000	170	WPE

TABLE A-16

## DETERMINATION OF INSTREAM FLOW NEEDS

Year	Watershed Name	Watershed No.	Counties
Completed	Huntington Creek	04	Sanpete, Emery
Completed	Straight Canyon	05	Sanpete, Emery
Completed	Ferron Canyon	06	Sanpete, Emery
Completed	Muddy Creek	07	Sanpete, Emery
1985	Price River	02	Carbon, Emery, Utah
1986	San Pitch River	03	Sanpete
1986	Upper Salina	17	Sanpete
1987	Chicken Creek	16	Juab, Sanpete
1987	Salt Creek	14	Juab, Sanpete
1987	Fountain Green	15	Juab, Sanpete
1988	Upper Spanish Fork	01	Carbon, Sanpete, Utah
1989	Moab	08	Grand, San Juan
1989	Paradox	18	San Juan, Utah, Montrose
1989	Delores River	09	Grand, San Juan, Utah, Montrose
1990	San Juan River	12	San Juan
1990	Montezuma Creek	13	San Juan
1990	Indian Creek	10	San Juan
1991	Grand Gulch	19	San Juan

1992

Dark Canyon

11

San Juan

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A-32

## LANDSLIDE AND FLOOD DAMAGE REPAIR ACTIVITY SCHEDULE

As a result of the 1983 and 1984 flooding and landslide events, the Forest has identified the damage repair work and additional cost needs. Table A-17 (a detailed account of work activity needs that are quantified) and Table A-18 (a cost summary by activities) exhibit a ten-year program beyond the normal resource action programs identified in the Forest Plan. These actions are necessary to restore the Forest's resources and facilities to approximate pre-flood conditions. Some select inventory needs are included to further refine and analyze conditions that exist and to aid the Forest predictive capabilities of these damaged watersheds so other resource programs can continue in a logical manner.

The 1983 and 1984 flood events have resulted in a tremendous impact and strain on the Forest resource, permittees, and affected downstream communities and resources. It has affected the long-term capability of the Forest to handle the normal recurring output programs, and to meet public demands. The work program proposed in the respective table is designed to complete the work over a ten-year period and the added costs have been incorporated into the analyses.

The Forest-wide Flood Damage Repair Reports of 1983 and 1984 identified the damage to the respective resources and facilities that occurred. Table A-18 is a summary of the two respective reports for the work that is up and beyond the eligibility for the Emergency Watershed Protection (Section 403 of the Agriculture Credit Act) Program and ERFO (Emergency Relief Federally Owned) funding from the Federal Highway Administration. This flood damage repair program is scheduled over a ten-year period to keep within current manpower constraints. It could be accelerated into a shorter time frame, but additional staffing would be needed to carry forth this program along with the normal program of work.

With the present conditions of active sliding, high ground water, and predictions of continued above normal precipitation, the priorities or timing or work for any specific year could change to meet changing conditions and refinement and updated priorities.

Some of the identified resource work activities could move forward independently of the others. However, most of the program is multi-functional in nature and coordinated. To delete or delay one activity could affect the timing and outcome of the other activities. The fisheries stream habitat repair (C03) needs and the watershed improvement program (F03) of debris removal, riparian vegetation, etc., should go forth "hand in glove", drainage by drainage, so these respective activities can compliment each other and provide for increased cost effectiveness of restoring the ravaged stream channels and fisheries resource.

Projects listed on Table A-17 are based on the initial flood damage reports. Each project will require on-site evaluation prior to implementation to assure that the effects of natural repair processes and completed projects at or adjacent to the project site are considered in project design.

TABLE A-17

## FLOOD DAMAGE REPAIR ACTIVITY SCHEDULE

MIH CODE	RANGER DISTRICT	PROJECT NAME	TYPE OF TREATMENT	MILES	STRUCTURES	ACRES	TREATMENT YEAR	MANAGEMENT AREA
A05	1	Chicken Creek C.G. Repair	Design				86	DRS
A05	1	Pinchot C.G. Replacement	Design				87	DRS RPN
A05	1	Oowah C.G. Replacement	Design				88	DRS
A05	2	Ferron Canyon Picnic Area	Design				89	DRS
A05	3	Forks of Huntington Canyon C.G.	Design Water System				90	DRS RPN SPR RNG
A05	1	Chicken Creek C.G. & Water System	Reconstruction				87	GWR RNG
A05	1	Pinchot C.G. Replacement	Reconstruction				88	RPN RNG
A05	1	Oowah C.G. Replacement	Reconstruction				89	DRS
A05	2	Ferron Canyon Picnic Area Replacement	Reconstruction				90	DRS
A05	3	Forks of Huntington Canyon C.G. Water System	Replacement				91	DRS RPN SPR RNG
A10	1	Oak Creek Trail No. 5053	Design	1.2			87	RNG
A10	1	Dry Creek Trail No. 5048	Design	0.8			87	GWR RNG
A10	1	White Ledge Fork Trail No. 5096	Design	0.8			87	RNG
A10	1	Patten Trail No. 5120	Design	1.4			87	RNG TBR
A10	1	Birch Creek Trail No. 5115	Design	1.9			87	RNG
A10	1	Narrow Trail No. 5125	Design	4.6			87	TBR RNG
A10	4	Oowah Lake Trail No. 5141	Design	3.6			88	RNG TBR
A10	1	Oak Creek Trail No. 5053	Construction	1.7			88	RNG
A10	1	Dry Creek Trail No 5048	Construction	0.8			88	GWR RNG
A10	1	White Ledge Fork Trail No. 5096	Construction	0.8			88	RNG
A10	1	Patten Trail No. 5120	Construction	1.4			88	RNG TBR
A10	1	Birch Creek Trail No. 5115	Construction	1.9			88	RNG
A10	1	Narrow Trail No. 5125	Construction	4.6			88	TBR RNG
A10	4	Oowah Lake Trail No. 5141	Construction	3.6			89	RNG TBR
C03	4	Oowah Reservoir Dam Replacement	Construction		1		87	DRS
C03	1	Six-Mile Ponds Dam Replacement	Construction		1		88	UDM RNG
D02	S.O.	Range Allotment Inventory	Allotment Map Update			4,500	86	
D02	S.O.	Range Allotment Inventory	Allotment Map Update			4,500	87	
D05		Range Structural Facility	Replacement	16			86	
E00	S.O.	Timber Resource Damage	Inventory			8,000	87	

TABLE A-17 (Continued)

## FLOOD DAMAGE REPAIR ACTIVITY SCHEDULE

MIH CODE	RANGER DISTRICT	PROJECT NAME	TYPE OF TREATMENT	MILES	STRUCTURES	ACRES	TREATMENT YEAR	MANAGEMENT AREA
F01	S.O.	Accelerated Soil Resource	Inventory (Manti Div.)			200,000	86	
F01	S.O.	Accelerated Soil Resource	Inventory (Manti Div.)			200,000	87	
F01	S.O.	Accelerated Soil Resource	Inventory (San Pitch)			69,000	88	
F01	S.O.	Watershed Landslide Evaluation	Inventory & Report			40,000	87	
F03	1	Chicken Creek Near Levan	Watershed Rehabilitation	0.0	0	25	86	RNG
F03	1	Chicken Creek Near Levan	Riparian Revegetation	2.1	0	8	86	RPN
F03	1	Chicken Creek Near Levan	Remove Debris	5.8	0	71	86	RPN
C03082	1	Chicken Creek Near Levan	Fish Habitats	8.7	486	0	86	RPN
F03	1	Fairview Canyon	Watershed Rehabilitation	0.0	0	80	87	
C03082	1	Fairview Canyon	Fish Habitats	2.2	150	0	87	RPN
F03	1	Fairview Canyon	Remove Debris	6.6	0	27	87	RPN
F03	1	Manti Canyon	Remove Debris	2.0	0	7	87	RPN
C03082	1	Manti Canyon	Fish Habitats	6.6	226	0	87	RPN
F03	1	Ephraim Canyon	Remove Debris	1.1	0	4	87	RPN
C03082	1	Ephraim Canyon	Fish Habitat	5.1	110	0	87	RPN
F03	1	Thistle Creek	Remove Debris	4.8	0	20	88	RPN
F03	1	Rock Creek	Riparian Revegetation	0.3	0	1	88	RPN
F03	1	Rock Creek	Remove Debris	1.9	0	8	88	RPN
F03	1	Oak Creek Near Spring City	Remove Debris	4.0	0	9	88	RPN
C03082	1	Oak Creek Near Spring City	Fish Habitats	5.5	237	0	88	RPN
F03	1	Canal Canyon	Remove Debris	1.8	0	7	88	RPN
F03	3	North Hughes Canyon	Riparian Revegetation	0.5	0	2	88	RPN
F03	3	North Hughes Canyon	Remove Debris	0.6	0	2	88	RPN
F03	3	Eccles Canyon	Remove Debris	0.3	0	1	88	RPN
F03	1	Oak Creek Near Fairview	Remove Debris	1.0	0	4	89	RPN
F03	1	Oak Creek Near Fairview	Riparian Revegetation	2.7	0	11	89	RPN
C03082	1	Oak Creek Near Fairview	Fish Habitats	4.0	175	0	89	RPN
F03	1	Dry Creek Near Fairview	Remove Debris	1.0	0	4	89	RPN
C03082	1	Dry Creek Near Fairview	Fish Habitats	3.9	175	0	89	RPN
F03	3	Lake Fork	Remove Debris	5.4	0	42	89	RPN
F03	3	Lake Fork	Riparian Revegetation	5.9	0	24	89	RPN
C03082	3	Lake Fork	Fish Habitats	8.4	242	0	89	RPN

TABLE A-17 (Continued)

## FLOOD DAMAGE REPAIR ACTIVITY SCHEDULE

MIH CODE	RANGER DISTRICT	PROJECT NAME	TYPE OF TREATMENT	MILES	STRUCTURES	ACRES	TREATMENT YEAR	MANAGEMENT AREA
F03	3	Left Fork of Huntington Creek	Riparian Revegetation	.8	0	3	90	RPN
F03	3	Left Fork of Huntington Creek	Remove Debris	.9	0	7	90	RPN
C03082	3	Left Fork of Huntington Creek	Fish Habitats	18.2	428	0	90	RPN
C03082	1	Twelve Mile Creek	Fish Habitats	7.7	408	0	91	RPN
F03	1	Twelve Mile Creek	Remove Debris	9.7	0	116	91	RPN
C03082	1	Twelve Mile Creek	Fish Habitats	7.6	408	0	92	RPN
F03	1	Twelve Mile Creek	Remove Debris	8.0	0	32	92	RPN
F03	1	Six-Mile Creek	Remove Debris	6.3	0	25	93	RPN
C03082	1	Six-Mile Creek	Fish Habitats	9.4	332	0	93	RPN
F03	1	Little Clear Creek	Riparian Revegetation	1.6	0	6	93	RPN
F03	1	Little Clear Creek	Remove Debris	4.9	0	33	93	RPN
F03	1	Little Clear Creek	Watershed Rehabilitation			20	93	RPN
F03	2	Seely Creek	Remove Debris	.6	0	2	94	RPN
C03082	2	Seely Creek	Fish Habitats	2.5	72	0	94	RPN
F03	2	Seely Creek	Riparian Revegetation	4.0	0	16	94	RPN
F03	2	Reeder Canyon	Remove Debris	.2	0	1	94	RPN
F03	3	Winter Quarters Creek	Remove Debris	.1	0	1	94	RPN
F03	3	Woods Canyon	Remove Debris	.7	0	3	94	RPN
C03082	3	Woods Canyon	Fish Habitat	1.0	25	0	94	RPN
F03	3	Pontown Creek	Remove Debris	.1	0	1	94	RPN
F03	3	Pontown Creek	Riparian Revegetation	2.0	0	8	94	RPN
C03082	3	Pontown Creek	Fish Habitats	2.6	75	0	94	RPN
C03082	3	French Creek	Fish Habitats	1.2	32	0	94	RPN
F03	3	French Creek	Riparian Revegetation	1.2	0	5	94	RPN
C03082	1	Deep Creek	Fish Habitats	3.0	260	0	94	RPN
F03	1	Deep Creek Near Levan	Remove Debris	3.2	0	13	94	RPN
F03	2	Ferron Canyon	Remove Debris	2.0	0	8	95	RPN
C03082	3	Eccles Canyon	Fish Habitats	.3	13	0	95	RPN
C03082	2	Muddy Creek	Fish Habitats	1.3	46	0	95	RPN
F03	2	Muddy Creek	Remove Debris	1.9	0	7	95	RPN

MIH CODE	RANGER DISTRICT	PROJECT NAME	TYPE OF TREATMENT	MILES	STRUCTURES	ACRES	TREATMENT YEAR	MANAGEMENT AREA
F03	2	Muddy Creek	Riparian Revegetation	4.6	0	18	95	RPN
F03	4	Mill Creek at Moab	Remove Debris	.5	0	2	95	RPN
C03082	4	Mill Creek at Moab	Fish Habitats	2.0	87	0	95	RPN
F03	3	Fish Creek	Remove Debris	.1	0	1	95	RPN
C03082	3	Tie Fork Canyon	Fish Habitats	.1	3	0	95	RPN
F03	3	Tie Fork Canyon	Remove Debris	.1	0	1	95	RPN
F03	3	Blind Canyon	Watershed Rehabilitation	0.0	0	2	95	RPN
F03	3	Mill Fork Canyon (Huntington Creek)	Watershed Rehabilitation	0.0	0	2	95	RPN
F03	3	Mill Fork Canyon (Huntington Creek)	Remove Debris	.5	0	2	95	RPN
C03082	2	Lowry Water	Fish Habitats	.1	5	0	95	RPN
F03	2	Lowry Water	Remove Debris	.5	0	2	95	RPN
F03	2	Lowry Water	Riparian Revegetation	.5	0	2	95	RPN
F03	3	Little Bear Canyon	Remove Debris	.1	0	1	95	RPN
F03	1	Four Mile Canyon	Watershed Rehabilitation	0.0	0	25	95	RPN
F03	1	Four Mile Canyon	Remove Debris	.3	0	1	95	RPN
C03082	1	Four Mile Creek Near Levan	Fish Habitats	1.8	96	0	95	RPN
F03	3	York Canyon	Remove Debris	1.1	0	4	95	RPN
F03	3	Mill Fork (North End)	Remove Debris	.2	0	1	95	RPN
F03	3	Mill Fork (North End)	Riparian Revegetation	.2	0	1	95	RPN
F03	1	Log Hollow/North Canyon	Remove Debris	1.0	0	4	95	RPN
L02	2	Ferron-Mayfield Road No. 50022	Preconstruction Eng.	22.3	0	0	86	
L06	2	Miller's Flat Road No. 50114	Preconstruction Eng.	18.0	0	0	87	
L06	2	Southside Ferron Mountain Road No. 43	Preconstruction Eng.	18.2	0	0	88	
L06	3	Lake Fork Indianola No. 50070	Preconstruction Eng.	20.2	0	0	89	
L06	1	Maple Canyon Road No. 50066	Preconstruction Eng.	4.7	0	0	90	
L06	4	Dark Canyon Lake No. 50129	Preconstruction Eng.	12.9	0	0	90	
L06	1	Six Mile Road No. 50047	Preconstruction Eng.	13.0	0	0	90	
L06	1	Chicken Creek Road No. 50101	Preconstruction Eng.	13.6	0	0	91	
L10	1	Beaver Creek Road No. 50290	Preconstruction Eng.	6.8	0	0	92	
L06	3	Browns Peak Road No. 50125	Preconstruction Eng.	11.4	0	0	93	
L10	1	Dry Creek Road No. 50217	Preconstruction Eng.	1.5	0	0	94	
L10	3	Intex Mine Road No. 50012	Preconstruction Eng.	2.0	0	0	94	



TABLE A-17 (Continued)

## FLOOD DAMAGE REPAIR ACTIVITY SCHEDULE

MIH CODE	RANGER DISTRICT	PROJECT NAME	TYPE OF TREATMENT	MILES	STRUCTURES	ACRES	TREATMENT YEAR	MANAGEMENT AREA
L03	2	Ferron-Mayfield Road No. 50022	Construction Eng.	22.3	0	0	87	RNG MMA GWR
L07	2	Miller's Flat Road No. 50114	Construction Eng.	18.0	0	0	88	MMA RNG
L07	2	Southside Ferron Mountain Road No. 43	Construction Eng.	18.2	0	0	89	RNG TBR GWR
L07	3	Lake Fork Indianola No. 500070	Construction Eng.	20.2	0	0	90	RNG TBR GWR WPE SPR
L07	1	Maple Canyon Road No. 50066	Construction Eng.	4.7	0	0	91	RNG TBR WPE
L07	4	Dark Canyon Lake No. 50129	Construction Eng.	12.9	0	0	91	RNG TBR
L07	1	Six Mile Road No. 50047	Construction Eng.	13.0	0	0	91	RNG TBR GWR WPE SPR
L07	1	Chicken Creek Road No. 50101	Construction Eng.	13.6	0	0	92	RNG GWR WPE SPR
L11	1	Beaver Creek Road No. 50290	Construction Eng.	6.8	0	0	93	RNG TBR GWR WPE SPR
L07	3	Browns Peak Road No. 501125	Construction Eng.	11.4	0	0	94	RNG GWR
L11	1	Dry Creek Road No. 50217	Construction Eng.	1.5	0	0	95	RNG
L11	3	Intex Mine Road No. 50012	Construction Eng.	2.0	0	0	95	RNG TBR
L05	2	Ferron-Mayfield Road No. 50022	Road Reconstruction	22.3	0	0	87	RNG SPR GWR UDM
L09	2	Miller's Flat Road No. 50114	Road Reconstruction	18.0	0	0	88	RNG TBR GWR
L09	2	Southside Ferron Mountain Road No. 43	Road Reconstruction	18.2	0	0	89	RNG TBR GWR
L09	3	Lake Fork Indianola No. 50070	Road Reconstruction	20.2	0	0	90	RNG TBR GWR WPE SPR
L09	1	Maple Canyon Road No. 50066	Road Reconstruction	4.7	0	0	91	RNG TBR WPE
L09	4	Dark Canyon Lake No. 50129	Road Reconstruction	12.9	0	0	91	RNG TBR
L09	1	Six Mile Road No. 50047	Road Reconstruction	13.0	0	0	91	RNG TBR GWR
L09	1	Chicken Creek Road No. 50101	Road Reconstruction	13.6	0	0	92	WPE SPR RNG GWR WPE SPR
L13	3	Beaver Creek Road No. 50290	Road Reconstruction	6.8	0	0	93	RNG TBR GWR WPE SPR
L09	1	Browns Peak Road No. 50125	Road Reconstruction	11.4	0	0	94	RNG GWR
L13	1	Dry Creek Road No. 50217	Road Reconstruction	1.5	0	0	95	RNG
L13	3	Intex Mine Road No. 50012	Road Reconstruction	2.0	0	0	95	RNG TBR
L19749	S.O.	Arterial Roads Maintenance Level 4	Road Maintenance	14.0	0	0	86	
L19749	S.O.	Major Collector Maintenance Level 4	Road Maintenance	99.9	0	0	86	
L19748	S.O.	Arterial Roads Maintenance Level 3	Road Maintenance	22.4	0	0	86	
L19749	S.O.	Minor Collector Maintenance Level 4	Road Maintenance	50.0	0	0	87	

TABLE A-17 (Continued)

## FLOOD DAMAGE REPAIR ACTIVITY SCHEDULE

MIH CODE	RANGER DISTRICT	PROJECT NAME	TYPE OF TREATMENT	MILES	STRUCTURES	ACRES	TREATMENT YEAR	MANAGEMENT A
L19748	S.O.	Major Collector Maintenance Level 3	Road Maintenance	99.9	0	0	87	
L19748	S.O.	Minor Collector Maintenance Level 3	Road Maintenance	99.9	0	0	88	
L19747	S.O.	Minor Collector Maintenance Level 2	Road Maintenance	99.9	0	0	88	
L19749	S.O.	Local Road Maintenance Level 4	Road Maintenance	75.0	0	0	89	
L19748	S.O.	Local Road Maintenance Level 3	Road Maintenance	99.9	0	0	89	
L19747	S.O.	Local Road Maintenance Level 2	Road Maintenance	99.9	0	0	90	
L19746	S.O.	Local Road Maintenance Level 1	Road Maintenance	99.9	0	0	90	
L19749	S.O.	Arterial Roads Maintenance Level 4	Road Maintenance	14.0	0	0	91	
L19749	S.O.	Major Collector Maintenance Level 4	Road Maintenance	99.9	0	0	91	
L19748	S.O.	Arterial Roads Maintenance Level 3	Road Maintenance	22.4	0	0	91	
L19749	S.O.	Minor Collector Maintenance Level 4	Road Maintenance	50.0	0	0	92	
L19748	S.O.	Major Collector Maintenance Level 3	Road Maintenance	99.9	0	0	92	
L19748	S.O.	Minor Collector Maintenance Level 3	Road Maintenance	99.9	0	0	93	
L19747	S.O.	Minor Collector Maintenance Level 2	Road Maintenance	99.9	0	0	93	
L19748	S.O.	Local Road Maintenance Level 4	Road Maintenance	75.0	0	0	94	
L19747	S.O.	Local Road Maintenance Level 3	Road Maintenance	99.9	0	0	94	
L19746	S.O.	Local Road Maintenance Level 2	Road Maintenance	99.9	0	0	95	
L19749	S.O.	Local Road Maintenance Level 1	Road Maintenance	99.9	0	0	95	
P04	S.O.	Initial Attack Helicopter Until Primary Road Access is Restored	Fire Protection				86	
P04	S.O.	Initial Attack Helicopter Until Primary Road Access is Restored	Fire Protection				87	
P04	S.O.	Initial Attack Helicopter Until Primary Road Access is Restored	Fire Protection				88	

TABLE A-18

FLOOD DAMAGE COST REPAIR SUMMARY (\$M)  
 BY FISCAL YEAR AND MANAGEMENT ACTIVITIES

MIH CODE	ACTIVITY DESCRIPTION	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
-------------	----------------------	------	------	------	------	------	------	------	------	------	------	-------

A05	Recreation Facility and Site Design	70.0	52.0	35.0	87.0	9.0						253.0
A06	Recreation Facility and Site Construction (Replacement)		230.0	175.0	115.0	288.0	31.0					839.0
A10	Trail Reconstruction Design		11.0	4.0								15.
A10	Trail Reconstruction			65.0	20.0							85.0
C03	Structural-Fisheries Dam Replacement		150.0	146.0								296.0
C03	Stream Structural Habitat Improvement in Conjunction With Watershed	291.6	292.1	142.1	355.5	256.5	244.9	244.9	199.8	278.7	150.3	2456.4
E00	Timber Resource Damage Inventory		30									30.0
D02	Range Resource Inventory	15.0	15.0									30.0
D05	Range Structural Improvement (Replacement)	115.0										115.0
F01	Inventory (Watershed and Landslide Evaluation)		40.0									40.0
F01	Inventory (Accelerated Soil Resource Inventory)	100.0	100.0	34.5								234.5
F03	Watershed Improvement (Rehabilitation in conjunction With Stream Fisheries)	25.1	27.5	34.9	43.5	5.9	34.6	20.0	74.0	26.7	182.4	474.6
L02 L06 L10	Arterial, Collector, and Local Road Preconstruction	10.0	35.0	30.0	10.0	55.0	8.0	12.0	7.0	3.0		170.0
L03 L07 L11	Arterial, collector, and Local Road Construction Engineering		10.0	30.0	25.0	5.0	37.0	8.0	9.0	5.0	2.0	131.0
L05 L09 L13	Arterial, Collector, and Local Road Reconstruction		100.0	458.0	276.0	50.0	363.0	80.0	74.0	34.0	10.6	1445.6
L19	Road Operation (Maintenance-All Levels)	50.6	47.5	57.5	45.6	34.5	50.5	47.5	57.5	45.6	34.5	471.3
P04	Initial Attack Helicopter	80.0	80.0	80.0								240.0
	Total	757.3	1220.1	1292.0	977.6	703.9	769.0	412.4	421.3	393.0	379.8	7326.4

TABLE A-19

MINERALS AND GEOLOGY ACTIVITY SCHEDULE  
FY 1986 Through FY 1995

Activity	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>COAL</b>										
New Leases (EIS)		8*			8*			8*		
Leasing Actions (Non EIS)	12	12	12	12	12	12	12	12	12	12
Exploration	30	30	32	32	34	34	34	36	36	36
Development										
New Mines		1*		1*		1*		1*		1*
Mine Plan Repermitting	2	0	1	3	6	2	1	1	4	6
Mine Plan Amendments (EA)	7	7	7	7	7	7	7	7	7	7
Mine Plan Reviews	30	30	30	30	30	30	30	30	30	30
Abandoned Mine Reclamation	1	1	1	1	1	1	1	1	1	1
<b>OIL AND GAS</b>										
Leasing	150	150	150	150	150	150	150	150	150	150
Exploration	40	40	35	35	35	30	30	30	30	30
Drilling	7	7	7	7	7	7	7	7	7	7
Production Facilitates	3	3	3	3	3	3	3	3	3	3
<b>LOCATABLE MINERALS</b>										
Exploration	40	45	45	50	55	55	45	40	35	30
Development	1	1	1	2	2	2	1	1	1	1
Claim Investigation	6	6	6	6	6	6	6	6	6	6
<b>COMMON VARIETY MINERALS</b>										
Permits (EA)	1	1	1	1	1	1	1	1	1	1
Permits (No EA)	9	9	9	9	9	9	9	9	9	9
<b>GEOLOGIC RESOURCE AND SERVICES MAN-YEARS</b>										
Minerals/Geology	10.5	11.3	11.4	11.0	12.2	11.8	10.6	11.3	11.2	10.4
Support	9.9	10.5	10.6	10.4	11.5	11.1	10.1	10.7	10.8	10.2

\* 50 percent of work and cost carried over to the next fiscal year.

# Support Service Elements

Activity Schedules for Support Service Elements are listed as follows:

<u>Elements</u>	<u>Page</u>
Fire Management Activity Schedule .....	A-43
Lands Activity Schedule .....	A-49
Transportation Activity Schedule .....	A-55
Sign Program Activity Schedule .....	A-63
Facilities Activity Schedule .....	A-64

## FIRE MANAGEMENT ACTIVITY SCHEDULE

PURPOSE - Fire Management is just one of the resource elements considered in the development of this Forest Plan. The purpose of this appendix is to establish the Fire Management portion of the Management Direction of the Forest Plan.

Fire Management direction has been developed by reviewing past and existing fire prevention, detection, and suppression programs in a comprehensive program called Fire Management Analysis and Planning Handbook (FSH 5109.19). This analysis reviews and seeks the most cost effective fire suppression program for the Forest. The analysis provides for an improved process for continuing fire management planning and assessment at the Forest level.

PROCEDURE - Fire Management Analysis and Planning Handbook provides four levels of analysis and planning of which three were used in the planning development. Fire Management Analysis Level I is an analysis of the management situation. The analysis uses information describing the current situation and inventory; current and historical fire and weather information; and program cost. Fire Management Analysis Level II is an evaluation of Fire Program options and program mixes. This process was used to find the most cost-efficient program. The most cost efficient program is used in the implementation in the Fire Management Planning Level III. Fire Management Planning Level IV is the operational project evaluation.

The Forest was divided into two divisions for the analysis; Manti Division and LaSal Division. This decision was made because of differences in the resources available, past fire occurrences, and urban interface.

The Forest was divided into two major fuel types. Fuel Model C and a combination of Fuel Model G and H. These areas were subdivided by division boundaries. Fuel Model G-H for the Manti Division and Fuel Model C for the LaSal Division.

Within the Forest protection system, this analysis identified two Fire Management Zones. They are listed by divisions, fuel model, average annual fire occurrence and average annual acreage burned (see Figure A-3).

<u>Division</u>	<u>Fuel Model</u>	<u>Average Annual Fire Occurrence</u>	<u>Annual Acreage Burned</u>
Manti	G-H	20	81
LaSal	C	29	57

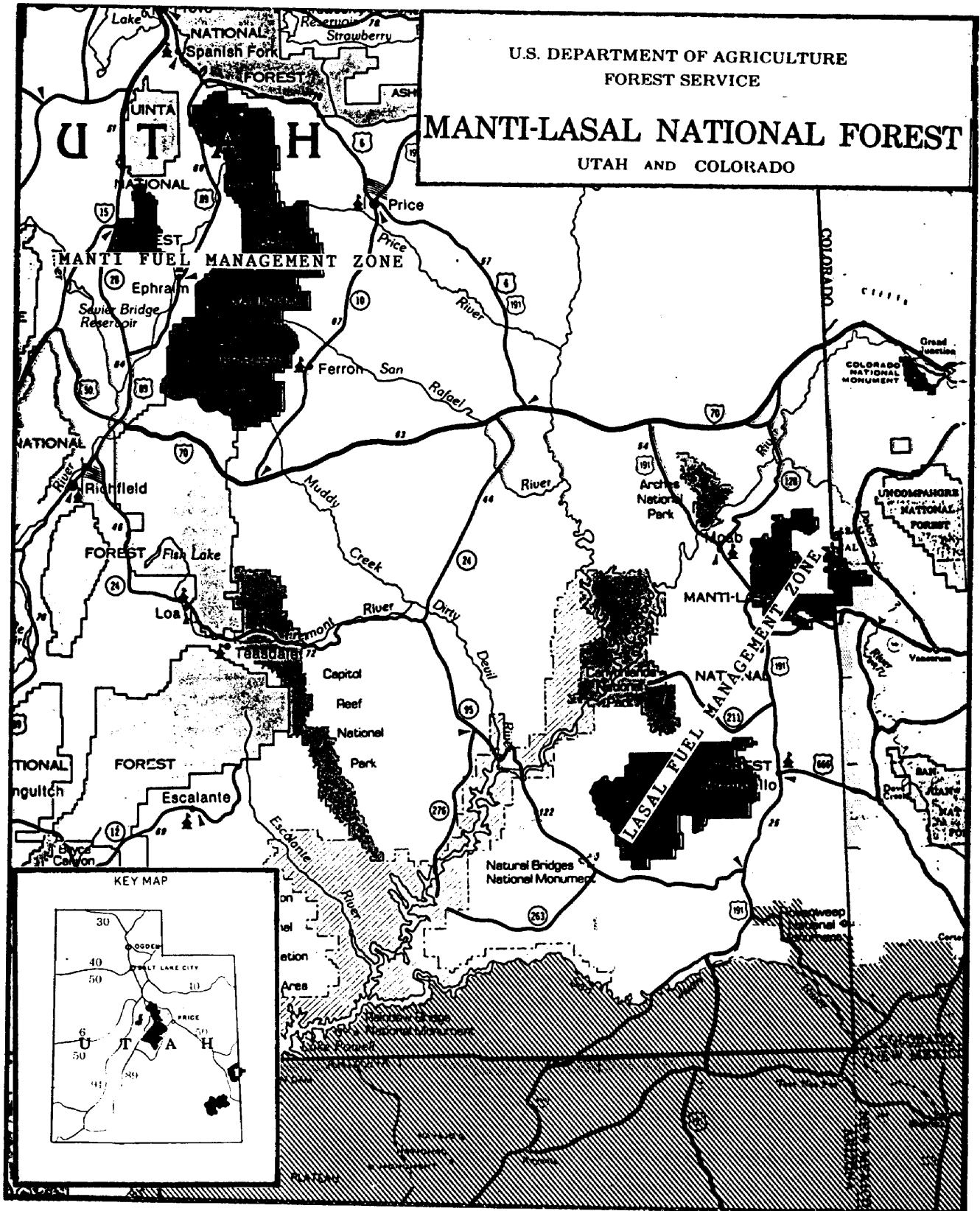
Fire Management Zones - The fire management zones are further described with generalizations of fuels, weather, topography, suppression actions and urban interface.

1. Manti Division is a predominately high-elevation zone that is comprised mostly of the Wasatch and Gunnison Plateaus, it has private land holdings within the fire management zone. The east and west margins of the plateaus are 3,000 to 6,500 feet above the valley floors providing some low and middle elevation zones.

The fuels within this area range from light to heavy loading depending upon fuel type, aspect and elevation.

Because of the elevation, moisture is generally received in adequate amounts from wet thundershowers to affect fire intensities.

FIGURE A-3





## FUEL MANAGEMENT ZONES

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Suppression actions are handled by District and Forest personnel.

Fires have been small with the largest fire in recent years being 400 acres. At times other Forests are called for suppression support.

2. LaSal Division is predominantly a middle elevation zone with areas of high elevation zone, within the peaks areas, and low elevation within canyon areas.

The fuels within this area range from light to moderate loadings with areas of insect-killed ponderosa pine, which could create heavier fuel loadings in the future. This area is drier and is subject to more lightning fires. It has private land holdings within the fire management zone.

Suppression actions are a coordinated effort between BLM, District and Forest personnel. Fires have been small with the largest fire in recent years being 150 acres. At times, other Forests are called for suppression support.

Moisture is generally received in adequate amounts from wet thundershowers to affect fire intensities. This division has more lightning caused fires than the other divisions.

Evaluation - Each District provided historical program costs, manpower and resource availability, manning response to different intensity levels, travel time and non-fire manpower program response. This information, along with fire frequency, intensity levels, and rate of spreads were used for the level II analysis.

Fires can be effectively managed in most cases in both Fire management Zones using confinement, containment, or control. The fire management Analysis Level I revealed that large fires could occur in both zones.

Six optional fire management strategies were evaluated during the Fire Management Analysis Level II. Table A-20 displays the total fire fighting protection resources for the Forest by options.

TABLE A-20\*

SUMMARY OF FOREST OPTIONS FOR INITIAL ACTION STRENGTH OF FORCE FIRE MANAGEMENT ANALYSIS LEVEL II		
Options	Manpower	Equipment
Base (011)	21	4 Engines
-20% (012)	15	4 Engines
-40% (013)	10	4 Engines
-60% (014)	6	4 Engines
+20% (015)	25	6 Engines
+40% (016)	30	8 Engines

\* Refer to EIS Chapter II, Table II-5 Summary Comparison of Trade-offs Between Alternatives, and Chapter IV Impact

## of Implementing Alternatives.

A-45

The planning process has revealed statistics that will be of benefit to the fire management program. Two of these are identified below.

1. The fire season often lasts from mid-May until the end of October. The Forest has two fire seasons with summer lightning from mid-May to the first of September and the second fire season occurs in the fall during the hunting season to late October.
2. If the Forest experiences a significant number of multiple fires per day or multiple fire days, that can place stress on the availability of manpower and equipment resources.

Prescribed Fire - Prescribed fire will be used to meet management goals and objectives for the protection, enhancement, and maintenance of resource productivity. In achieving the resource objectives, prescribed fire will be used only when fuels and weather conditions assure that the fire is in prescription for the specific management unit. If those conditions are not met, the burn will not occur.

The long-term strategy and direction for prescribed fire on the Manti-LaSal National Forest is five-fold.

1. Prescribed fire is used as a tool to dispose of forest residues when they cannot be used for firewood or when other viable alternatives are limited.
2. Unplanned ignitions may be declared a prescribed fire. The ignition must meet a predesignated set of criteria established in site-specific prescribed fire plan.
3. Prescribed fires will be used in wildlife habitat to foster browse or other vegetative productivity and create diversity.
4. Prescribed fires will be used in range habitat and other vegetative productivity to improve composition and create diversity.
5. Prescribed fires will be used in ponderosa pine and other conifer stands to reduce and maintain acceptable fuel loadings and to prepare seedbeds.

Fuel Management - Fuels management treatment will be used to protect, maintain, and enhance production to meet management goals and objectives, where economically feasible. If activity fuel treatment cannot be accomplished to meet resource management objectives, the activity will not be undertaken.

### Activity Fuels

1. Activity fuels will be treated or provided supplemental protection by the beginning of the first fire season following completion of the activity.
2. The treatment of activity fuel is the responsibility of the benefiting function conducting the activity.
3. Standards will be based upon land and resource management objectives for each management unit. FSH 5109.18 Fuel Management Handbook will be used as a guideline for setting standards.
4. Residue utilization can be used to extend activity treatment dates.
5. Fuel Treatment Applications. The following management actions for fire hazard reduction

shall be considered when developing fuels management plans.

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- A. Utilization
- B. Rearrangement
- C. Removal
- D. Disposal
- E. Conversion
- F. Nontreatment
- G. Interim Protection
- H. Supplemental Protection

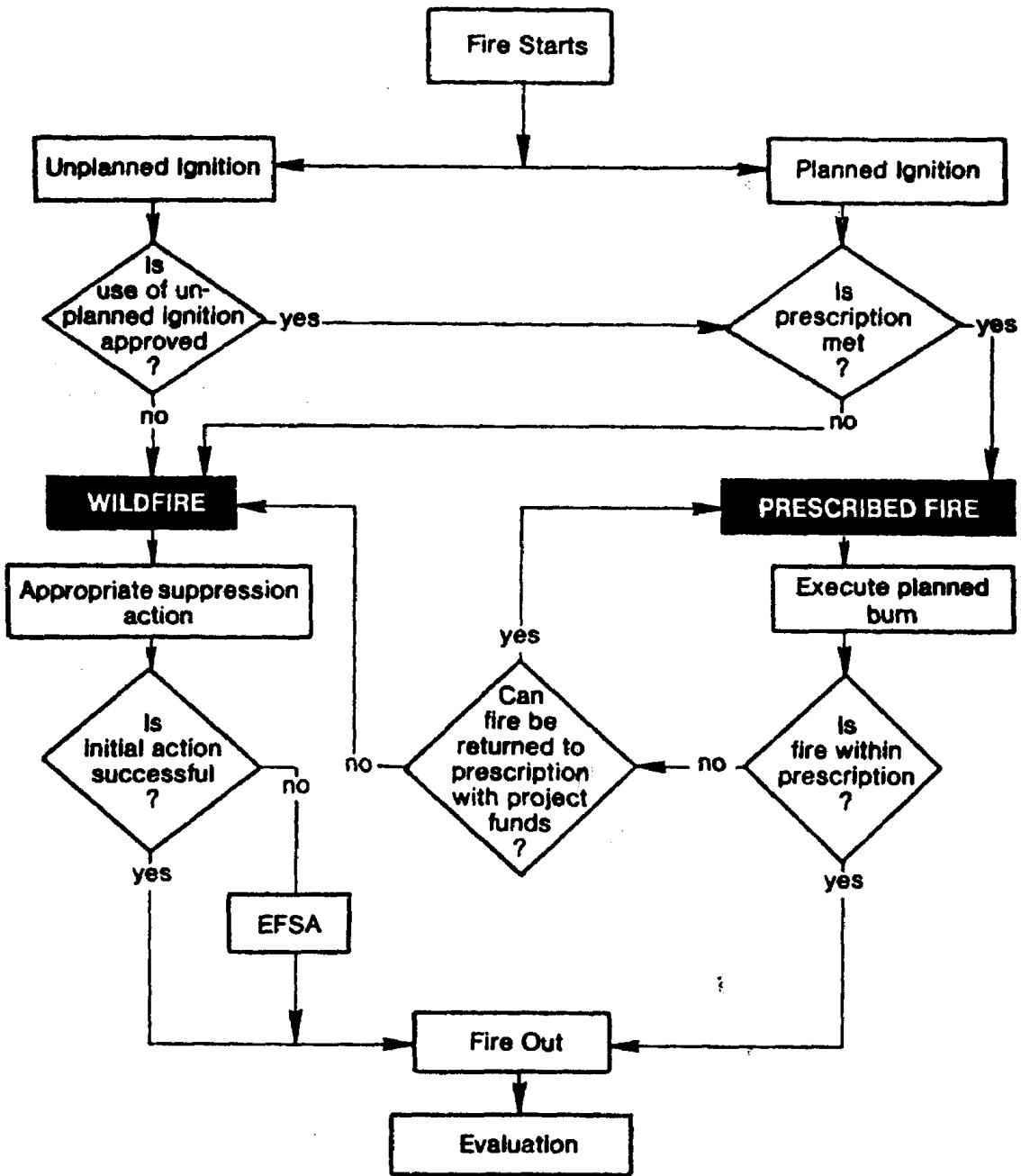
### Natural Fuels

1. The treatment of natural fuels is the responsibility of the benefiting function conducting the activity and must be cost-effective or the activity will not be undertaken.
2. Standards will be based upon land and resource management objectives for each management unit.
3. Fuels Treatment Applications. The following management actions for fire hazard reduction shall be considered when developing fuels management plans.
  - A. Utilization
  - B. Rearrangement
  - C. Removal
  - D. Disposal
  - E. Conversion
  - F. Nontreatment
  - G. Interim Protection
  - H. Supplemental Protection

Figure A-4 summarizes the application of fire policy to different fire situations.

FIGURE A-4

**FIRE MANAGEMENT POLICY MODEL**



## LANDS ACTIVITY SCHEDULE

The Lands Activity Schedule contains the following land programs:

-Landline Location (Table A-21) lists the landline location program for ROW's and interior and exterior boundaries.

-Rights-of-Way (Table A-22) lists, by road, the ROW cases and miles of road ROW's needed.

-Withdrawal Sites Review (Table A-23) lists the existing withdrawals that are to be reviewed to determine if the withdrawals should be continued.

-Proposed Mineral Withdrawal Sites Review (Table A-24) lists the proposed sites to consider for withdrawal.

TABLE A-21

LANDLINE LOCATION			
Year	ROW's	Interior	Exterior
1	2.1	1.3	11.8
2	5.5	4.0	6.4
3	1.8	1.3	13.6
4	2.0	1.5	14.8
5	1.8	4.5	11.9
6	1.2	3.0	14.6
7	4.2	1.0	14.5
8	3.0	4.8	13.5
9	3.5	1.3	18.5
10	1.7	4.8	14.4



TABLE A-22

## RIGHTS-OF-WAY

Year	Road Name	FDR#	Cases	Miles
1986	Pack Creek - LaSal Pass	50073	3	1.6
	Upper Two Mile (Sinbad Ridge Access)	50203	1	0.5
1987	Dairy Fork	50006	1	0.3
	Potter Canyon	50271	1	2.2
	East Mountain	50060	3	3.0
1988	South Fork - Soldier	50009	1	0.4
	Miller's Flat	50014	3	1.4
1989	Miller's Flat	50014	1	0.6
	Skyline Drive	50150	1	0.2
	Cottonwood	50040	2	1.2
1990	Sinbad	New Access	1	0.5
	Lake Fork - Indianola	50070	2	1.5
	Polar Mesa	50030	1	0.3
1991	Gateway	50207	4	1.2
1992	Gooseberry Reservoir	50124	1	0.2
	Upper Huntington*	50225	2	4.0
1993	Dry Creek	50217	2	0.7
	Electric Lake	50222	1	1.8
	Granger Ridge	50221	1	0.5
1994	Pine Ridge	50140	1	1.3
	Trail Mountain	50034	1	1.2
	Flat Canyon	50145	1	1.0
1995	Lowry Water	50038	1	0.3
	Muddy Creek	50047	2	0.8
	Dairy Fork	50006	1	0.6
Totals			39	26.8

\* Probably should be special use.

## WITHDRAWAL REVIEW

Withdrawals from mineral entry on the Forest were made over the years to protect capital investments and planned developments. The majority of the withdrawals were under Executive Order (EO) 10355, which was later repealed by the Federal Land Policy and Management Act of 1976 (FLPMA). Section 204 (1) of FLPMA requires that all withdrawals in 11 western states be reviewed by 1991 to determine whether and for how long the continuation of each withdrawal would be consistent with the original purpose for which the land was segregated from mineral entry. The purpose of the review required by FLPMA is to reduce the amount of land withdrawn from entry where surface mining regulations (36 CFR 228) or other laws can provide adequate protection. The review will be done according to criteria and procedures established in the Secretary of Interiors regulations 43 CFR 2300 and by Bureau of Land Management (BLM) Organic Act directives. If the review is not completed by 1991, withdrawals will be automatically revoked.

Three different categories of withdrawals will be considered in the review process. These are: (a) Forest Service withdrawals on National Forest System land; (b) Forest Service withdrawals on BLM land; and (c) Other Federal agency withdrawals on National Forest System land.

The review process will include a determination of whether continuation, revocation, or partial revocation of each withdrawal is appropriate. The basic steps in the review process are: 1. Field examination of withdrawal sites. 2. Preparation of required mineral and lands reports. 3. Preparation of an Environmental Assessment. The Environmental Assessments can cover more than on site if the same action is recommend for a number of sites. 4. Preparation of new legal descriptions for lands on which withdrawals are to be partially revoked with a minimum amount of land to be withdrawn. 5. Preparation of a justification statement for withdrawals which are to be continued. 6. A review of other Federal agency withdrawal recommendations on National Forest System lands with concurrence or disapproval. 7. Submission of completed documents and recommendations to the BLM per their procedures.

New withdrawal area requests will be processed according to BLM regulations. For example, if the proposed Research Natural Areas are formally accepted for management, new withdrawals will be requested.

Comprehensive reviews of withdrawals for the Manti-LaSal National Forest will begin in fiscal year 1986 and will be completed by fiscal year 1989. The review schedule is shown in Table A-23 on the following page. This schedule has been agreed upon by the BLM and will give them adequate review time to meet the 1991 deadline.



TABLE A-23

## WITHDRAWAL SITES REVIEW

Fiscal Year and Name	Location	District	Acres	Serial No.
1986*				
Joes Valley Water and Power Site (Bureau of Reclamation)	S32, T17S, R6E, and S5, T18S, R6E	Ferron	200	U-035987
Joes Valley Water and Power Site (Bureau of Reclamation)	S30, T17S, R6E, and S4, T18S, R6E	Ferron	180	U-087869
Chicken Creek Recreation Area (Uinta National Forest)	S2 and 11, T15S, R1E	Sanpete	30	U-6443
Joes Valley Administrative Site	S31, T17S, R6E	Ferron	112	U-16603
Indian Creek Administrative Site	S22, T19S, R4E	Ferron	40	U-42843
Upper Joes Valley Administrative Site	S15, T16S, R6E	Ferron	80	U-42843
Seeley Creek Administrative Site	S25 and 26, T17S, R4E	Ferron	180	U-42851
Moroni Administrative Site (Uinta National Forest)	S21, T14S, R2E	Sanpete	40	U-42841
Mesa Administrative Site	S30, T26S, R24E	Moab	58	U-026841
Hammond Canyon Archeological Area	S28, 29, 30, 31, 32 and 33, T35S, R20E	Monticello	800.19	U-028260
Baker Administrative Site	S26 and 35, T33S, R23E	Monticello	75	U-42860
Mammoth Administrative Site	S13, T13S, R5E, and S18, T13S, R6E	Price	76.16	U-42867
Great Basin Experimental Range	T17S, R4 and 5E, T18S R3 and 4E	Sanpete Ferron	33,839.68	U-09556
Price Dist./S.O. Administrative Site	S9 and 10, T14S, R10E	Price	6.25	U-42941
Maple Canyon Recreation Area (Uinta National Forest)	S34, T14S, R2E	Sanpete	20	U-7566
1987				
Joes Valley Water and Power Site (Bureau of Reclamation)	T18S, R6E	Ferron	1,556	U-42940
Warner Lake Summer Home Area	S28, T26S, R24E	Moab	40	U-049508-A

\* Several sites listed here were originally scheduled for 1985. Funding was not received that year so they were carried over to 1986.

TABLE A-23 Continued

## WITHDRAWAL SITES REVIEW

Fiscal Year and Name	Location	District	Acres	Serial No.
1987 (Continued)				
Oowah Recreation Area	S33, T26S, R24E	Moab	60	U-049508-A
Hammond Canyon Archeological Area	S30, T35S, R19E, and S20, 21, 27, 28, 29, 30 and 33, T35S, R20E	Monticello	2,839.33	U-081486
Spring Ridge Administrative Site	S22 and 27, T11S, R5E	Price	80	U-092145-A
Warner Administrative Site	S21 and 28, T26S, R24E	Moab	62.05	U-42842
Baker Administrative Site	S35, T33S, R23E	Monticello	80	U-42844
1988				
Mt. Baldy Administrative Site	S19 and 20, T19S, R4E	Sanpete	160	U-010062-A
Indian Creek Administrative Site	S9, T34S, R22E	Monticello	160	U-010062-A
Pinchot Administrative Site	S32, T19E, R3E	Sanpete	240	U-010062-A
Steven's Creek Administrative Site	S36, T19 1/2S, R5E	Ferron	100	U-010062-A
Lake Administrative Site	S28, T14S, R6E	Price	90	U-010062-A
Stuart Administrative Site	S8 and 9, T15S, R7E	Price	190	U-010062-A
Gooseberry Administrative Site	S18, T34S, R20E	Monticello	160	U-010062-A
Park Administrative Site	S5, T18S, R6E	Ferron	120	U-010062-A
Pack Creek Administrative Site	24S, T27S, R23E	Moab	40	U-010062-A
Manti Community Recreation Area	S13 and 14, T18S, R3E	Sanpete	80	U-012576
Lake Hill Recreation Area	S20, T17S, R4E	Sanpete	60	U-012576
Ferron Reservoir Recreation Area	S22, T19S, R4E	Ferron	160	U-012576
White Mountain Administrative Site	S34, T20S, R4E	Ferron	80	U-012576
Flat Canyon Recreation Area	S33, T13S, R6E	Price	80	U-012576
Huntington Recreation Area	S5, 8, 17 and 20, T15S, R7E	Price	60	U-012576
Kigalia Administrative Site	S9, T36S, R19E	Monticello	160	U-012576
Warner Administrative Site	S28, T26S, R24E	Moab	60	U-012576
Castle Rock Recreation Area	S17, T15S, R7E	Price	50	U-012576
Forks Recreation Area	S20, T15S, R7E	Price	40	U-012576
Buckeye Administrative Site (Colorado)	S3, T48N, R20W	Moab	99.35	C-06785
Dalton Springs Recreation Area	S32, T33S, R23E	Monticello	80	U-021426
Gooseberry Water and Power Site	S13, 14, 23 and 24			
(Bureau of Reclamation)	T13S, R5E	Price	6,524	U-42915

TABLE A-24

## PROPOSED MINERAL WITHDRAWAL SITES REVIEW

Year	Name	Location	Acres
1986	Buckeye Administrative Site and Recreation Area	T48N, R20W, Sec.2, Lots 13, 14, 15, and N 1/2, SE 1/4, SW 1/4, SE 1/4, W 1/2, SE 1/4, SE 1/4, N 1/2 N 1/2 NW 1/4 SW 1/4, E 1/2 E 1/2 SE 1/4 SW 1/4, E 1/2, NE 1/4 SW 1/4, NW 1/4 NE 1/4 SW 1/4	310
1986	LaSal Administrative Site	T28S, R25E, Sec.22, W 1/2 SW 1/4 SW 1/4 SE 1/4, E 1/2 SE 1/4 SE 1/4 SW 1/4	10
1986	Warner Administrative Site and Campground	T26S, R24E, Sec. 21, S 1/2 SW 1/4, SE 1/4 E 1/2 SE 1/4 SE 1/4 SW 1/4	25
1988	Spring City Picnic Area	E 1/4 NE 1/4 SE 1/4 NE 1/4, Sec. 12, R4E, T16S	2
1988	Elk Knolls (RNA)	SW 1/4, NW 1/4, NW 1/4, SW 1/4, Sec. 10, T18S, R4E, SE 1/4, NE 1/4, NE 1/4, SE 1/4, Sec. 9, T18S, R4E	40
1988	Grove of Giant Aspen (SA)	E 1/2, NE 1/4, SW 1/4, NE 1/4, W 1/2, NW 1/4, SE 1/4, NE 1/4, Sec. 24, T19S, R3E	10
1988	Old Folks Flat Campground	Sec. 8, T15S, R7E, Sec. 5, T15S, R7E	5
1988	Stuart Guard Station	Sec. 8, T15S, R7E	5
1988	Blue Mountain Ski Area With Proposed Expansion	Portions of Sec. 31, T33S, R23E, SLM and Portions of Sec. 1, T34S, R23E, SLM	325
1988	Devils Canyon Campground	Portions of Sec. 9, 16, and 17, T35S, R23E, SLM	250
1988	Buckboard Campground	Portions of Sec. 25, T33S, R22E, SLM	90
1988	Monticello Lake	Portions of Sec. 23, T33S, R22E, SLM	120
1988	Spring Lake	Portions of Sec. 16 and 21, T33S, R22E, SLM	90
1988	Racetrack Reservoir	Portions of Sec. 22, T33S, R22E, SLM	40
1988	Red Bluff Campground	Portions of Sec. 28, T34S, R22E, SLM	40
1989	Indian Creek Campground	Sec. 10, T16S, R6E	57.50
1989	Joes Valley Rec. Complex	Sec. 30, 31, 32, T17S, R6E, Sec. 6, T18S, R6E	322.68
1989	Gooseberry Campground	Sec. 18, T13S, R6E	17.5
1989	Forks Campground	Sec. 20, T15S, R6E	17.5
1990	Beaver Dam Summer Home	Sec. 31, T13S, R6E	37.5
1990	Fish Creek Campground	Sec. 13, T12S, R6E	10

## TRANSPORTATION ACTIVITY SCHEDULE

In the first 10-year period, eleven percent of the system will have been upgraded to the management objective level leaving 63 percent needing future upgrading to be at the management objective level.

1. 9.6 mile of primitive major-collector road will be upgraded to all weather gravel road.
2. 88.3 mile of primitive minor-collector road will be upgraded to all weather gravel road.
3. 88.3 mile of primitive minor-collector road will be upgraded to dry weather gravel road.
4. 51.9 miles of graded and drained major-collector road will be upgraded to all weather gravel.
5. 43.5 miles of new graded and drained road will be added to the system.

During the first several years, intensive management through use restriction and a shift from marginal local, collector and arterial road system maintenance to intensive collector and arterial road system maintenance should occur in order to provide resource and roadbed protection. Instead of 99 percent of the local system being maintained at level 2 or higher, only five percent would be maintained at level 2 or higher at the beginning of the period. Restriction would be placed on 45 percent of the local road system in the beginning. Gradually, 58 percent of the local road system would be maintained at level 2 for travel by high clearance vehicles at end of the period and only 42 percent of local system or 23 percent of total system restricted.

Intensive and improved maintenance of the arterial and collector system would allow passenger car traffic use to increase from 20 percent to 46 percent of the system mileage by the end of the period. High clearance vehicle traffic use would increase from 46 percent of the system mileage to 68 percent of the system mileage over the 10 year period.

Maintenance would move from minimum operating maintenance to adequate existing investment protection with dispersed recreation and developed access maintenance. Maintenance would still be below management objectives.

The Transportation Activity Schedule contains the following program:

- Ten-year Road Maintenance Plan Activity Schedule (Table A-25).
- Transportation Plan Review Schedule that list system roads to be considered for (a) obliteration and complete closure (Table A-26), (b) obliteration and use restrictions (Table A-27), and (c) use restrictions (Table A-28).
- Non-system Roads Recommended for Obliteration (Table A-29).
- Roads Proposed for Forest Development Road System (Table A-30) lists roads to be considered for inclusion in the system.

Road Construction (Table A-31) lists the roads scheduled for construction or reconstruction.

TABLE A-25

TEN-YEAR ROAD MAINTENANCE PLAN ACTIVITY SCHEDULE  
Miles of Road Maintained by Maintenance Levels

Year	Maintenance Levels					Cost M\$
	1	2	3	4	5	
1986	652.1	338.3	129.3	17.8	16.3	457
1987	657.0	338.3	129.3	52.5 75.9	16.3	479
1988	661.8	338.3	129.3	85.7 42.7	16.3	500
1989	666.6	338.3	129.3	120.5 7.9	16.3	522
1990	646.7	338.3	154.1	128.4	16.3	544
1991	619.2	338.3	186.4	128.4	16.3	566
1992	593.4	338.3	217.1	128.4	16.3	587
1993	515.7	410.6	227.3	128.4	16.3	609
1994	414.4	516.7	227.3	128.4	16.3	631
1995	313.2	622.7	227.3	128.4	16.3	653
2000	306.0	323.9	454.1	223.1	0	903

## TRANSPORTATION PLAN REVIEW SCHEDULE

The following tables list roads scheduled for review to determine whether they should be closed and/or obliterated or have use restrictions. Part of the roads listed are on the Forest Development Road system and part are not on the system. In addition, Table A-26 lists non-system roads that will be evaluated for inclusion on the Forest Development Road system.

TABLE A-26

FOREST DEVELOPMENT ROADS  
RECOMMENDED OBLITERATION/COMPLETE CLOSURE

Sanpete Ranger District

50114 - White Ledge Road (Considered for Motorized Trail)  
50217 - Dry Creek (Shift to Trail System)

Ferron Ranger District

50153 - Ferron Mountain

Price Ranger District

50008 - Bear Ridge (Part to be Replaced)  
50012 - Intex Mine  
50119 - South Hughes  
50124 - Gooseberry Reservoir (Part Only)  
50138 - Terry Ridge  
50211 - Mill Creek  
50213 - Gooseberry Summer Homes  
50214 - Dry Canyon  
50225 - Upper Huntington (Part Only)

Moab Ranger District - None

Monticello Ranger District

50174 - Hart's Draw (Part Only)

TABLE A-27

FOREST DEVELOPMENT ROADS  
CONSIDERED/EVALUATED FOR OBLITERATION/USE RESTRICTIONS

Sanpete Ranger District

50127 - Moroni Ridge (Part Only)  
50134 - Deep Ridge  
50148 - Death Hollow  
50154 - Rocky Ridge  
50158 - Cooley Creek  
50165 - Trough Springs  
50272 - Dry Pole  
50279 - Haystack

Ferron Ranger District

50135 - Grave Pit

Price Ranger District

50122 - Fish Creek Ridge (Part Only)  
50215 - Garrett Ridge

Moab Ranger District - None

Monticello Ranger District - None

TABLE A-30

ROADS PROPOSED FOR FOREST DEVELOPMENT ROAD SYSTEM

Sanpete Ranger District - None

Ferron Ranger District - None

Price Ranger District

Bear Ridge (New Alignment)  
Burnout  
Spring Ridge Administrative Site

Moab Ranger District

North Beaver Mesa  
Sinbad Ridge Road  
Willow Basin Road  
Mesa Guard Station Road  
Pinhook Battleground Road  
Cold Spring Road  
Pack Creek Road  
Gold Basin Road  
Paradox-Buckeye Road (Lion Creek to FS Boundary)

Monticello Ranger District

Peter's Point  
Bull Dog  
Johnson Creek





TABLE A-31

ROAD CONSTRUCTION

Year	FDR No.	Miles	Primitive	Native	Ready for 4" Aggregate	Ready for 12" Aggregate	Graded With 4" Aggregate	Graded With 12" Aggregate	Cost M\$		
1986	50150	9.7	_____>						204		
	50069	13.2	_____>						<u>205</u>		
Total									409		
1987	50073	16.1	_____>						250		
	50008	8.0	_____>						124		
	50122	3.6	_____>						<u>56</u>		
Total									430		
1988	50036	3.0	_____>						46		
	50129	4.1	_____>						64		
	50006	5.5	_____>						85		
	50039	5.0	_____>						78		
	50271	5.9	_____>						91		
	50110	1.9	_____>						29		
	50060	5.4	_____>						<u>84</u>		
Total									477		
1989	50011	5.3	_____>						82		
	50047	4.0	_____>						62		
	50009	2.8	_____>						43		
	50114	4.5	_____>						70		
	50014	3.7					_____>				<u>231</u>
Total									488		
1990	50014	8.2					_____>				512
1991	50014	4.9					_____>				306
	50092	3.8					_____>				<u>238</u>
Total									544		
1992	50092	4.7					_____>				294
	50150	5.6					_____>				<u>272</u>
Total									566		
1993	50150	4.1					_____>				199
	50150	1.5					_____>				94
	50150	4.8					_____>				<u>300</u>
Total									593		
1994	50150	9.9					_____>				619
1995	50150	10.3					_____>				644

## SIGN PROGRAM ACTIVITY SCHEDULE

The sign activity schedule shows that the Forest will need between \$16,230 and \$19,476 per year to complete the first phase of the Forest Sign Plan. No priority 1 or 5 sign requirements were identified. Within the priority groupings, the installation will be safety signs first, regulatory signs second, information signs third, and route signs fourth. The present identified needs are 1.1 percent priority 2, 59 percent priority 3, and 30 percent priority 4. Some sixty man-days per year for planning, purchasing, installing and maintaining, the signs have to be identified. Installation and maintenance accounts for 75 percent of the manpower requirements.

TABLE A-32

### SIGN PROGRAM

YEAR		Warning	Regulatory	Guide	Total \$
1986	Install/Replace	595	120	6,535	7,250
	Repair	----	----	----	----
1987	Install/Replace	----	----	16,230	16,230
	Repair	----	----	----	----
1988	Install/Replace	3,140	3,810	9,280	16,230
	Repair	----	----	----	----
1989	Install/Replace	----	----	16,230	16,230
	Repair	----	----	----	----
1990	Install/Replace	----	----	16,230	16,230
	Repair	----	----	----	----
1991	Install/Replace	----	----	16,230	16,230
	Repair	120	25	1,305	1,450
1992	Install/Replace	----	----	16,230	16,230
	Repair	----	----	3,246	3,246
1993	Install/Replace	----	----	16,230	16,230
	Repair	630	760	1,856	3,246
1994	Install/Replace	----	----	16,230	16,230
	Repair	----	----	3,246	3,246
1995	Install/Replace	----	----	16,230	16,230
	Repair	----	----	3,246	3,246

## FACILITIES ACTIVITY SCHEDULE

The purpose of Facilities Activity Schedule (based on the Forest Facilities Master Plan) is to identify action needed to ensure that Forest facilities are adequate for Forest management needs. The plan is based on current and expected future work loads.

The Forest Facilities master Plan is divided into a Forest-wide summary of planned actions, a District by District narrative, and maps showing administrative site locations. The Forest-wide summary of planned actions is included here.

There are 62 FA&O buildings on the Forest that the Facilities Master Plan, which is a part of the Forest Plan, has scheduled for retention. Generally, these buildings average 50 or more years of age but are structurally sound. Accomplishment of annual condition surveys, periodic structural inspections, and planning and executing routine repairs and minor improvements related to safety and health, costs \$60.00 per year. This averages \$1,000 per building per year and provides for the following typical repairs or maintenance.

- A. Replacement or oiling of wooden rooftops to prevent leaks.
- B. Repair, replacement, and caulking of windows, screen doors, doors, and front porches.
- C. Painting of interior and exterior.
- D. Patching of dry wells and sagging porches.
- E. Control of insects and rodents.
- F. Upgrading or maintaining water, sewer, and utilities where they exist to comply with health and safety requirements by law.
- G. Correcting foundation problems before they endanger the structural integrity of the building.

The Facilities Activity Schedule contains the following facility programs:

- Building and Structure Program (Table A-33) lists scheduled facility improvements.
- Summary of Planned Actions lists the facilities on the Forest and indicates the proposed action for maintenance, construction, or obliteration.

TABLE A-33

## BUILDING AND STRUCTURE PROGRAM

Year	Site	Need
1986	None	
1987	Ferron Complex Indian Creek Guard Station Castle Dale Dwelling Warner Guard Station	Rewire Electrical Rewire Sewer
1988	Moab Office Baker Guard Station Bunkhouse Baker Guard Station Warehouse	Space Housing Space
1989	Kigalia Guard Station	Water/Sewer
1990	Stuart Guard Station	Water/Sewer
1991	Ephraim Office	Safe Space
1992	Ephraim Office	Safe Space
1993	Buckeye Guard Station Stuart Guard Station	Water/Sewer Housing
1994	Price District Office Ephraim Warehouse	Space Space

## SUMMARY OF PLANNED ACTIONS

<u>Site/Facility and Building Number</u>	<u>Action</u>
Price Supervisor's Office (Leased Building) <u>1/</u>	Replace
Price Administrative Site #1000001 <u>1/</u>	Relocate/New
Warehouse (Radio Shop) #1303	Relocate/New
Oil and Gas House #1337	Relocate/New
Equipment Shed #1304	Relocate/New
Storage Warehouse (Price District) #1336	Relocate/New
Property Building (Fire) #1334	Relocate/New
Pesticide and Seed Storage Building #1329	Relocate/New
Staff Storage Building #1341	Relocate/New
Price WCF Shop (Leased Building) <u>1/</u>	Replace
Price District Office (Leased Building) <u>1/</u>	Replace
Ephraim Office (Leased Building) <u>1/</u>	Replace
Ephraim Administrative Site #1001002	Relocate/New
Shop/Warehouse #1309	Relocate/New
Paint, Pesticide, and Flammable Storage Building #1333	Relocate/New
Ephraim Dwelling #1001003	Retain
Manti Administrative Site #1001004	Retain
Dwelling #1131	Retain
Garage and Shop #1306	Retain
Moroni Guard Station #1001006	Relocate/New
Water and Sewer System #10602, #10603	Relocate/New
Electrical System #10606	New Construction
Two Trailer Pads with Utilities #10604, #10605	New Construction
Dwelling #10601	Relocate/New
Mount Baldy Administrative Site #1001005	
Bunkhouse #1123	Remove
Water and Sewer System #10501, #10502	Upgrade
Electrical System #10503	New Construction
Two Trailer Pads with Utilities #10504, #10505	New Construction
Pinchot Guard Station	Obliterate
Upper Joes Valley Guard Station	Obliterate
Dwelling	Obliterate
Garage	Obliterate
Orange Olsen Administrative Site #1002001	
Dwelling #1113	Retain
Bunkhouse #1132	Upgrade/Plumbing
House Trailer	Obliterate
Generator House #20201	Replace
Storage Building #1307	Replace
Eight Trailer Pads with Utilities #20202, #20203, # 20204, #20205, #20206, #20207, #20208, and #20209	New Construction
Roads	Upgrade/Pavement
Electrical System #20210	Upgrade
Water System #7349	Upgrade
Sewer System #002-9	
Upgrade	

1/ All facilities in Price are substandard or leased buildings. The Forest Service should obtain a new site and build all facilities needed in Price at the new site.

## SUMMARY OF PLANNED ACTIONS (Continued)

<u>Site/Facility and Building Number</u>	<u>Action</u>
Seeley Creek Guard Station	Obliterate
Indian Creek Guard Station #1002002	
Dwelling #1118	Retain
Bunkhouse/Storage #1314	Renovate
Four Trailer Pads with Utilities # 20201, #20202, # 20203, and # 20204	New Construction
Electrical System # 20205	New Construction
Water System #7329	Upgrade
Sewer System #002-7	
Upgrade	
White Mountain Cabin	Obliterate
Pit Toilet	Obliterate
Fence	Obliterate
Green Hollow - Cowboy Creek #1002003	New Construction
Three Trailer Pads with Utilities #20301, # 20302, # 20303	New Construction
water System #20305	New Construction
Sewer System #20304	New Construction
Electrical System #20306	New Construction
Castle Dale Administrative Site #1002004	Retain
Dwelling #1107	Upgrade/Elect
Garage #1311	Retain
Ferron Administrative Site #1002005	
Dwelling #1112	Upgrade/Elect
Bunkhouse #1117	Upgrade/Elect
Warehouse #1342	Upgrade/Elect
Barn #1308	Upgrade/Elect
Paint, Pesticide, and Flammable Storage #20502	New Construction
Garage #1312	Upgrade/Elect
Ferron Office (leased Building)	Replace
Stuart Guard Station #1003001	
Dwelling #1127	Retain
Garage #1322	Retain
Warehouse #1343	Retain
Four Trailer Pads with Utilities	New Construction
Sewer System	Replace
Water System	Replace
Lake Guard Station #1003002	
Dwelling #1120	Upgrade/Plumbing
Garage #1316	Retain
Six Trailer Pads with Utilities	New Construction
Water System	Retain
Sewer System	Retain
Parking Area	New Construction
Warehouse #30321	New Construction
Generator Shed #30322	Retain
Spring Ridge Administrative Site #1003004	
Water system	New Construction
Sewer System	New Construction
Corral and Pasture	New Construction
Roads and Parking	Reconstruction
Trailer Pad	New Construction

## SUMMARY OF PLANNED ACTIONS (Continued)

<u>Site/Facility and Building Number</u>	<u>Action</u>
Buckeye Guard Station #1004001	
House Trailer #40104	Retain
Storage Shed #40105	Retain
Trailer Pad with Utilities	New Construction
Water System	Upgrade
Sewer System	Upgrade
Electrical System	New Construction
Parking Area	New Construction
Warner Guard Station #1004002	
Dwelling #1129	Renovate
Garage #40203	Retain
Water System	Retain
Sewer System	Replace
Trailer Pad with Utilities	New Construction
LaSal Guard Station #1004003	
Dwelling #1103	Retain
Storage Shed #40301	New Construction
Water System	Replace
Sewer System	Retain
Electrical System	Update
Mesa Guard Station #1004004	Retain
Moab Office (Leased Building)	Replace
Moab Administrative Site #1004005	Retain
Warehouse #1302	Retain
Bunkhouse #1109	Retain
Garage and Shop #1301	Retain
Paint, Pesticide, and Flammable Shed #40502	Retain
Storage shed #1338	Retain
Dwelling #1122	Retain
Monticello Office (Leased Building) #1005001	Replace
Monticello Dwelling (216 Uranium) #1005002	Retain
Garage	Retain
Monticello Dwelling (Lower Uranium) #1005003	Dispose
Baker Administrative Site #1005004	
Dwelling #1102	Retain
Garage #1310	Retain
Bunkhouse #1104	Replace
Warehouse #1325	Retain
Barn #1326	Retain
Oil Shed #50403	Retain
Recreation Shed #50404	Retain
Sewer System	Retain
Equipment Shed/Warehouse #50401	New Construction
Paint, Pesticide, and Flammable Storage Building #50402	New Construction
Gooseberry Guard Station #1005005	
Dwelling - 3 Person #1116	Renovate/Siding
Dwelling - 2 Person #50502	Renovate/Siding
Gas and Oil Shed #1313	Replace
Trailer Pad with Utilities	New Construction
Water System	Retain
Sewer System	Retain



SUMMARY OF PLANNED ACTIONS (Continued)

<u>Site/Facility and Building Number</u>	<u>Action</u>
Kigalia Guard station #1005006	
Dwelling #1119	Renovate/Siding
Warehouse #50602	Replace
Sewer System	Replace
Water System	Replace
Trailer Pad with Utilities	New Construction
Levan Peak Communication Site #1000002	New Construction
Horseshoe Flat Communication Site #1000003	Addition
Abajo Peak Communication Site #1000004	Retain
Cedar Mountain Communication Site #1000005	Retain
Monument Peak Communication Site #1000006	Retain
Bald mesa Communication Site #1000007	Retain
Sanpete Pint Communication Site #1000008	Retain
Castle Valley Landfill Warehouse #1000009	Retain



# APPENDIX B

## MINERAL STIPULATIONS AND MITIGATION STATEMENTS

Page

### Coal

1. Special Coal Lease Stipulations ..... B-2  
(To be included in leases as appropriate.)
2. Standard Stipulations for Coal Drilling Operations ..... B-5  
(To be included in leases as appropriate.)

### Oil and Gas

1. Stipulation for Lands Under Jurisdiction of Department of Agriculture ..... B-8  
(Required in leases for National Forest System lands.)
2. Forest Service (R-4) Supplement A ..... B-9  
(Required in leases for National Forest System lands.)
3. Special Stipulations ..... B-11  
(Tables included in leases as appropriate.)
4. Prospecting Permit ..... B-15  
(Required in permits.)
5. Regional Stipulations ..... B-17  
(Required in permits for prospecting for O&G.)
6. Manti-LaSal National Forest Stipulations ..... B-18  
(Included in permits for prospecting for O&G.)

### Locatable Minerals

1. Locatable Mineral Mitigation Statements ..... B-21  
(Required in Action Plan approval documents.)
2. Required and Special Mitigation Statements for Uranium Drilling ..... B-21

## SPECIAL COAL LEASE STIPULATIONS

Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of the Interior, to consent to leasing and to prescribe conditions to ensure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service - Manti-LaSal National Forest.

The following stipulations pertain to the Lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

### Forest Service Stipulation #1

Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the Lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the finds. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the Lessee prior to disturbance shall immediately bring them to the attention of the appropriate authority. Paleontological remains of significant interest do not include leaves, ferns, or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the Lessee.

### Forest Service Stipulation #2

If there is reason to believe that threatened or endangered (T&E) species of plants or animals, or migratory species of high Federal interest occur in the area, the Lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the Lessee.

### Forest Service Stipulation #3

The Lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data is adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the inter-relationship of the geology, topography, surface hydrology, vegetation, and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

Forest Service Stipulation #4

Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.

Forest Service Stipulation #5

The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of the access road, are factors which will determine the ultimate size of the surface area utilized for the mine. A site-specific Environmental Analysis will be prepared for each new mine site development and for major improvements to existing developments to examine alternatives and mitigate conflicts.

Forest Service Stipulation #6

Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed and screening techniques employed to reduce visual impacts, and where possible, achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural land forms and vegetative landscape features will be avoided.

Forest Service Stipulation #7

The Lessee shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

Forest Service Stipulation #8

The Lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), Lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

Forest Service Stipulation #9

Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The Lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

Forest Service Stipulation #10

In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation shall be constructed from inside the mine, except at specific approved locations.

Forest Service Stipulation #11

If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.

Forest Service Stipulation #12

The coal contained within and authorized for mining under this lease shall be extracted only by underground mining methods.

Forest Service Stipulation #13

Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

Forest Service Stipulation #14

In order to protect big-game wintering areas, elk calving and deer fawning areas, sagegrouse strutting areas, and other key wildlife habitat an/or activities, specific surface uses outside the mine development area may be curtailed during specified periods of the year.

Forest Service Stipulation #15

Support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages reestablished, and the areas returned to a premining land use.

Forest Service Stipulation #16

The Lessee, at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced land monuments (section corners, 1/4 corner, etc.), their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the land net. This work shall be conducted at the expense of the Lessee, by a professional land surveyor registered in the State of Utah, and to the standards and guidelines found in the Manual of Surveying Instructions, United States Department of the Interior.

Forest Service Stipulation #17

The Lessees, at their expense, will be responsible to replace any surface water identified for protection, that may be lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses.

STANDARDIZED STIPULATIONS FOR COAL DRILLING OPERATIONS

Stipulations to be Included in the Coal Drilling Permit

1. A pre-work meeting including the responsible company representative(s), contractors, and the Forest Service must be conducted at the project location prior to commencement of operations. Site-specific Forest Service requirements will be discussed at this time.
2. A Road-Use Permit must be obtained from the Forest Service before equipment is transported onto National Forest System lands.
3. Operations are prohibited from \_\_\_\_\_ to \_\_\_\_\_ in the \_\_\_\_\_ following area(s) (legal description)  
\_\_\_\_\_  
\_\_\_\_\_
4. All surface disturbing activities including reclamation must be supervised by a responsible representative of the permittee/license who is aware of the terms and conditions of the project permits and licenses. A copy of the appropriate permits and licenses must be available for review at the project site.
5. The Forest Service must be notified 48 hours in advance that heavy equipment will be moved onto National Forest System lands and that surface disturbing activities will commence.
6. Establishment of campsites and staging areas on National Forest System lands in support of this project is subject to Forest Service approval.
7. The Forest Service must be notified of any proposed alterations to the plan of operations. Any changes to the existing plan are subject to Forest Service review and concurrence.
8. Fire suppression equipment must be available to all personnel working at the project site. Equipment must include at least one hand tool per crew member consisting of shovels and pulaskis and one properly rated fire extinguisher per vehicle and/or internal combustion engine.
9. All gasoline, diesel, and steam-powered equipment must be equipped with effective spark arresters and mufflers. Spark arresters must meet Forest Service specifications discussed in the USDA Forest Service Spark Arrester Guide, June, 1981. In addition, all electrical equipment must be properly insulated to prevent sparks.
10. The permittee/licensee will be held responsible for damage and suppression cost for fires started as a result of operations. Fires must be reported to the Forest Service as soon as possible.
11. The Forest Service reserves the right to suspend operations during periods of high fire potential.
12. Water needed in support of operations must be properly and legally obtained according to State Water Laws. The location of diversion, if on National Forest System lands, is subject to Forest Service review and approval.
13. Unauthorized off-road vehicular travel is prohibited.

14. Section corners or other survey markers, including claim corners, in the project area must be located and flagged for preservation prior to commencement of surface disturbing activities. The removal, displacement, or disturbance of markers must be approved by the proper authority.
15. If cultural or paleontological resources are discovered during operations, all operations which may result in disturbance to the resource must cease and the Forest Service must be notified of the discovery.

#### Forest Service Stipulations to be Discussed at the Pre-Work Meeting

1. Gates must be kept closed unless otherwise notified.
2. The permittee/licensee will be held responsible for all damage to fences, cattleguards, resource improvements, roads, and other structures on National Forest System lands which result from operations. The Forest Service must be notified of damages as soon as possible.
3. All drilling fluids, muds, and cuttings must be contained on the project site in mud pits or portable containers. The pits must not be used for disposal of garbage, trash, or other refuse.
4. All trees and brush must be cleared as the first step for new access and site construction. Topsoil must be stripped and stockpiled at a location where loss and contamination is minimized.
5. Disturbed areas must be reclaimed by the end of the field season. Exceptions require Forest Service approval.
6. Contaminated soil and gravel must be stripped and placed in the mud pit prior to site reclamation.
7. Mud pits must be allowed to dry before they are backfilled and reclaimed. They must be enclosed by a 4-strand barbed wire fence while they are left to dry.
8. When dry, mud pits must be reclaimed by selectively backfilling excavated materials, topsoil last, such that the disturbed area is replaced to approximate original contour. The disturbed area must be seeded with the specified seed mix when topsoil is replaced.
9. Roads to be obliterated must be reclaimed by ripping the surface, replacing the disturbed area to the approximate original contour, replacing stockpiled topsoil, and seeding with the specified seed mix. Seeding must take place when topsoil is replaced. Water diversion structures, if needed, must be constructed as specified by the Forest Service.
10. All disturbed drainages must be replaced to their approximate original configuration when the project area is reclaimed.
11. All significant water encountered during drilling must be reported to the Forest Service, including the depth and formation at which it was encountered, and an estimate of flow.
12. The operator must clean up and remove all drilling equipment, trash, garbage, flagging, vehicles, and other such materials from National Forest System lands.



13. All trash, garbage, and other refuse must be properly contained on the project site prior to disposal.
14. All drill holes must be plugged in accordance with Federal and State regulations.
15. Operations must be coordinated with grazing permittees to prevent conflicts.
16. Harassment of wildlife and livestock is prohibited.

Stipulations to be Included in Road-use Permits

1. Roads must not be used when they are wet and susceptible to damage.
2. The permittee is responsible for repair of damages to roads which are caused by his operations.
3. All traffic must maintain safe speeds commensurate with existing conditions.
4. Roads must be watered if dust becomes a problem or if excessive loss of road material occurs.
5. Heavy equipment may not be transported along FDR \_\_\_\_\_, during holiday weekends and the opening weekend of the regular big-game hunting season.

STIPULATION FOR LANDS OF THE NATIONAL FOREST SYSTEM  
UNDER JURISDICTION OF  
THE DEPARTMENT OF AGRICULTURE

The licensee/permittee/lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the license/prospecting permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of the Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of the Interior, and (3) use and occupancy of the NFS not authorized by a permit/operating plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed

to \_\_\_\_\_

at \_\_\_\_\_

Telephone No.: \_\_\_\_\_

who is the authorized representative of the Secretary of Agriculture.

\_\_\_\_\_  
Signature of Licensee/Permittee/Lessee

SURFACE DISTURBANCE STIPULATIONS

1. Notwithstanding any provision of this lease to the contrary, and drilling, construction or other operation on the lands covered by this lease that will disturb the surface thereof or otherwise affect the environment (hereinafter called "surface disturbing operation") conducted by the lessee shall be subject, as set forth in this stipulation, to the prior approval of such operation by the Bureau of Land Management (BLM) in consultation with the Forest Service, and to such reasonable conditions not inconsistent with the purposes for which this lease is issued, as the authorized officer may require to protect the surface of these lands and the environment.
2. Prior to entry upon National Forest System lands or the disturbance of the surface thereof, for drilling, surveying, and staking of well sites or other facilities, or for any other purposes, the lessee shall contact the appropriate Forest Service officer, as shown in item 12 of BLM Form 3109-3, in regard to surface-use requirements and/or restrictions.
3. An environmental review will be made by the Bureau of Land Management, in consultation with the Forest Service, for the purpose of insuring proper protection of the surface, the natural resources, the environment, and existing improvements, and for assuring timely reclamation of disturbed lands.

Upon completion of said environmental review and any necessary NEPA documents, the authorized officer of the Bureau of Land Management shall notify lessee of the conditions, if any, to which the proposed surface-disturbing operations will be subject.

Said conditions may relate to any of the following:

- a. The location of drilling or other exploratory or developmental operations or the manner in which they are to be conducted.
  - b. The types of vehicles that may be used and the areas in which they may be used.
  - c. The manner or location in which improvements such as roads, buildings, pipelines, or other improvements are to be constructed.
4. The lessee agrees that during periods of adverse conditions due to climatic factors such as thawing, heavy rains, or flooding, all activities creating irreparable or extensive damage, as determined by the Forest Service, will be suspended or the plan of operation modified and agreed upon.
  5. Protection of Cultural and Paleontological Resources
    - a. The Forest Service is responsible for assuring that the area to be disturbed on this lease is inventoried to determine the presence of cultural and paleontological resources and to specify those resources requiring protection and/or mitigation measures to be undertaken by the operator.

Unless notified to the contrary by the Forest Service, the operator may, at his discretion and cost, conduct the inventory on the lands to be disturbed. This inventory must be authorized by a Forest Service special use permit and must be done by, or under the supervision of, appropriate qualified specialists approved by the Forest Service. Upon review of the inventory reports, the Forest Service will specify those cultural and paleontological resources requiring protection and/or mitigation measures to be undertaken by the operator. All cost of protection and salvage of resource values will be borne by the operator and all data and materials salvaged will remain under the jurisdiction of the U.S. Government as appropriate.

- b. The operator shall immediately cease operations in areas in which any antiquities or other objects of historic or scientific interest are discovered and bring the discovery to the attention of the Forest Service and the authorized officer of the Bureau of Land Management. Any such discoveries shall be left intact until the operator is permitted to proceed by the authorized officer of the Bureau of Land Management.

6. Protection of Threatened or Endangered Species

The Forest Service is responsible for assuring adequate protection for threatened and endangered species occurring in the area to be disturbed. Prior to undertaking any surface disturbing activities on lands covered by this lease, the lessee shall contact the appropriate Forest Service officer to be advised of the occurrence of, and requirements for protection of, any plant or animal species listed or proposed for listing as endangered or threatened or their habitat. Lessee may be required to complete inventories under guidelines provided by the Forest Service if areas of proposed surface disturbance may result in adverse impacts on threatened or endangered species. Presence of such species may result in some restrictions to the operator's plans or even disallowing any use or occupancy that would detrimentally affect any of the identified species.

Discovery of any threatened or endangered species during operations will require cessation of such operations until the appropriate Forest Service officer and the authorized officer of the Bureau of Land Management have been advised and approved protective measures implemented.

\_\_\_\_\_ Date  
Lessee

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SPECIAL STIPULATIONS

The following special stipulations are in addition to the lease terms and standard stipulations (Form 3109-3, and Forest Service Supplement to 3109-3), and are necessary to protect specific resource values on the lease area. If found to be in the public interest, these stipulations may be made less restrictive when specifically approved in writing by the District Engineer, Minerals Management Service, and the authorized officer of the Federal Surface Management Agency.

1. All of the land on this lease is included in (Recreation or Special Area, etc.). Therefore, no occupancy or disturbance of the surface of the land described in this lease is authorized. The Lessee, however, may exploit the oil and gas resources in this lease by directional drilling from sites outside this lease. If a proposed drilling site lies on land administered by the Bureau of Land Management or by the Forest Service, a permit for use of the site must be obtained from the BLM District Manager or the Forest Service District Ranger, before drilling or other development begins. (Note: Use of stipulation requires MMS concurrence.)
2. No access or work trail or road, earth cut or fill, structure or other improvement, other than active drill rig, will be permitted if it can be viewed from the (road, lake, river, etc.). (Note: Use of stipulation requires MMS concurrence.)
3. No occupancy or other activity on the surface of (legal subdivision) is allowed under this lease.
4. No occupancy or other surface disturbance will be allowed within \_\_\_\_\_ feet of the (road, trail, river, creek, canal, etc.). This distance may be modified when specifically approved in writing by the District Engineer of the Geologic Survey, with the concurrence of the authorized officer of the Federal Surface Management Agency.
5. No drilling or storage facilities will be allowed within \_\_\_\_\_ feet of (live water, the reservoir, the archeological site, the historical site, the paleontological site, etc.) located in (legal subdivision). This distance may be modified when specifically approved in writing by the District Engineer of the U.S. Geological Survey, with the concurrence of the authorized officer of the Federal Surface Management Agency.
6. No occupancy or other surface disturbance will be allowed on slopes in excess of \_\_\_\_\_ percent, without written permission from the District Engineer of the U.S. Geological Survey, with the concurrence of the authorized officer of the Federal Surface Management Agency.

Note: The Manti-LaSal National Forest uses 35 percent as the limiting slope. This slope value was generally identified as the slope on which operations would cause unacceptable scarring, instability, and surface disturbance. This stipulation is recommend for the total area of all leases processed by the Forest. The Forest does not, at this time, have an accurate inventory of areas having slopes in excess of 35 percent. Proposed operations will be considered on a site-specific basis.

7. In order to (minimize watershed damage, protect important seasonal wildlife habitat, etc.) exploration, drilling, and other development activity will be allowed only (during the period from \_\_\_\_\_ to \_\_\_\_\_, during dry soil period, over a snow cover, on frozen ground). This limitation does not apply to maintenance and operation of producing wells. Exceptions to this limitation, in any year, may be specifically authorized in writing by the District Engineer of the U.S. Geological Survey, with the concurrence of the authorized officer of the Federal Surface Management Agency.

8. In order to minimize watershed damage, during muddy and/or wet periods, the authorized officer of the Federal Surface Management Agency, through the District Engineer of the U.S. Geological Survey may prohibit exploration, drilling, or other development. This limitation does not apply to maintenance and operation of producing wells.
9. The (trail, road) will not be used as an access road for activities on this lease, except as follows: (no exceptions, weekdays during recreation season, etc.).
10. To maintain aesthetic values all semi-permanent and permanent facilities may require painting or camouflage to blend with the natural surroundings. The paint selection or method of camouflage will be subject to approval by the District Engineer of the Geological Survey, with the concurrence of the authorized officer of the Federal Surface Management Agency.
11. No occupancy or other activity on the surface of the following described lands is allowed under this lease:

Reasons for this restriction are:

Examples of appropriate reasons for this restriction are:

- a. Steep slopes.
- b. Specific ecosystem, ecological land unit, land type, or geologic formation which presents hazards such as mass failure.
- c. Roadless or essentially roadless area (includes Chevron and Rainbow stipulations).
- d. Special management units such as Recreation Type I, water supply, administrative site, etc.

( \_\_\_\_\_ ) Approximately \_\_\_\_\_ percent of leases.

Note: This stipulation could be used in place of stipulation numbers 1,3, and 6.

12. No \_\_\_\_\_ will be allowed within \_\_\_\_\_ feet of the \_\_\_\_\_. This area contains \_\_\_\_\_ acres and is described as follows:

Reasons:

First blank to be filled in with one or more of the following: drilling, storage, facilities, surface disturbance, or occupancy. Second and third blanks to be filled in with one or more of the following:

- a. \_\_\_\_\_ feet wildlife habitat essential to specific species.
- b. \_\_\_\_\_ feet peripheral or unique vegetation type.
- c. 200 feet either side of centerline of roads or highways.
- d. 500 feet of normal high waterline in all streams, rivers, ponds, reservoirs, lakes.

- e. 600 feet of all springs.
- f. 400 feet of any improvements.

Note: Stipulation number 12 could be used in place of stipulation numbers 5 and 6.

13. In order to (minimize)(protect) \_\_\_\_\_ will be allowed only during \_\_\_\_\_. This does not apply to maintenance and operation of producing wells and facilities. Lands within leased area to which this stipulation applies, are described as follows:

Reasons:

First blank to be filled in with one or more of the following:

- a. Watershed damage.
- b. Soil erosion.
- c. Seasonal wildlife habitat (winter range, calving/fawning area, etc.).

Second blank to be filled in with one or more of the following:

- a. Surface disturbing activities.
- b. Exploration.
- c. Drilling.
- d. Development.

The third blank to be filled in with one or more of the following:

- a. Period from \_\_\_\_\_ to \_\_\_\_\_.
- b. Dry soil periods.
- c. Over the snow.
- d. Frozen ground.

Note: Stipulation number 13 could be used in place of stipulation number 7, giving greater definition as to restrictions.

14. Controlled or Limited Surface Use Stipulation - This stipulation may be modified when specifically approved in writing by the District Engineer, Geological Surveys, with concurrence of the Federal Surface Management Agency. Distances and/or time periods may be made less restrictive depending on the actual on-the-ground conditions.

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The Lessee/Operator is given notice that all portions of the lease area may contain specific values, may be needed for specific purposes, or may require special attention to prevent damage to surface and/or other resources. Any surface use or occupancy within such special areas will be strictly controlled or, if necessary, excluded. Use or occupancy will be authorized only when the Lessee/ Operator demonstrates that the special area is essential for operations in accordance with a surface use and operations plan, which is satisfactory to the Geological Survey and the Federal Surface Management Agency for the protection of such special areas and existing or planned uses. Appropriate modifications to imposed restrictions will be made for the maintenance and operation of producing oil and gas wells; however, in extremely critical situations, occupancy may only be allowed in emergencies.

After the Federal Surface Management Agency has been advised of specific proposed surface use or occupancy on these lands, and on request of the Lessee/Operator, the agency will furnish more specific locations and additional information on such special areas, which now include:

(Legal land description to lot and/or quarter, quarter section.)

Reason for restriction:

Duration of Restriction: (year-round, month(s))

15. Activity Coordination Stipulation - This lease includes lands within\* \_\_\_\_\_, which has resource values sensitive to high levels of activity. In order to minimize impacts to these resources, special conditions, such as unitization prior to approval of operations, and/or other limitations to spread surface disturbance activities over time and space may be required prior to approval and commencement of any operations on the lease.

16. Protection of Endangered or Threatened Species - The Federal Surface Management Agency is responsible for assuring that the area to be disturbed is examined prior to undertaking any surface-disturbing activities on lands covered by this lease, to determine effects upon any plant or animal species listed or proposed for listing as endangered or threatened, or their habitats. If the findings of this examination determine that the operation may detrimentally affect an endangered or threatened species, or its habitat, some restrictions to the operator's plans or even disallowance of use may result.

The following statements apply to all of the supplemental stipulations and must be included in all recommendations:

- a. "If found to be in the public's interest, these stipulations may be made less restrictive when specifically approved in writing by the District Engineer, Geological Survey, and the authorized officer of the Federal Surface Management Agency."
- b. "Prior to acceptance of this stipulation, the prospective Lessee is encouraged to contact the Federal Surface Management Agency for further information regarding the restricting nature of this stipulation."
- c. "Any change in the wording of these stipulations must be approved by the Department of the Interior."



\*Wilderness Area, Further Planning Areas, Areas of Threatened and Endangered Species.

**PROSPECTING PERMIT**  
(Geophysics, Oil and Gas, Geothermal, Acquired Minerals)  
(Act of June 4, 1897) (Ref: FSM 2821)

NAME OF PERMITTEE

DATE OF APPLICATION

Permission is hereby granted to \_\_\_\_\_  
of \_\_\_\_\_  
to use the following-described lands: \_\_\_\_\_ (Describe the lands to be occupied with reference to a Government survey,  
State grant road, stream, or well-known landmark)

for the purpose of making excavations, drilling shot holes, or doing other work thereon necessary for determining whether there are mineral deposits of such quantity and value as would warrant application to the Bureau of Land Management, Department of the Interior, for:

- a. A prospecting permit granting a preference right to lease, or
  - b. A lease authorizing exploration and development of mineral energy resources.
- and the erection of such temporary structures and/or facilities as are requisite thereto.

This permit is granted subject to all valid claims to the described lands, and to the following conditions:

- 1a. The permittee shall pay in advance to the Forest Service, U.S. Department of Agriculture, an annual rental in the sum of \$ \_\_\_\_\_.\*
- 1b. The permittee shall pay to the Forest Service, U.S. Department of Agriculture, the sum of \$ \_\_\_\_\_ for \_\_\_\_\_

\_\_\_\_\_ \*Strike out 1a or 1b, whichever is inapplicable.

- 2. The permittee, in exercising the privilege granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations which are applicable to the area or operations covered by this permit, including, but not limited to, those pertaining to fire, sanitation, fish and game.
- 3. This permit is accepted subject to the conditions set forth herein, and to conditions \_\_\_\_\_ to \_\_\_\_\_ attached hereto and made a part of this permit.

PERMITTEE	NAME OF PERMITTEE	SIGNATURE OF AUTHORIZED OFFICER	DATE
ISSUING OFFICER	NAME AND SIGNATURE	TITLE	DATE

(CONTINUED ON REVERSE)

the use of the described lands for prospecting, or other purposes; the area herein described shall be subject at all times to any other lawful uses by the United States, its lessees, permittees, licensees, and assigns.

5. This permit does not grant any rights of any kind in minerals; nor does it grant any preference right of any nature whatsoever in the issuance of a permit or lease for the exploration, removal, or development of the mineral resources in the described lands.
6. The permittee shall take all reasonable precaution to prevent and suppress forest fires. Particularly in connection with operations under this permit, fire prevention and fire-fighting equipment as required by the Forest Supervisor shall be provided, and the burning or other disposal of brush and other flammable debris shall be done by the permittee in accordance with written stipulations to be issued by the Forest Supervisor.
7. No national forest timber may be cut or destroyed without first obtaining a permit from the forest officer in charge.
8. The permittee will exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this permit and will pay the United States for any damage resulting from violation of the terms of this permit or any law or regulation applicable to the national forests by the permittee, his agents, or employees, or through negligence of the permittee, his agents, or employees, when acting within the scope of their employment.
9. The permittee shall safeguard with fences, barriers, fills, covers, or other effective devices, any shafts, pits, tunnels, cuts, and other excavations which otherwise would unduly imperil the lives, safety, or property of other persons.
10. Upon abandonment, termination, or revocation of this permit, the permittee shall remove all structures and facilities which have been placed on the premises by him, and shall restore the site, unless otherwise agreed upon in writing or in this permit.
11. This permit may be revoked by the Forest Supervisor upon determination that permittee's operations have violated any of the terms and conditions set forth in this permit.
12. The permittee shall fully repair all damage, other than ordinary wear and tear, to roads and trails in the national forests caused by the permittee in the exercise of the privilege granted by this permit.
13. In case of change in address, permittee shall immediately notify the Forest Supervisor.
14. No Member of the Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this permit or to any benefit that may arise therefrom, but his provision shall not be construed to extend to this permit if made with a corporation for its general benefit.
15. The conditions of this permit are completely set forth herein and none of its terms can be varied or modified except in writing by the forest officer issuing the permit, his successor, or superior, and in accordance with applicable law and the regulations of the Secretary of Agriculture.

16. \_\_\_\_\_ (Name) \_\_\_\_\_ (Title)  
\_\_\_\_\_ (Address) \_\_\_\_\_ (Business Phone)  
\_\_\_\_\_ (Zip) \_\_\_\_\_ (Home Phone)

is designated as the authorized field representative of the permittee to be in charge and responsible for operations under the permit and for compliance with the terms and conditions thereof.

17. In the event of any conflict between any of the preceding printed clauses or any provision thereof and any of the following clauses or any provision thereof, the following clauses will control.

## REGIONAL STIPULATIONS

1. "This permit does not authorize any operations in conflict with an outstanding Bureau of Land Management mineral lease or permit."
2. "Before beginning any exploration work, including access and work road location and construction, the permittee shall prepare a 'Prospecting Plan'. This plan should be prepared after consultation with the District Ranger or Rangers in whose District the work will be done. The final plan, including maps shall be submitted, in triplicate, to the Forest Supervisor, \_\_\_\_\_ National Forest, for final approval, at least one week before any operations are to be commenced under the plan. Such approval will be conditioned on reasonable requirements needed to prevent soil erosion, water pollution, and unnecessary damages to the surface vegetation and other resources of the United States and to provide for the restoration of the land surface and vegetation. The plan shall contain all such provisions as the Forest Service may deem necessary to maintain proper management of the lands and resources within the prospecting areas and must be in harmony with the provisions of the National Environmental Quality Act of 1970, as amended. Where appropriate, depending upon the location and type of operation, the Forest Supervisor may require the plan to contain, but not be limited to the following items:
  - a. The location, construction specifications, maintenance program, and estimated use by the permittee, his employees, and agents of all access and work roads.
  - b. The exact location and extent of any and all areas on which there will be surface disturbance during the operations including a suitable map or aerial photograph which shows topographic, cultural, and drainage features involve.
  - c. The methods to be used in the operations, including disposal of waste material.
  - d. The size and type of equipment to be used in the operation.
  - e. The name, address, and telephone number of the permittee and of his designated field representative who will be responsible for operations under the permit.

If later exploration requires departure from or addition to the approved plan, these revisions or amendments, together with justification statement for proposed revisions, will be submitted to the Forest Supervisor at least one week before operations under the proposed revision or amendment are to begin.

If, in the judgement of the Forest Supervisor, later exploration or other developments require modification or an approved plan, the Forest Supervisor may require the operator to make revisions or amendments of the operations thereunder, in accordance with the foregoing principles.

Any and all operations conducted in advance of approval of an original, revised, or amended prospecting plan, or which are not in accord with an approved plan, constitute a violation of the terms of this permit and the Forest Service reserves the right to close down operations until such corrective action, as is deemed necessary, is taken by the permittee.

3. The permittee shall furnish and maintain a reclamation bond in the amount of \$ \_\_\_\_\_ conditioned upon compliance with the terms and conditions of the permit. (Note: Reclamation does not include fire liability or other actions in connection with the operations.)



4. Explosives must be stored and handled in compliance with Federal, State, and local rules and regulations governing the use of such items.
5. Reclamation includes, but is not limited to, cleanup, removal, and proper disposal of stakes, flagging, explosive debris, and other materials utilized during exploration.
6. Upon completion of exploration, all drilled holes will be plugged and abandoned in conformance with applicable Federal and State laws and regulations.
7. This prospecting permit will expire on \_\_\_\_\_, unless an extension of time is authorized in writing by the Forest Supervisor or his designated representative.
8. Prior to bond release and permit termination, a map will be furnished the Forest Supervisor or his designated representative showing the location and number of holes drilled and information concerning location and depth of underground water encountered during testing, and a final inspection of the test sites will be made by the permittee with the Forest Supervisor or his designated representative.

## MANTI-LASAL NATIONAL FOREST STIPULATIONS

### Required Stipulations

- A. The following 16 stipulations were formulated by the Manti-LaSal National Forest to be included on all prospecting permits issued by the Forest. They will be numbered 26 through 41 on the permits.
  1. All surface-disturbing activities conducted under this permit must be supervised by a designated, responsible official or representative of the permittee who is aware of the terms and conditions of this permit.
  2. A copy of this permit must be available at the project site during operations and must be presented to any Forest Service official upon request.
  3. The Manti-LaSal National Forest reserves the right to suspend all permits during periods of high fire potential.
  4. Any and all damages to resources, structures, and improvements which result from the permittee's operations must be repaired as soon as possible. The Forest Service must be notified of such damages. Repairs must meet Forest Service specifications.
  5. If cultural or paleontological resources are discovered during operations, all operations which may result in disturbance to the resource must cease and the Forest Service must be notified of the discovery.
  6. Section corners claim markers or other survey markers within the project area must be flagged for preservation prior to commencement of surface-disturbing operations. The removal, displacement, or disturbance of markers is not permitted.
  7. Fire suppression equipment must be available to all personnel on the project site. Equipment must include a minimum of one hand tool per crew member consisting of shovels and pulaskis, and one properly rated fire extinguisher per vehicle and/or internal combustion engine.

8. All gasoline, diesel, and steam-powered equipment must be equipped with effective spark arresters and mufflers. Spark arresters must meet Forest Service specifications discussed in the USDA Forest Service Spark Arrester Guide, June 1981. In addition, all electrical equipment must be properly insulated to prevent sparks.
9. The permittee will be held responsible for damage and suppression cost for fires started as a result of operations. Fires must be reported to the Forest Service as soon as possible.
10. Off-road vehicle travel is prohibited unless specifically approved by the Forest Service.
11. All operations must be suspended during inclement weather conditions. Use of Forest roads must be avoided when they are wet and susceptible to rutting. In either case, the Forest Service must be notified as soon as possible when operations are postponed.
12. Harassment of wildlife and livestock is prohibited.
13. All range fence gates which are opened for access must be closed after passing through, unless otherwise notified.
14. All accidents or mishaps resulting in significant resource damage and/or serious personal injury must be reported to the Forest Service.
15. Water needed in support of operations must be properly and legally appropriated according to State water laws. The location of diversions, if on National Forest System lands, is subject to Forest Service review and approval.
16. Vehicle operators must observe safe speeds commensurate with road and weather conditions.

B. The Following Standard Stipulations will be Required when Surveys Involve the Use of Explosives

1. The operator must establish and observe a buffer distance from structures, reservoirs, streams, springs, resource improvements, and unstable areas beyond which blasting may be conducted without damage or significant effects.
2. Flagmen and/or observers must be posted at strategic locations during blasting to minimize the potential hazard to Forest resource users, wildlife, and livestock.
3. Explosive materials must not be left unattended at any time unless properly secured in storage magazines at approved locations.
4. If detonations result in cratering of the ground surface and/or damage to the root systems of vegetation, the disturbed areas must be backfilled and seeded with a seed mix specified by the Forest Service.

C. The Following Stipulations will be Required when Operations Include the Use of Vibrator or Thumper Trucks (Vibroseis Method)

1. Vibrating on bituminous surfaced Forest Development Roads is prohibited.
2. The operators must establish and observe a buffer distance from structures, reservoirs, streams, springs, resource improvements, and unstable areas beyond which vibrating will not cause damage or significant effects.

3. Flagmen must be posted to control traffic and notify motorists when vibrating is being conducted along Forest Development Roads.

D. The Following Standard Stipulations will be Required when Helicopters are Used in Support of Projects

1. A flight plan must be submitted to the Forest Service as part of the proposal for Forest Service review and approval
2. Staging areas must be approved by the Forest Service prior to their establishment and use.

E. The Following Stipulations are Required when Operations Involve Drilling

1. Drill holes must be plugged by backfilling the cuttings. Holes drilled to a depth of 100 feet or more must be backfilled to within six to seven feet of the natural ground surface. A five-foot concrete plug must be poured into the hole, the remaining one to two feet must be backfilled with soil. Holes drilled on exposed bedrock must be plugged so that the top of the concrete plug is flush with the bedrock surface.

All holes which encounter flowing water, oil, or gas must be plugged by grouting concrete or plugging mud into the hole from at least 50 feet below the aquifer and/or oil and gas-bearing formation. The remaining portion of such holes, if any, must be plugged as discussed above. The Forest Service must be notified of any artesian holes.

2. Any remaining cuttings must be buried.
3. If drilling foams or other fluids are used to enhance circulation, the fluids and cuttings must be contained on-site. If mud pits are constructed for this purpose, they must be allowed to dry and be backfilled. Prior Forest Service approval must be obtained regarding the use of drilling fluids and methods for containing them.

F. The Following Stipulation will be Required when Operations are Proposed to Take Place in Critical or Sensitive Wildlife Habitat Areas

1. Operations are prohibited within the following described area(s):

(Legal Description) \_\_\_\_\_  
\_\_\_\_\_

from (date) \_\_\_\_\_ to \_\_\_\_\_.

These dates may be modified by the Forest Service based on weather conditions and observed wildlife behavior in this/these area(s).

- G. Additional stipulations may be required to elaborate on the above stipulations or to mitigate site-specific issues, concerns, and/or adverse effects. Such stipulations may include seasonal restrictions, reclamation requirements, required seed mixes, requirements for construction of project roads and drill pads, and for reconstruction or maintenance of Forest Development Roads, etc.



### LOCATABLE MINERAL MITIGATION STATEMENTS

Approval of a plan of operation by the Forest Service shall be accompanied by the following statements (FSM 2817.23, 2/83 Amend. 22):

Approval of this operating plan does not constitute recognition or certification of ownership by any person named as owner herein.

Approval of this operating plan does not constitute now or in the future recognition or certification of the validity of any mining claims to which it may relate or to the mineral character of the land on which it lies.

### REQUIRED AND SPECIAL MITIGATION STATEMENTS FOR URANIUM DRILLING

Statements #1 and #2 are required for approval of all operating plans (FSM 2817.23, 2/83, Amend. 22).

Mitigation measures #3 through #22 will be considered for approval of operating plans as needed.

1. Approval of this Operating Plan does not constitute recognition or certification of the validity of ownership by any person named as owner herein.
2. Approval of this Operating Plan does not constitute now or in the future, recognition or certification of the validity of any of the mining claims to which it may relate nor the mineral character of the land on which it lies.
3. Changes and additions to the approved Plan of Operations must be submitted to the District Ranger for approval as a revised or supplemental plan. The revised or supplemental Plan of Operations must be approved by the District Ranger before work may begin.
4. The operator shall furnish and maintain a reclamation bond in the amount of \$\_\_\_\_\_ conditioned upon compliance with the terms and conditions of approval of the Plan of Operations. (Note: Reclamation does not include fire liability or other actions in connection with the operator.)
5. Prior to bond release, a map must be furnished the District Ranger or his designated representative showing the location and number of holes drilled and information concerning location and depth of underground water encountered during testing. A final inspection of the project area must also be made by the operator with the District Ranger or his designated representative.
6. The District Ranger must be notified of the intent to establish a temporary camp or living quarters for company employees or contractors. Approval must be obtained from the District Ranger prior to construction or occupancy of such facilities.
7. All surface disturbing activities and operations must be supervised by a company representative knowledgeable of the terms of and conditions of approval of the Plan of Operations.
8. Section corners or other survey markers within the project area must be flagged for preservation prior to commencement of surface disturbing operations. The removal, displacement, or disturbance of markers must be approved by the proper authority.

9. All surface disturbing operations must cease in the event that archeological or cultural resource are unearthed or discovered. The District Ranger or his designated representative must be immediately notified of the situation. Operations may again commence upon Forest Service approval.
10. Harassment of wildlife and livestock is prohibited.
11. The operator is responsible for immediate repairs of any and all damages to roads, structures, and improvements, which result from his operations, at his own expense.
12. Gates and livestock fences must be kept closed unless otherwise posted.
13. All equipment and debris must be removed from the National Forest upon completion of operations. All trash and garbage must be properly disposed of at an approved refuse area. Disposal or burial of any such materials in mud pits or other areas, or by burning, on the National Forest is prohibited.
14. Water must be legally obtained in accordance with State water laws.
15. Vehicle operators must maintain safe speeds commensurate with existing road traffic and weather conditions.
16. Removal of vegetation must be limited to that necessary for operations. Removal or trimming of trees must be avoided whenever possible.
17. Adequate fire suppression equipment must be readily available to employees and contractors at the project site. This will include at least one hand-held implement per man consisting of shovels and axes and one fire extinguisher per vehicle.
18. All motorized equipment will have working mufflers and spark arresters. Electrical equipment must be properly insulated. Vehicles equipped with catalytic converters will be parked in clear areas to avoid igniting potential fuels such as grass and brush.
19. The District Ranger or his designated representative must be notified when operations are completed and informed as to when reclamation work will begin.
20. All drill holes must be plugged as soon as possible as follows:

Cuttings must be backfilled to within six to seven feet of the ground surface. A five-foot concrete plug must be poured into the hole to within one to two feet of the ground surface. The remaining one to two feet should be filled with soil or appropriate surface material.

Holes drilled on exposed bedrock must be plugged so that the top of the concrete plug is flush with the surface.

All holes having significant water flowing to the surface or encountering oil and/or gas must be plugged from at least 50 feet above and 50 feet below the aquifer or oil or gas bearing formation. The remaining length of such holes, if any, must be plugged as discussed above.
21. The method and materials used to mark hole locations must be approved by the District Ranger.
22. Mining and major road construction are not covered by this report.



# **APPENDIX C**

## **UNSUITABILITY AND MULTIPLE USE MANAGEMENT EVALUATION**

### **Introduction**

Factors determining land acceptability for coal leasing are capability assessment, application of unsuitability criteria, and an evaluation using multiple use management criteria. The Bureau of Land Management completed the capability assessment and by map and letter dated January 24, 1983 identified lands, 400,300 acres in Federal ownership within the Manti-LaSal National Forest boundary, containing mineable coal. The purpose of this appendix is to display the application of unsuitability criteria (43 CFR 3461.1) and multiple use management decisions (43 CFR 3420.1-3) to these lands. The application of unsuitability and Multiple Use Criteria determine suitability and lead to the clearance, elimination, and/or delay in leasing coal deposits. Clearance of coal lands for leasing does not preclude further evaluation on a site-specific basis of individual lease tracts or development activities.

### **Unsuitability Assessment**

The 20 unsuitability criteria (Table C-1) defined in Federal Regulation (43 CFR 3461.1) were applied to the 400,300 acres identified as containing mineable coal. Seven of the unsuitability criteria do not apply because the criteria does not exist within these coal lands. Four more criteria were found not to be applicable after exceptions and exemptions were applied. Nine of the criteria were excepted or exempted insofar as leasing is concerned, but should be applied on a project by project basis, since they occur and may affect surface developments (see Table C-2).

UNSUITABILITY CRITERIA  
FEDERAL REGULATION (43 CFR 3461.1)

CRITERION NUMBER 1 - All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests, and Federal lands in incorporated cities, town, and villages.

Exceptions - (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic, or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the 100th Meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977.

(ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long no surface coal mining operations are permitted.

Exemptions - The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the portion of this criterion applying to land proposed for inclusion in the listed systems does not apply to lands: To which substantial legal and financial commitments were made prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 2 - Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

Exemptions - A lease may be issued, and mining operations approved, in such areas if the surface management agency determines that:

- (i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or
- (ii) The right-of-way or easement was granted for mining purposes; or
- (iii) The right-of-way or easement was issued for a purpose for which it is not being used; or

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(iv) The parties involved in the right-of-way or easement agree, in writing, to leasing; or

(v) It is impractical to exclude such areas due to the location of coal and methods of mining and such areas or uses can be protected through appropriate stipulations.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 3 - Federal lands affected by section 522(e) (4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes land within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community, or institutional building or public park or within 300 feet of an occupied dwelling.

Exceptions - A lease may be issued for lands:

- (i) Used as mine access roads or haulage roads that join the right-of-way for a public road;
- (ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated;
- (iii) If, after public notice and opportunity for public hearing in the locality, a written finding is made by the authorized officer that the interests of the public and the landowners affected by mining within 100 feet of a public road will be protected.
- (iv) For which owners of occupied dwellings have given written permission to mine within 300 feet of their buildings.

Exemptions - The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

CRITERION NUMBER 4 - Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative,

the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

UNSUITABILITY CRITERIA  
FEDERAL REGULATION (43 CFR 3461.1)

Council on Historic Preservation and State Historic

Exemptions - The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.

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CRITERION NUMBER 5 - Scenic Federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which included operations on which a permit has been issued.

CRITERION NUMBER 6 - Federal lands under permits by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 7 - All districts, sites, buildings, structures, and objects of historic, architectural, archeological, or cultural significance on Federal lands which are include in or eligible for inclusion in the National Register of Historic Places, and an appropriate buffer zone around the outside boundary of the designated property (to protect the inherent values of the property that make it eligible for listing in the National Register) as determined by the surface management agency, in consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office shall be considered unsuitable.

Exceptions - All or certain stipulated methods of coal mining may be allowed if the surface management agency determines, after consultation with the Advisory

Preservation Office that the direct and indirect affects of mining, as stipulated, on a property in or eligible for the National Register of Historic Places will not result in significant adverse impacts to the property.

Exemptions - The application of this criterion to a property listed in the National Register is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the criterion to buffer zones and properties eligible for the National Register does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 8 - Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

Exceptions - A lease may be issued and mining operation approved in an area or site if the surface management agency determines that:

(i) With the concurrence of the state, the area or site is of regional or local significance only;

(ii) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or

(iii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.

CRITERION NUMBER 9 - Federally designated critical habitat or threatened or endangered plant and animal species and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

Exceptions - A lease may be issued and mining

operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.

TABLE C-1 (Continued)

UNSUITABILITY CRITERIA  
FEDERAL REGULATION (43 CFR 3461.1)

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 10 - Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

Exceptions - A lease may be issued and mine operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 11 - a bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exceptions - A lease may be issued if:

- (i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or
- (ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved.
- (iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 12 - Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

Exceptions - A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 13 - Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exceptions - A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal and mining will not adversely affect the falcon habitat during the periods when such habitat issued by the falcons.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 14 - Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.



Exceptions - A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal and mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 15 - Federal lands which the surface management agency and the state jointly agree are fish and wildlife habitat for resident species of high interest to the state and which are essential for maintaining these priority wildlife species shall be

TABLE C-1 (Continued)

UNSUITABILITY CRITERIA  
FEDERAL REGULATION (43 CFR 3461.1)

considered unsuitable. Examples of such lands which serve a critical function for the species involved include:

- (i) Active dancing and strutting grounds for sage grouse, sharp-tailed grouse and prairie chicken;
- (ii) Winter range most critical for deer and antelope, and elk; and
- (iii) Migration corridors for elk.

Exceptions - A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 16 - Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 17 - Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

Exception - A lease may be issued where the surface management agency in consultation with the municipality (incorporated entity) or the responsible governmental unit determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 18 - Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands one-fourth mile from the other edge of the far banks of the water, shall be unsuitable.

Exceptions - The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

CRITERION NUMBER 19 - Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in 3400.0-5(a) of this title, standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved State Programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

Exemptions - This criterion does not apply to lands: surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977; or which had obtained a permit to conduct surface coal mining operations.

CRITERION NUMBER 20 - Federal lands in a state to which is applicable a criterion (i) proposed by that state, and (ii) adopted by rulemaking by the Secretary, shall be considered suitable.

Exceptions - A lease may be issued when:

(i) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis, plan, or supplement to a comprehensive land use plan, for the area in which such land is included, or

(ii) After consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.

Exemptions - This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

TABLE C-2

## APPLICATION OF UNSUITABILITY

	<u>Criteria</u>	<u>Application</u>			<u>Comments</u>
		<u>Not</u> <u>Applicable(1)</u>	<u>Not Applicable</u> <u>Excepted or</u> <u>Exempted (2)</u> <u>(3)</u>	<u>Applicable</u>	
	1. Federal Lands, etc.		X		
	2. Rights-of-Way, Surface Leases, etc.			X	
	3. Rights-of-Way, Public Facilities, etc.			X	
	4. Wilderness Study Areas	X			No existing or proposed wilderness study areas within the coal lands.
	5. Class I Visual Quality Areas			X	
	6. Scientific Study Area			X	
	7. Cultural or Historical Resources			X	
C-6	8. National Natural Landmarks	X			No landmarks have been designated presently, but future designations may be expected.
	9. Threatened and Endangered Species Sites			X	
	10. Threatened and Endangered Species Habitat			X	
	11. Bald and Golden Eagle Nests		X		
	12. Bald and Golden Eagle Roosts and Concentration Areas		X		
	13. Falcon Nesting Sites		X		
	14. High Priority Habitat (Migratory Birds)	X			
	15. High Interest Species Habitat			X	
	16. Riverine, Coastal and Floodplains			X	
	17. Municipal Watersheds	X			Local watersheds do not meet Municipal Watershed (USDI) criteria.
	18. Natural Resource Waters	X			No Natural Resource Waters within coal lands.
	19. Alluvial Valley Floors	X			No Alluvial Valley Floors within coal lands.
	20. State Criterion	X			UMC 762.11 a and b and UMC 762.12 do not list criteria applicable to these lands.

(1) Criteria found not applicable to any forest lands.

(2) Criteria found not applicable to any forest lands once exceptions and exemptions have been applied.

(3) Criteria found not applicable to forest lands but on a project specific basis, excepted and exempted for leasing.

# Multiple-Use Management Decisions

Through the land Management Planning process, broad management decisions have been made that clear, eliminate, and/or delay coal land leasing. Coal lands within the Forest are in 8 unique areas (see Appendix F Map F-1) that do not follow surface resource management unit boundaries (see Land and Resource Management Plan Map in packet). Issues and/or resource thresholds were identified for the coal lease areas, and through multiple use evaluations, a conclusion was reached on the suitability of the areas for leasing. Table C-3 provides a list of the areas and their location, the issues and concerns related to lease actions, and the conclusions related to multiple use management.



TABLE C-3

COAL LEASE UNIT  
MULTIPLE-USE EVALUATIONS

<u>Area Name and Location</u>	<u>Issues and Concerns</u>	and the proposed development activities related to leasing will not cause
1. <u>Pleasant Valley - Fish Creek</u> Includes that portion of the Forest within the Pleasant Valley and Fish Creek watershed.	1. Pollution at Scofield Reservoir exceeds Utah water quality standards (threshold).	threshold to be exceeded.
2. <u>Huntington Canyon - Gentry Mountain</u> Includes that portion of the Forest within the Huntington River watershed, and a portion of the Price River watershed draining the east side of Gentry Mountain and Castle Valley Ridge.	2. Water quality, traffic, visual quality, and recreation thresholds. Increase current traffic levels will restrict traffic flows, interrupt wildlife movement and increase road kills.	2. This area will be available for further lease action consideration. Existing leases of Gentry Mountain are being mined mainly through portals on the eastern escarpment. Further lease actions utilizing Huntington Canyon for transportation and mine development other than for supplying existing operations will be delayed until it is determined that unacceptable impacts to existing resources would not occur.
3. <u>Joe's Valley Reservoir - Straight Canyon</u> Includes that portion of the Forest below the escarpment of North Horn and Trail Mountains in Straight Canyon and the Joe's Valley Recreation Complex.	3. Recreation, traffic, visual quality, and land instability thresholds. Present Straight Canyon Road is not adequate for heavy truck traffic.	3. This area will not be available for further coal lease action considerations order to maintain existing resources. The existing road through Straight Canyon will not be upgraded to accommodate heavy truck traffic due to presence of unstable canyon slopes.
4. <u>Muddy Creek Drainage</u> Includes that portion of the Forest bound on the north by the drainage divide between Ferron and Muddy Creek, on the west by the unsuitable coal lands, on the south by the 39th latitude to Box Canyon, and follows the east escarpment of Box Canyon to Muddy Creek, and then the south escarpment of Muddy Creek to the Forest boundary.	4. Community infrastructure, growth, and Forest recreation opportunity spectrum level thresholds. Adequate coal deposit information. Potential deer and elk key winter range thresholds.	4. This area will not be available for further coal lease action consideration until it is determined that any activity would not adversely affect the minimum viable population for management indicator species (deer and elk), cause undesirable community growth, or be incompatible with existing resource uses.
5. <u>Upper Bench</u> Includes that portion of the Forest on the bench between Joe's Valley Graben and Skyline Drive from Potter's Canyon south to the drainage between Ferron and Muddy Creek.	5. Potential hydrologic, land instability, visual quality, and recreation thresholds. Inadequate coal deposit information.	5. This area will not be available for further coal lease action consideration until adequate data is supplied to (a) show that leasing and mine development will be within standards and guidelines, (b) to determine impacts on the numerous seeps, springs, lakes, perched aquifers, and riparian areas, and (c) to show that leasing and mine development would not induce mass movements.
<u>Conclusions</u>	1. Further lease action considerations other than for supplying existing operations will be delayed until current impacts water quality have been mitigated	

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TABLE C-3 (Continued)

COAL LEASE UNIT  
MULTIPLE-USE EVALUATIONS

<u>Area Name and Location</u>	<u>Issues and Concerns</u>	<u>Conclusions</u>
<p>6. <u>Quitchoyah -Pines Area</u> Includes the portion of the Forest boundary on the north by the 39th latitude to Box Canyon, and then follows the escarpment of Box Canyon to Muddy Creek, and then the south escarpment of Muddy to the Forest boundary. The Forest boundary provided the other boundary of the area.</p>	<p>6. Deer and elk key winter range, community infrastructure, and growth threshold. Insufficient coal deposit information. Reduction in Forest planned recreational opportunity spectrum levels.</p>	<p>6. One coal tract, that can be mined from the southern and eastern escarpments (Quitchoyah Fork Creek, or Link Canyon), will be available for further coal lease action consideration. Lease actions for the second tract will be delayed until the first</p>
<p>7. <u>Mount Pleasant Ridge</u> Includes that portion of the Forest west of Skyline Drive, north of Pleasant Creek, and south of Crooked Creek.</p>	<p>7. Land instability water quality and quantity standards, and wildlife habitat thresholds.</p>	<p>been mined out when threshold levels capable of accommodating added mining.</p> <p>7. This area will not be available for further lease action consideration</p>
<p>8. <u>Ferron Canyon, Cottonwood - Trail Mountains</u> Includes that portion of the Forest, South Horn, East, and Trail Mountains, Joe's Valley Graben south and north of the Muddy Creek watershed, excluding the Joe's Valley and Straight Canyon.</p>	<p>8. Deer and elk key winter range thresholds. Insufficient coal, geologic, and mine feasibility information.</p>	<p>adequate supplies to show that leasing and mine development will be within standards and guidelines, and would not induce mass movements or adversely impact community water supplies.</p> <p>8. Coal lands other than in Joe's Valley Graben will be available for further lease action consideration. Prior to leasing, additional data extent, quality, and mining accessibility are needed to determine extent and configuration of leasing west of Joe's Valley Graben. Leasing activity will be limited to insure that any activity not adversely affect the minimum viable populations management indicator</p> <p>Presently, North Horn coal tract has been delineated and is suitable for leasing action.</p>

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# **APPENDIX D**

## **ENERGY TRANSPORTATION AND UTILITY CORRIDOR EVALUATION**

### **Introduction**

There is an increased concern at the National, State, and local levels for meeting future right-of-way needs while protecting the environment which led to this corridor evaluation as a part of the Forest Planning Process. The concern is founded upon a real demand for transportation and utility facilities- especially pipelines, electric transmission lines, and railroads- to transport energy from resource areas to the centers of consumption. This concern has led to legislation authorizing the Forest Service and other Federal land management agencies to designate transportation and utility corridors on Federal land.

Selecting routes for linear facilities on Federal lands is complicated by mixed ownership land patterns, conflicting land uses, and environmental and engineering constraints. The Manti-LaSal National Forest has evaluated and selected corridors by application of existing Forest Service Manual and Regional Guide direction for transportation and utility corridor planning.

### **Objectives of Corridor Evaluation**

Identify and designate existing or potential energy transportation rights-of-way as corridors that:

1. Comply with evaluation criteria for determination of corridor suitability; and
2. Are desirable for retention, but not capable of further widening; and
3. Are desirable to retain and have widening potential for future uses.

### **Evaluation Criteria**

Criteria considered in determining suitability of the inventoried rights-of-way for designation as corridors are as follows:

1. Routes are compatible with Federal, State, and local land use plans and ordinances.
2. Environmental impacts are acceptable or mitigable for;
  - a. Natural resources, including soil, water, fish, wildlife, vegetation, cultural resources, and visual quality.
  - b. Wetlands, flood plains, riparian areas, and other similar areas protected by law.
  - c. Threatened or endangered species or their habitats as protected by law.

3. Few, if any, physical effects and constraints on corridor placement or rights-of-way placed therein would exist due to geological landform instability.
4. Economic and energy efficiency is achieved by selecting a right-of-way within and existing corridor, before establishing a new or relocated corridor. Selection is based on considering costs of construction, operation, maintenance and cost to the environment of each location. This should lead to maximum acceptable use of existing transmission lines, pipelines, and transportation routes.
5. Potential health and safety hazards to National Forest users and the general public, resulting from facilities or activities within the right-of-way corridors, could be mitigated and/or minimized.
6. Existing and potential future facilities within the right-of-way would be technically compatible.
7. Reasonable mitigation would prevent unacceptable social and economic impacts to National Forest land users, adjacent landowners, and other groups or individuals.

## **General Assumptions**

-The concerned counties and communities would support the Manti-LaSal National Forest corridor designations. Such counties and communities might not agree on corridor widths as specified on National Forest System lands and might, through negotiation and applicable authorizing actions, set different widths on county property, or within community boundaries.

-The State Department of Transportation and/or the Federal Highway Administration would approve of highway right-of-way encroachments proposed by those authorized to conduct the project.

-Most of the Forest Development Roads would be part of Avoidance or Exclusion Area designations.

-Where applicable, Manti-LaSal National Forest corridor designations would be in harmony with such designations on adjacent Bureau of Land Management (BLM) land.

-Energy transportation proposals and applications for locations outside of corridors (within avoidance areas) would be subject to possible denial, if mitigation measures could not provide for adequate protection of sensitive/critical resource values.

-Proposals and applications for locations within exclusion areas would be denied.

-Proposals and applications for locations within avoidance or unclassified areas would be evaluated on a case-by-case basis. Approval of proposals/applications with adequate mitigations may be possible from such evaluations.

## **Management Directions**

General - Location which will be considered for designation as corridors are where existing rights-of-way for transmission lines over 66 KV, oil and gas or coal slurry pipelines 10 inches or larger, or combinations thereof, pass into or through National Forest System lands within an identifiable strip of land, and where the probability exists that other lines may be located within this strip. Inclusion of lower rated transmission lines or smaller pipelines within designated corridors would be permitted.

Before new corridors or widening of existing corridors are approved, consideration will be given to wheeling or multiple circuiting of transmission lines; and increasing pipeline capacity by addition of compressors or looping, or utilizing existing highway transportation rights-of-way. Federal, State, and Interstate Highway routes are considered as potential corridors for energy transportation facilities.

Specific - Generally where the purpose of the transportation, transmission, or pipeline route is to accommodate or service a particular end use on the Forest, the route followed is not considered as a potential corridor. Where existing rights-of-way pass into or through National Forest System lands, on an identifiable strip of land, and where the probability exists that other energy transportation systems may be located within the strip, it is considered for designation as a corridor.

Based on the most current planning information from utility and power administrations, the Manti-LaSal National Forest has directed planning for future utility rights-of-way and associated corridors by:

1. Designating

- a. Corridors - These are linear strips of land which have ecological, technical, economic, social, or similar advantages over other areas for the present or future location of energy transportation or utility rights-of-way within their boundaries.
- b. Windows - Critical segments of terrain through which rights-of-way could pass in traversing from points of origin to destination.
- c. Rights-of-Way - Land authorized to be used or occupied for the construction, operation, maintenance, and the terminus of a project facility passing over, upon, under, or through such land.

2. Identifying constrained areas where future utility rights-of-way will be discouraged or denied.

- a. Avoidance Areas - Areas that pose particular environmental impacts which would be difficult or impossible to mitigate; or areas that have characteristics which impose unusual engineering constraints. Applications for linear rights-of-way within avoidance areas would be processed by the Forest if, after project evaluation, it was determined that proposed mitigation measures would meet the Standards and Guidelines for the various resources within the areas.
- b. Exclusion Areas - Areas where linear facilities would not be legally permitted to cross. Applications for linear rights-of-way within exclusion areas would not be processed, due to the statutory prohibitions applicable to the area in question.

3. Identifying Unclassified Areas

- a. Unclassified Area - an area where potential environmental impacts have not been qualified or quantified. Linear facilities could pass through the area if environmental evaluation established adequate mitigation measures.

## Process

The process for applying the Service-wide and Regional direction for energy transportation and utility corridor planning are to (listed in planning sequence):

01. Inventory and field check existing pipelines, electric transmission lines, and major transportation routes which are located on the Forest; (Transportation routes are inventoried as potential corridors for electrical transmission and pipeline facilities, not for expansion of or addition to the State/Interstate Road/Highway System).
2. Identify criteria which will be used to evaluate potential corridors;
3. Analyze suitability of routes or areas to handle new or additional facilities and the suitability of the routes or areas for overhead vs. underground vs. surface linear right-of-way facilities;
4. Evaluate and designate areas suitable for corridors on the Manti-LaSal National Forest within the land management planning process;
5. Consolidate right-of-way alignments into designated corridors to avoid the proliferation of separate linear rights-of-way.
6. Identification/evaluation of land areas where facilities may not or will not be placed, by classifying the areas as avoidance areas or exclusion areas.
7. Combination of the above to; (a) identify, evaluate, and designate important right-of-way areas; and (b) identify, evaluate, and designate areas exhibiting important natural, cultural, and social values.

## Inventory

The following is a descriptive inventory of rights-of-way, windows, exclusion areas, and avoidance areas. They are shown on the Energy Transportation and Utility Corridor Maps, Appendix F.

### Existing Rights-of-Way

Electrical transmission lines, gas pipelines, and Federal, State and Interstate Highway rights-of-way currently existing on the Manti-LaSal National Forest that meet standards for potential corridor designation are displayed in Tables D-1 and D-2 respectively. (No rights-of-way exist on the Forest for railroads).

Planning Windows

An inventory of the Forest indicates there are no areas that qualify as planning windows.

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Exclusion Areas

The following areas have been identified as exclusion areas:

1. Research Natural Areas
  - Elk Knolls
  - Nelson Mountain (Proposed)
  - Mount Peale (Proposed)
  - Cliff Dwellers Pasture (Proposed)
2. Great Basin Experimental Range
3. Scenic, Wilderness, and Recreation Areas
  - Dark Canyon Wilderness Area
  - Straight Canyon & Joe's Valley Recreation Area
  - Ferron Reservoir Recreation Area
  - Huntington Canyon Recreation Area
  - Hammond Canyon Archeological and Scenic Area

TABLE D-1

EXISTING ELECTRICAL AND GAS TRANSMISSION LINES

Name	Location Beginning-Ending	Size	R/W Width (Feet)	Length (Miles)	Acres
a. Huntington-Mona UP&L	Begins at the Huntington Power Plant west of Huntington and	345-KV	120	18.0 miles	212

ends at Mona Station near Nephi, Utah. Crosses the Manti Division between Huntington and Fairview, Utah. Crosses the Sanpitch Division in Chalk Creek.

b. Thistle-Mona Deseret Generation and Trans- mission	Crosses the Manti Division near Thistle, Utah.	345-KV	150	0.6 miles	10
c. Rattlesnake Paradox	Crosses the Moab Ranger District between old and new LaSal, Utah	46-KV	40	5.7 miles	27
d. Price-Provo Natural Gas Line	Crosses Manti Division between Clear Creek and Indianola Communities.	18/20 inch	60	14.4 miles	112

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TABLE D-2

## EXISTING FEDERAL, STATE, AND INTERSTATE HIGHWAYS

Name	Location	R/W Width (Feet)	Length (Miles)	Acres
a. U.S., Highway 191	Crosses Monticello Ranger District between Monticello and Blanding at Devils Canyon.	132	0.6	10
b. State Highway U-29	Crosses Manti Division via Straight-Seeley and Ephraim Canyons	100/200	37.0	654
c. State Highway U-31	Crosses Manti Division via Huntington and Fairview (Cottonwood) Canyon.	132	33.4	590
d. State Highway U-46/C-90	Crosses Moab District between new and old LaSal.	132	2.2	35
e. State Highway U-96	Begins at Scofield and joins U-31 at Fairview Summit.	175	12.9	275

Avoidance Areas

The geographical areas identified as avoidance areas are as follows:

1. West slope of the Manti Division (Indianola to Mayfield front) owing to slope instability.
2. Cedar Knoll of the Manti Division, owing to slope instability.
3. Upper Fish Creek owing to municipal water supply, National Recreation Trail, and Semiprimitive Recreation Management Unit Requirements.
4. Candland Mountain, owing to National Recreation Trail and Semiprimitive Recreation Management Unit Requirements.
5. Grassy Flat-Mary's Lake Bench owing to Semiprimitive Recreation Management Unit Requirements.

6. Little Bear area, owing to Semiprimitive Recreation Management Unit Requirements and municipal watersheds.
7. PL-566 watershed areas, owing to land instability with sensitive and fragile soils.
8. Manti Division east escarpment, owing to rapture nesting habitat.
9. West slope of San Pitch Division, owing to slope instability.
10. LaSal Peaks, owing to being a part of the National Parks viewshed.
11. Sinbad-Carpenter Ridge, owing to high scenic values.



12. Blue Mountain, owing to municipal watersheds being a part of National Park viewsheds, and recreational values.
13. Arch and Texas Canyons, owing to high scenic values, and archaeologic values.
14. The south-central part of the Monticello Ranger District, because of the generally high-site density (archeological values.).
15. Clay Bank-White Knoll area, owing to slope instability.
16. Flat Canyon Recreation Area.

#### Unclassified Areas

These unclassified areas are National Forest System lands that are not identified as part of the potential corridors and/or exclusion and avoidance areas.

## **Evaluation**

Each right-of-way route (the right-of-way and terrain immediately adjacent to the right-of-way window and avoidance area) was evaluated by the seven criteria to determine the effect of corridor designation and eventual right-of-way use. This analysis is shown on Table D-3 through D-4.



TABLE D-3

## EVALUATION PROCESS

## Rights-of-Way (Electrical Transmission Lines and Gas Pipelines)

Paradox Price-Provo Evaluation Criteria 18/20 Inch Gas Pipeline	Huntington-Mona 345 KV Transmission Line	Thistle-Mona 354 KV Transmission Line	Rattlesnake- 69 KV Transmission Line
1. Compatible with Federal, State, and Local Land Use/Management Plans	Species Habitat No Conflict	No Conflict	No Conflict
2. Environmental Impacts Natural Resources a. Soils/Vegetation b. Water Quality c. Fish/Wildlife d. Cultural e. Visuals/Recreation	a. Soils/Vegetation. Shallow soils; would be difficult to revegetate (applies to eastern slope). Moderately high erosion potential.  e. Visuals/Recreation. Near Upper Joes Valley and Indian Creek Campground. Highly visible from U.S. 89 in Sanpete Valley.  No major Conflicts	Soils/Vegetation. Low soil moisture. Clay sub- soils could cause revegeta- tion problems.  e. Visuals/Recreation. Highly visible from U.S. 89 in Thistle Canyon.  No major Conflicts	a. Soils/Vegetation. Shallow, rocky soils exist to the southeast of the route.  d. Cultural. Historic values exist along por- tions of this route.  e. Visuals/Recreation Highly visible from SR 46.  No Major Conflicts  No Known Conflicts
Wetlands, Flood Plains, Riparian Areas	Known eagle habitat.	Known habitat for Astragalus desereticus.	
Threatened or Endangered		D-8	

No Conflict

a. Soils/Vegetation  
High erosion potential on west slopes; difficult to revegetate disturbed sites.

Visuals/Recreation  
Highly visible from portions of Skyline Drive and at Indianola.

Wetlands in Upper Gooseberry.

Known eagle habitat.  
Potential habitat for *Astragalus desereticus* along north end.

TABLE D-3 (Continued)

Price-Provo Evaluation Criteria 18/20 Inch Gas Pipeline	Huntington-Mona 345 KV Transmission Line	Thistle-Mona 354 KV Transmission Line	Rattlesnake-Paradox 69 KV Transmission Line
3. Geological Landform Restrictions	4. Economic and energy efficiency of constructing, operating, and maintaining ROW and costs of modify-ing or	relocating existing facilities in a proposed corridor.  5. Potential health and safety hazards to National	Forest users and general public.  6. New and existing uses would be technologically compatible.  7. Socio-economic effects to adjacent

landowners and other groups or individuals.	Slumps and sides on western slope. Steep topography along most of route.	Some steep terrain east of the route.	No Major Problems	Steep side slopes show instability and movement along west half of route. Steep ridge lines on west slope.
		No Major Problems	No Major Problems	
	High construction costs along most of route. Difficult access for maintenance.		No Major Problems	Identified land stability problems are presently causing high maintenance costs and would require high first construction costs for new facilities.
	No Major Problem	No Major Problems	No Major Problems	No Major Problems
	Above listed natural and physical restrictions could limit the compatibility of new uses with existing uses, except for upgrading proposals.	Decision to expand ROW width would affect adjacent private landowners.	Decision to expand ROW width would affect adjacent private landowners.	No Major Problems
	Expansion of ROW could adversely affect recreation user perception of the Upper Joes Valley Recreation area.			Decision to expand ROW width would affect adjacent private landowners, since ROW passes near to or through some private land.

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TABLE D-4

EVALUATION PROCESS  
(Roads and Highways)

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Highway Evaluation Criteria U-46/C-90	U.S. Highway 191 State Highway U-96	State Highway U-29	State Highway U-31	State
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1. Compatible with Federal State, and local Land Use/ Management Plans.

Approval and coordination would be required by State Department of Transportation (DOT) during planning, design, construction, and maintenance work for utilities and other energy transportation facilities within the road ROW. Forest Service would also have to review and approve use.

Approval and coordination would be required by State Department of Transportation (DOT) during planning, design, construction, and maintenance work for utilities and other energy transportation facilities within the road ROW. Forest Service would also have to review and approve use.

Proposals outside ROW would conflict with exclusion and avoidance area designations for the area being crossed (80 to 90 percent of route is within exclusion and avoidance areas).

Approval and coordination would be required by State Department of Transportation (DOT) during planning, design, construction, and maintenance work for utilities and other energy transportation facilities within the road ROW. Forest Service would also have to review and approve use.

Proposals outside ROW would conflict with exclusion and avoidance area designations for the area being crossed (80 to 90 percent of route is within exclusion and avoidance areas).

Approval and coordination would be required by State Department of Transportation (DOT) during planning, design, construction, and maintenance work for utilities and other energy transportation facilities within the road ROW. Forest Service would also have to review and approve use.

ent of Transportation (DOT) during planning, design, construction, and maintenance work for utilities and other energy transportation facilities within the road ROW. Forest Service would also have to review and approve use.

Proposals outside ROW would conflict with exclusion and avoidance area designations for the area being crossed (80 to 90 percent of route is within exclusion and avoidance areas).

TABLE D-4 (Continued)

Highway Evaluation Criteria U-46/C-90	U.S. Highway 191 State Highway U-96	State Highway U-29	State Highway U-31	State
<p>2. Environmental Impacts</p> <p>Natural Resources</p> <ul style="list-style-type: none"> <li>a. Soils/Vegetation</li> <li>b. Water Quality</li> <li>c. Fish/Wildlife</li> <li>d. Cultural</li> <li>e. Visuals/Recreation</li> </ul>	<p>a. Soils/Vegetation. Shallow soils; would be difficult to re-vegetate (applies to total road length). Moderately high erosion potential.</p>	<p>a. Soils/Vegetation. Shallow soils on west slopes. Moderately high erosion potential. Difficult to revegetate disturbed sites.</p>	<p>Utility proposal would conflict with Huntington Canyon Recreation Plan, which emphasizes protection of visuals and recreation values adjacent to the highway.</p>	
<p>NOTE:</p> <p>A "no entry" for a particular ROW indicates that no major effects exist or would be anticipated.</p>	<p>b. Water Quality. Eastern quarter of route parallels Straight Canyon watershed area. Western quarter of route within Ephraim Watershed.</p>	<p>b. Water Quality. Two-thirds of route within sensitive watersheds, i.e., Huntington and Fair-view Canyons.</p>		
	<p>c. Fish/Wildlife. Parallels trout fishery for 25 percent of length.</p>	<p>c. Fish/Wildlife. Parallels trout fishery for 25 percent of length.</p>		



ver most of route. Moderate erosion potential. Difficult to revegetate disturbed sites.

b. Water Quality.  
Within a watershed area tributary to Scofield Reservoir.

c. Fish/Wildlife.  
Parallels trout fishery for 25 percent of length.

TABLE D-4 (Continued)

Highway Evaluation Criteria U-46/C-90				State
	U.S. Highway 191 State Highway U-96	State Highway U-29	State Highway U-31	
	d. Visuals/Recreation Major travel route to the Southeastern Utah National Parks and Monuments. Crosses near Devils Canyon Campground.	d. Visuals/Recreation Crosses through Straight Canyon and Joes Valley Recreation Area. High scenic values along total length of route. Crosses over Skyline Drive Road.	d. Visuals/Recreation Crosses through Hunt- ington Canyon Rec- reation Area. High scenic values along total length of route. Crosses over Skyline Drive Road.	
Wetlands, Flood Plains, and Riparian Areas	No Major Conflicts	Flood plains and riparian areas along 25 percent of route length.	Flood plains and riparian areas along 50 percent of route length.	No Major Conflicts
Threatened or Endangered Species and Habitat	No known conflicts with T&E animals.	No known conflicts with T&E animals	No known conflicts with T&E animals.	No know conflicts with T&E animals
3. Geological Landform Restrictions	Heavy rock cut within Forest.	Narrow, steep walled restrictive canyon on east side. Unstable slopes west of Joes Valley Reservoir.	Unstable slopes along western portion of route. Narrow canyon bottom along eastern portion of route.	No Major Problems
4. Economic and energy efficiency of constructing, operating, and maintaining ROW and costs of modifying or relocating existing facilities in a proposed corridor.	No Major Problems	High Construction cost to mitigate environmental re- source values.	High Construction cost to mitigate environmental re- source values.	No Major Problems

Road.

Flood plains and riparian areas along 25 percent of route length.

No known conflicts with T&E animals.

Unstable landforms along western half of route.  
Narrow canyon with steep side slopes along eastern half of route.

High construction costs to mitigate environmental resource values.

TABLE D-4 (Continued)

Highway Evaluation Criteria U-46/C-90	U.S. Highway 191 State Highway U-96	State Highway U-29	State Highway U-31	State
5. Potential health and safety hazards to National Forest users and general public.	No Major Problems	No Major Problems	No Major Problems	No Major Problems
6. New and existing uses would be technologically compatible.	No Major Problems	Above listed natural and physical restrictions could limit the compatibility of new uses with the existing road ROW.	Above listed natural and physical restrictions could limit the compatibility of new uses with the existing road ROW.	No Major Problems
7. Socio-economic effects to adjacent landowners and other groups or individuals.	Decision to expand ROW width would affect adjacent private landowners.	Expansion of ROW could adversely affect recreation user perception of the Upper Joes Valley Recreation Area.	Expansion of ROW could adversely affect recreation user perception of the Upper Joes Valley Recreation Area.	Decision to expand ROW width would affect adjacent private landowners.

ical restrictions could limit the compatibility of new uses with the existing road ROW.

Eastern portion would traverse through the Skyline Mine development. Expansion of ROW could adversely affect Upper Huntington Canyon recreation use.

Decision to expand ROW width would affect adjacent private landowners.

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## Recommendations

### Corridors

The narratives on corridor designations, including widths and type of rights-of-way, address the recommended designation for existing electrical transmission line and gas pipeline routes, and State Road/Highway routes.

#### ELECTRICAL TRANSMISSION LINE AND GAS PIPELINE ROUTES

Huntington-Mona 345 KV Transmission Line - Support corridor designation.

Suitable for overhead and underground electrical transmission and underground pipeline facilities.

Upgrading, upgrading, or replacing existing facilities, or addition to new facilities would only be permitted within the existing ROW width.

Thistle-Mona 345 KV Transmission Line - Support corridor designation.

Suitable for overhead and underground electrical transmission and underground pipeline facilities.

The width of the corridor on National Forest System lands to the east would be subject to visual and slope restrictions, and would vary from 200 to 500 feet, inclusive of existing 150-foot transmission line right-of-way.

Rattlesnake-Paradox 69 KV Transmission Line - Support corridor designation.

Suitable for overhead and underground electrical transmission and underground pipeline facilities.

Expansion or widening would be limited to 400 feet, inclusive of the existing 40-foot transmission line right-of-way and 132-foot State Highway U-46/C-90 right-of-way.

Price-Provo 18/20-Inch Gas Pipeline - Support corridor designation.

Suitable for underground pipeline facilities.

Expansion or widening would vary from 200 to 500 feet, inclusive of the existing 50-foot pipeline right-of-way.

## ROADS AND HIGHWAYS

U.S. Highway 191 - The Manti-LaSal National Forest highway portion is located within the Monticello Unit - LaSal Division, an Unclassified Area. Proposals for overhead, underground, and over-the-surface energy facilities (within or contiguous to this right-of-way) would be discouraged due to the proximity of an existing north/south utility right-of-way located to the east of National Forest system lands.

State Highway U-29 - The Manti-LaSal National Forest road portions are located within the Joe's Valley Recreation Exclusion Area and Clay Bank-White Knoll and West Slope - Manti Division Avoidance Areas.

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Proposals for overhead, underground, and over-the-surface facilities within or contiguous to this right-of-way would conflict with the direction for the important recreation and visual resources located in the adjacent exclusion area. The proposals would also adversely affect land stability within the avoidance areas. Energy transportation proposals along and/or contiguous to the road portions would be denied

State Highway U-31- The Manti-LaSal National Forest road portions are located in the Huntington Canyon Exclusion Area and the West Slope - Manti Division Avoidance Area.

The above statement for U-29 would also apply to this road location.

State Highway U-46/C-90 - Refer to previous statement on the Rattlesnake-Paradox 69 KV transmission line corridor designation.

State Highway U-96 - The Manti-LaSal National Forest road portions are located within the Flat Canyon Recreation and West Slope - Manti Division Avoidance Areas.

The above statements for U-29 would also apply to this road location.

### Avoidance Areas

Application of the 7 Evaluation Criteria to the 16 areas listed above led to the following general statements concerning corridor designations in avoidance areas:

Most (and in some cases all) locations within these areas would conflict with or not meet the goals and objectives for any one criterion; and reasonable mitigation would (for the most part) not prevent unacceptable impacts to natural, physical, or social resources and values located within and adjacent to the areas.

NOTE: The Manti Division has State Highway and Roads within avoidance areas that meet the "Management Requirements" for potential energy transportation and utility corridor designation. The above statements for avoidance areas would also apply to these highway/road locations.

With the exception of the Mountain Fuel Price to Provo gas pipeline, there are no other linear rights-of-way within the avoidance areas that meet the established Management Requirements.



# APPENDIX E

## GLOSSARY

**ACCELERATED EROSION** - Erosion much more rapid than normal or natural erosion, primarily as a result of the influence of the activities of man or in some cases, of animals or natural catastrophes that expose soil surfaces, for example, fire.

**ACRE EQUIVALENT** - The area affected by a wildlife improvement, i.e., a water development creates habitat for big game in the 640 acres surrounding the development.

**ACRE-FOOT** - A measure of water or sediment volume equal to the amount which would cover an area of 1 acre to a depth of 1 foot (325,851 gallons).

**ACTIVITY** - The work processes or management practices that are conducted to produce, enhance, or maintain outputs or achieve administrative and environmental quality objectives (FSM 1309, Management Information Handbook). An activity can generate multiple outputs.

**ACTIVITY FUELS** - Woody debris generated from any activity on the Forest such as firewood gathering, precommercial thinning, timber harvesting, and road construction, which increases fire potential.

**ACTUAL USE** - The actual occupancy of land and utilization of forage by livestock. Report grazing use of range actually made. Includes grazing under both grazing permits and livestock use permits.

**AFFECTED ENVIRONMENT** - The biological, physical, and social environment usually under the administration of one line officer, such as District Ranger or Forest Supervisor, that would be affected by an activity or action.

**AIRSHED** - A geographic area that, because of topography, meteorology, and climate, shares the same air. As applied to the National Forest by the Clean Air Act, amended August 1977, the term covers all wilderness areas larger than 5,000 acres that were in existence as of August 1977.

**ALLOWABLE SALE QUANTITY (ASQ)** - The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the Plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity."

**ANALYSIS OF THE MANAGEMENT SITUATION (AMS)** - A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

**ANIMAL UNIT** - A measurement of livestock numbers based on the equivalent of a mature cow (approximately 1,000 pounds live weight).

**ANIMAL UNIT MONTH (AUM)** - The amount of forage required by an animal unit for 1 month.

**APPROPRIATE SUPPRESSION RESPONSE** - The kind, amount, and timing of suppression action on a wildfire which most efficiently meets fire management direction under current and expected burning conditions. It may range in objective from prompt control to confinement.

**AQUATIC ECOSYSTEMS** - The physical environment of or pertaining to water-stream channel, lake or pond bed, wetland, water itself-and biotic communities that occur therein.



**ARTERIAL ROADS** - Roads comprising the basic access network for National Forest System administrative and management activities. These roads serve all resource elements to a substantial extent, and maintenance is not normally determined by the activities of any one element. They provide service to large land areas and usually connect with public highways or areas, or other Forest arterial roads to form an integrated network of primary travel routes. The location and standard are often determined by a demand for maximum mobility and travel efficiency rather than by a specific resource management service. Usually, they are developed and operated for long-term land and resource management purposes and constant service.

**AVAILABLE FOREST LAND** - Land which has not been legislatively withdrawn or administratively withdrawn by the Secretary of Agriculture or Forest Service Chief from timber production.

**BACKGROUND** - The distant part of landscape, picture, etc.; surroundings, especially those behind something and providing harmony or contrast; surrounding area or surface. Area located from 3 to 5 miles to infinity from the viewer.

**BASAL AREA** - The area of the cross-section of a tree stem near the base, generally at breast height and inclusive of bark.

**BASE SALE SCHEDULE** - A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity. (This definition expresses the principle of nondeclining flow.)

**BENCHMARK** - Reference points that define the bounds within which feasible management alternatives can be developed. Benchmarks may be defined by resource output or economic measures.

**BENEFIT** - The total value of an output or other effect.

**BENEFIT/COST RATIO (BCR)** - The total discounted benefits of an activity divided by the total discounted costs.

**BEST AVAILABLE CONTROL TECHNOLOGY (BACT)** - An emission limitation based on the maximum degree of reduction of each pollutant emitted from, or which results from any emitting installation, taking into account energy, environmental economic impacts, and other costs, and achievable for such installation through application of production processes and available methods, systems, and techniques.

**BEST MANAGEMENT PRACTICE (BMP)** - A practice or combination of practices that are the most effective and practical (including technological, economical, and institutional) consideration level compatible with water quality goals.

**BIG-GAME WINTER RANGE** - The area available to and used by big game through the winter season.

**BIOLOGICAL CONDITION INDEX (BCI)** - An expression of actual condition of a stream compared to its natural potential. It is measured by comparing actual chemical and physical characteristics of a stream with its potential.

**BIOLOGICAL POTENTIAL** - The possible output of a given resource limited only by its inherent physical and biological characteristics.



**BOARD FEET** - The amount of wood equivalent to a piece of wood one foot by one foot by one inch thick.

**BROWSE** - Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs which are utilized by big-game animals for food.

**CABLE LOGGING** - A method for transporting logs from stumps to collecting points which utilize a cable system as the main device for moving them.

**CAPABLE LANDS** - Those portions of the Forest that have an inherent ability to support trees for timber harvest and produce at least 20 cubic feet/acre/year of wood fiber.

**CARRYING CAPACITY** - The number of organisms of a given species and quality that can survive in, without causing deterioration of, a given ecosystem through the least favorable environmental conditions that occur within a stated interval of time.

**CAVITY NESTER** - Wildlife species that nest in cavities (hollows excavated in snags by birds).

**CHAINING** - The dragging of an anchor chain between two tractors for the purpose of uprooting trees.

**CLEARCUTTING** - The cutting method that describes the silviculture system in which the old crop is cleared over a considerable area at one time. Regeneration then occurs from (a) natural seeding from adjacent stands, (b) seed contained in the slash or logging debris, (c) advance growth, or (d) planting or direct seeding. An even-aged forest usually results.

**CLEARING INDEX** - A determining factor in granting permission for certain classes of open burning. It is directly related to atmospheric stability and indicates periods of increased potential for pollutant increase.

**CLIMAX** - The culminating stage in plant succession for a given site where the vegetation has reached an highly stable condition.

**CLOSED ROAD** - Forest road on which all motorized vehicle use is prohibited, except by permit, under the authority of 36 CFR 261.

**CODE OF FEDERAL REGULATIONS (CFR)** - Document published by the Office of the Federal Register, National Archives and Records Service, that codify documents regulating application and administration of laws enacted by the Congress of the United States.

**COLLECTOR ROADS** - Roads constructed to serve two or more elements but which do not fit into the other two categories (arterial or local). Construction costs of these facilities are prorated to the respective element served. These roads serve smaller land areas and are usually connected to a Forest arterial or public highway. They collect traffic from Forest roads or terminal facilities. The location and standard are influenced by both long-term multi-resource service needs and travel efficiency. Forest collector roads are operated for constant service.

**COMMERCIAL THINNING** - Reduction in tree density by designating select trees for removal through commercial sales for poles, posts, fuelwood, et. al.

**CONFINEMENT** - To restrict the fire within determined boundaries established either prior to the fire, during the fire, or in an escaped fire situation analysis. The normal tactic is surveillance only.

CONIFER - Cone-bearing trees, mostly evergreen, including the pine, spruce, fir, etc.

CONSERVATION POOL - The minimum amount of water in a reservoir which will provide sufficient habitat to maintain fish over the winter period.

CONSUMPTIVE USE - A use of resources that reduces the supply, such as logging and mining, See also "Nonconsumptive use."

CONSTANT SERVICE FACILITY - A long-term facility developed and operated for continuous or annual recurrent service. (FSM 7705.31)

CONSTRAINT - A quantification of the minimum or maximum amount of an output or cost that could be produced or incurred in a given time period.

CONTAINMENT - To surround a fire, and any spot fires therefrom, with control line, as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions. The normal tactic is indirect attack and burn to human-made or natural barrier with little or no mop-up.

CONTROL - To complete the control line around a fire, any spot fires therefrom, and any interior islands to be saved, burn out any unburned area adjacent to the fire side of the control line, and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions. The normal tactic is direct attack on the fire, if possible, and mop-up.

CORRIDOR - A linear strip of land identified for the present or future location of transportation or utility rights-of-way within its boundaries.

COST-EFFICIENCY - The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs, including environmental, economic, or social impacts, are not assigned monetary values but are achieved at specified levels in the least cost manner. Cost efficiency is usually measured using present net value, although use of benefit-cost ratios and rates-of-return may be appropriate.

CUBIC FOOT - The amount of timber equivalent to a piece of wood one foot by one foot.

CULMINATION OF MEAN ANNUAL INCREMENT - The point where the mean annual growth increment (the basal area of a stand of trees divided by their age) ceases to increase prior to decline.

CULTURAL RESOURCE - The remains of sites, structures, or objects used by humans in the past--historical or archaeological.

CULTURAL UNIT - A unique archaeological evidence found on archaeological sites that represent a distinct period of time or cultural activity.

Diameter at breast height (DBH) - The diameter of a tree measured 4 feet 6 inches above the ground.

DECIDUOUS - Trees or shrubs that shed leaves annually.

DECISION CRITERIA - Essentially the rules or standards used to evaluate alternatives. They are measurements or indicators that are designed to assist a decisionmaker to identify a preferred choice from the array of possible alternatives.

DEER NUMBER - The actual number of deer, as determined by a count.

DEER YEAR - The amount of forage habitat required by one deer for one year.

DEMAND - The quantity of goods or services called for at various prices, holding other factors constant.

DEPARTURE - The temporary deviation from the non-declining even-flow policy.

DESIGN CAPACITY - The maximum theoretical amount of use a developed recreation site was built to accommodate.

DESIGNATED CORRIDOR - A linear area of land with defined and recognized boundaries identified and designated by legal public notice.

DEVELOPED RECREATION - Recreation that requires facilities that, in turn, result in concentrated use of an area. Examples of recreation areas are campgrounds and ski areas; facilities in these areas might include roads, parking lots, picnic tables, toilets, drinking water, ski lifts, and buildings.

DEVELOPED RECREATION SITE - Relatively small, distinctly defined area where facilities are provided for concentrated public use; e.g., campgrounds, picnic areas, swimming areas.

DEWATERING - Remove most or all of the water from a stream channel; usually by a diversion for irrigation or power generation.

DISPERSED RECREATION - A general term referring to recreation use outside a developed recreation site; this includes activities such as scenic driving, hunting, backpacking, and recreation in primitive environments.

DISTANCE ZONE - Areas of landscape denoted by specified distances from the observer. Used as a frame of reference in which to discuss landscape characteristics or activities of man.

DIVERSITY - The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan. See also "Edge."

DIVERSITY INDEX (DAT) - A diversity index for macroinvertebrates which combines dominance (D) and number of taxa (T) (species).

DOUBLE CIRCUITING - Doubling the capacity of an electrical transmission line.

EARLY SERAL VEGETATION - One of the first stages that occur in vegetation community succession.

ECOLOGICAL TREND - The direction of change in vegetation condition or composition.

ECOSYSTEMS - An interacting system of organisms considered together with their environment; for example, marsh, watershed, and lake ecosystems.

EDGE - Where plant communities meet or where successional stages or vegetation conditions within the plant communities come together.

ELECTRONIC SITES - Areas designated for the operation of equipment which transmit and receive radio

signals, excluding television aerials and antennas, for local pickup of programming and passive reflectors.

ELK NUMBER - The actual number of elk, as determined by a count.

ELK YEAR - The amount of forage and habitat required by one elk for one year.

EMERGING PUBLIC ISSUE - An expressed demand or impact on Forest Service resources or management created by the public.

ENDEMIC - Native or confined to a certain region; having comparatively restricted distribution.

ENVIRONMENTAL ASSESSMENT (EA) - The concise public document required by the regulations for implementing the procedural requirements of NEPA (40 CFR 1508.9).

ESCAPED FIRE STATION ANALYSIS - A decision analysis using those factors influencing suppression of an escaped fire from which a plan of action will be developed. The analysis includes the development of alternative suppression strategies and the probable cost and damages associated with each.

EVEN-AGED-MANAGEMENT - The application of a combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Managed even-aged forests are characterized by a distribution of stands of varying ages (and, therefore, tree sizes) throughout the forest area. The difference in age between trees forming the main canopy level of a stand usually does not exceed 20 percent of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for regeneration and is harvested. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

EVEN-AGED SILVICULTURE - The combination of timber management actions that result in the creation of stands where trees of essentially the same age grow together.

EXISTING PUBLIC ISSUE - An expressed demand or impact on Forest Service resources or management created by the public.

EXPERIENCE LEVELS - The range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "urban" is planned for the National Forest System.

FACILITIES - Transportation planning, road management and operation, fleet equipment, and engineering services (for example, administrative buildings, water and sanitation systems, sanitary landfills, dams, bridges, and communication systems).

FAMILY UNIT - A developed site or picnic spot with table, fireplace, tent pad, and parking spot designed to handle a group of people.

FEE SITE - A Forest Service recreation area in which users must pay a fee. Fee sites must meet certain standards and provide certain facilities as specified in the Forest Service Manual.

FIRE HAZARD - The fuel in which a fire will ignite and burn.

#### E-6

FIRE INTENSITY LEVEL - The severity of a given fire condition. Low intensity fire flame lengths are under 4 feet and high intensity fires average flame lengths over 4 feet.

**FIRE MANAGEMENT** - All activities required for protection of resources from fire and the use of fire to meet land management goals and objectives.

**FIRE MANAGEMENT/EFFECTIVENESS INDEX (FMEI)** - The index value measures effectiveness of annual fire management operational programs. It is a planning, attainment, analysis, and evaluation tool for both annual and long-term programs. Measured in dollars per thousand acres protected, the objective is to minimize the index level.

**FORAGE** - All browse and nonwoody plants that are available to wildlife for grazing or harvested for feeding.

**FORB** - Any herbaceous plant other than grass or grass-like plants.

**FOREGROUND** - The detailed landscape found within 0 to 1/4-1/2 mile from the observer.

**FOREST DEVELOPMENT ROADS** - Roads that are part of the Forest development transportation system which includes existing and planned roads as well as other special and terminal facilities designated as Forest development transportation facilities. (See arterial roads, collector roads, and local roads.)

**FOREST RANGER** - The official responsible for administering the National Forest System lands in a Forest Service administrative unit called the Ranger District, located on a National Forest. The Forest Ranger reports to the Forest Supervisor.

**FOREST ROAD OR TRAIL** - The term "Forest road or trail" means a road or trail wholly or partly within, or adjacent to, and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. (Title 23 USC 101 as amended by the Surface Transportation Act of 1978.)

**FOREST SERVICE HANDBOOK (FSH)** - The Forest Service Handbooks complement the Forest Service Manual. They are the principal source of detailed instructions for performing specialized tasks and contain detailed procedures, standards, practices, and techniques used primarily by technicians and specialists.

**FOREST SERVICE MANUAL (FSM)** - The Forest Service Manual is the basic and ruling component of the directive system and the principal source of continuing instruction for the conduct of Forest Service programs and activities.

**FUEL BREAK** - A zone in which fuel quantity has been reduced or altered to provide a position for suppression forces to make a stand against wildfire. Fuel breaks are designated or constructed before the outbreak of a fire. Fuel breaks may consist of one or a combination of the following: natural barriers, constructed fuel breaks, manmade barriers.

**FUEL LOADING** - The volume of dead and down vegetative material, that may include logging slash, subject to burning. Measured in tons per acre.

**FUEL TREATMENT** - The rearrangement or disposal of natural or activity fuels to reduce the fire hazard. Fuels are defined as both living and dead vegetative materials consumable by fire.

**FUELWOOD** - Wood-round, split, or sawed, and generally otherwise refuse material-cut into short lengths for burning.

FUGITIVE DUST - Solid, airborne particulate matter emitted from any source other than through a stack.

FULL SERVICE MANAGEMENT - Refers to recreation management, operation, maintenance, and administrative activities are accomplished according to established standards and objectives.

GENERAL AQUATIC WILDLIFE SYSTEMS (GAWS) - Intermountain Region standard aquatic inventory system which encompasses the following elements: Stream and lake identification, stream survey, lake-reservoir survey, macroinvertebrates survey, valley bottomland stratification, computer data management, action programs.

GOAL - A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal basis from which objectives are developed.

GRAZING ALLOTMENT - See "Range Allotment."

GRAZING CAPACITY - The expected sustained annual production of forage that is suitable and available for livestock and/or wildlife can be grazed without inducing damage to vegetation, soils, and other related resources.

HABITAT - The place where a plant or animal naturally lives or grows.

HABITAT CAPABILITY - The estimated ability of an area, given existing or predicted habitat conditions, to support a wildlife, fish or plant population. It is measured in terms of potential population numbers.

HABITAT CONDITION INDEX (HCI) - An Indication of the condition of aquatic (stream) habitat based on the parameters of pool quantity, pool structure, stream bottom quality, streambank cover, and channel stability.

HIGHWAY - A Forest road under the jurisdiction of, and maintained by, a public authority and open to public travel. Designated as a Forest Highway, and meets the criteria of (1) jurisdiction, (2) providing a connecting link for the resources of the National Forests to other markets, and (3) serving other local needs such as schools, mail delivery, and commercial supply.

HUMAN RESOURCE UNIT (HRU) - A subunit of the larger SRU used for the same planning purposes, but focuses on a more site specific forest and district level.

INDICATOR SPECIES - A plant or animal species adapted to a particular kind of environment. Its presence is sufficient indication that specific habitat conditions are also present.

INSTREAM FLOWS - A prescribed level (or levels) of streamflow, usually expressed as a stipulation in a permit authorizing a dam or water diversion for the purpose of meeting National Forest System management objectives.

INTEGRATED PEST MANAGEMENT - A management strategy for suppression of forest pests which integrates silvicultural, mechanical, biological, and chemical suppression strategies which achieve greater efficiency and safety than the same strategies used alone.

#### E-8

INTERMEDIATE CUTTING - Any removal of trees from a stand between the time of its formation and the regeneration cut. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

INTERMITTENT SERVICE FACILITY - A facility developed and operated for periodic service and closed for more than one year between periods of use. (FSM 7705.31.)



**IRRETRIEVABLE** - Applies to losses of production, harvest, or commitment of renewable natural resources. For example, some or all of the timber production from an area is irretrievably lost during the time an area is used as a winter sports site. If the use is changed, timber production can be resumed. The production lost is retrievable, but the action is not irreversible.

**IRREVERSIBLE** - Applies primarily to the use of nonrenewable resources, such as minerals or cultural resources, or to those factors that are renewable only over long time spans, such as soil productivity. Irreversible also includes loss of future options.

**ISSUE** - A point, matter, or question of public discussion or interest to be addressed or decided through the planning process.

**KEY HABITAT** - Key land areas used by wildlife for forage and reproduction.

**LAND EXCHANGE** - The conveyance of non-Federal land or interests in the United States in exchange for National Forest System land or interests in land.

**LANDLINE** - For Forest Plan purposes, National Forest property boundaries.

**LATE SERAL VEGETATION** - One of the last stages that occurs before climax in vegetation community succession.

**LINEAR PROGRAMMING** - A mathematical method used to determine the cost-effective allocation of limited resources between competing demands when both the objective; e.g., profit or cost, and the restrictions on its attainment are expressible as a system of linear equalities or inequalities; e.g.,  $y = x + bx$ .

**LOCAL ROADS** - Roads constructed and maintained for, and frequented by, the activities of a given resource element. Some use may be made by other element activities, but normally maintenance is not affected by such use. These roads connect terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard are usually determined by the requirements of a specific resource activity rather than by travel efficiency. Forest local roads may be developed and operated for either constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

**LONG-TERM SUSTAINED YIELD (LTSY)** - In timber, the highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple-use objectives.

**MACROINVERTEBRATES** - An aquatic insect, without a backbone, that can be seen with the naked eye in the advanced stages of development. The composition of the community is an indication of the quality of the aquatic habitat and reflects the condition of the entire drainage.

**MAINTENANCE LEVEL** - A formally established set of objectives which describes the conditions necessary to achieve the planned operations of a road. (FSH 7709.15.)

#### E-9

**MANAGEMENT ACTION** - Any activity undertaken as part of the administration of the Forest.

**MANAGEMENT UNIT** - An area of land with similar management goals and a common management prescription.

**MANAGEMENT CONCERN** - A concern, problem, or a condition which constrains the range of management practices identified by the Forest Service in the planning process.

**MANAGEMENT REQUIREMENTS** - A statement of multiple-use goals, other goals and objectives, and the associated management prescriptions, with Standards and Guidelines for attaining them.

**MANAGEMENT INTENSITY** - A management practice or combination of management practices and associated costs designed to obtain different levels of goods and services.

**MANAGEMENT INDICATOR SPECIES (MIS)** - A species selected because its population changes indicate effects of management activities on the plant and animal community. A species whose condition can be used to assess the impacts of management actions on a particular area.

**MANAGEMENT OPPORTUNITY** - A statement of general actions, measures, or treatments that address a public issue or management concern in a favorable way.

**MANAGEMENT PRACTICE** - A specific activity, measure, course of action, or treatment.

**MANAGEMENT PRESCRIPTION** - Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

**MANAGEMENT STANDARDS & GUIDELINES** - See Standards and Guidelines.

**MATURE TIMBER** - Trees that have attained full development, particularly height, and are in full seed production.

**MANAGEMENT SYSTEM** - The laws, regulations, and traditions within which Forest Service management decisions are made and implemented.

**MARKET-VALUE OUTPUTS** - Goods and services valued in terms of what people are willing to pay for them, as evidenced by market transactions.

**MAXIMUM MODIFICATIONS** - See "Visual Quality Objectives (VQO)".

**MIDDLEGROUND** - The space between the foreground and the background in a picture or landscape. The area located from 1/4-1/2 to 3 to 5 miles from the viewer.

**MINIMUM VIABLE POPULATION** - In wildlife, it is the number of animals of a given species that are needed to maintain that species in an area.

**MINERALS, COMMON VARIETY (SALEABLE)** - Deposits which, although they may have value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts, do not possess a distinct, specific economic value for such use over and above the normal uses of the general sum of such deposits. May include sand, stone, gravel, pumicite, cinders, pumice (except that occurring in pieces over 2 inches on a side), clay, and petrified wood.

**MINERAL ENTRY WITHDRAWAL** - The exclusion of the right of exclusive possession by the locator, or locatable mineral deposits and mineral development work on areas required for administrative sites by the Forest Service and other areas highly valued by the public. Public lands withdrawn from entry under the general mining laws and/or the mineral leasing laws.

**MINERALS, LEASABLE** - Coal, oil, gas, phosphate, sodium, potassium, oil shale, sulphur, and geothermal steam.

**MINERALS, LOCATABLE** - Those hardrock minerals which are mined and processed for the recovery of metals. May include certain nonmetallic minerals and uncommon varieties of mineral materials such as valuable and distinctive deposits of limestone or silica. May include any solid, natural inorganic substance occurring in the crust of the earth, except for the common varieties of minerals and leasable minerals.

**MITIGATION** - Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice.

**MODIFICATION** - See "Visual Quality Objective (VQO)".

**MORTALITY** - In trees, it relates to lost wood fiber and includes those commercial species, standing or down, that have died during a specified period, and were not cull trees at the time of death.

**MOUNTAIN PINE BEETLE** - A tiny black insect, ranging in size from 1/8 to 3/4 inch, that bores its way into the tree's cambium and cuts off its supply of food, thus killing the tree.

**MULTIPLE USE** - The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land with consideration being given to the relative values of the various resources, and not necessarily the combination that will give the greatest dollar return or the greatest unit output.

**NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN** - A Plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended. It guides all natural resource management activities and establishes management standards and guidelines for the National Forest System lands of a given National Forest.

**NATIONAL FOREST LANDSCAPE MANAGEMENT SYSTEM** - The art and science of planning and administering the use of Forest lands in such ways that the visual effects maintain or upgrade man's psychological welfare. It is the planning and design of the visual aspects of multiple-use land management.

**NATIONAL FOREST MANAGEMENT ACT (NFMA)** - A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act requiring the preparation of Regional Guides and Forest Plans and the preparation of regulations to guide that development.

**NATIONAL FOREST SYSTEM (NFS) LANDS** - National Forests, National Grasslands, or purchase units, and other lands under the management of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

**NATIONAL RECREATION TRAILS** - Trails designated by the Secretary of the Interior or the Secretary of Agriculture as part of the National system of trails authorized by the National Trails System Act. National Recreation Trails provide a variety of outdoor recreation uses in or reasonably accessible to urban

areas.

**NATIONAL REGISTER OF HISTORIC PLACES** - A listing (maintained by the U.S. National Park Service) of areas which have been designated as being of historic significance. The Register includes places of local and state significance as well as those of value to the Nation.

**NATIONAL WILDERNESS PRESERVATION SYSTEM** - All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department having jurisdiction.

**NET PUBLIC BENEFITS** - An expression used to signify the overall long-term value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitative values or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. The maximization of net public benefits to be derived from management of units of the National Forest System is consistent with the principles of multiple use and sustained yield.

**NETWORK** - A group of individuals that form a system for maintaining or activating their interests-including both informal and formal groups.

**NON-CONSUMPTIVE USE**- A use of a resource that does not reduce the existing inventory or supply.

**NON-DECLINING EVEN-FLOW POLICY** - A level of timber production that schedules sale and harvest in future decades equal to or greater than the present decade.

**NON-MARKET VALUED OUTPUTS** - Goods and services not generally traded in the marketplace, but valued in terms of what reasonable people would be willing to pay for them rather than go without. Those obtaining the outputs do not pay all or part of what they would be willing to.

**NON-SYSTEM ROAD** - Travelways through the Forest that are not included on the Forest road inventory, are not maintained, and are generally jeep trails or tracks that developed through use.

**NOXIOUS WEEDS** - A plant species that is undesirable; conflicts, restricts, or otherwise causes problems with the management objectives.

**OBJECTIVE** - A concise, time-specific statement of measurable planned results that respond to preestablished goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

**OBLITERATION** - The reclamation of the land occupied by a facility for purposes other than transportation.

**OCCUPANCY TRESPASS** - The illegal occupation or possession of National Forest System land or property.

**OFF-ROAD VEHICLES (ORV)** - Vehicles such as motorcycles, all-terrain vehicles, four-wheel drive vehicles, and snowmobiles.

**OLD GROWTH** - A stand of trees that is past full maturity and showing decadence; the last stage in forest succession.

**OPEN ROAD** - Forest road under the jurisdiction of the Forest Service on which all types of legal

motorized vehicles may be allowed to operate, and for which no restriction or closures has been issued under the authority of 36 CFR 261.

**OPERATING PLAN** - A written document approved by the Forest Supervisor which provides specifically, at the project level, for implementation of the management direction established in the Forest Plan.

**OPPORTUNITY** - See "Management Opportunity".

**OPPORTUNITY COST** - An opportunity cost is revenue foregone. In this analysis it is a cost calculated as the difference between present net value of the alternatives and the present net value of the maximum PNV benchmark.

**OUTPUTS** - The goods, services, products, and concerns which are measurable and capable of being used to determine the effectiveness of programs and activities in meeting objectives. Goods, end products, or services that are purchased, consumed, or utilized directly by people. A broad term for describing any result, product, or service that a process or activity actually produces.

**OVERMATURE TIMBER** - Trees that have attained full development, particularly in height, and are declining in vigor, health, and soundness.

**PARTIAL RETENTION** - See "Visual Quality Objectives (VQO)".

**PERMITTED USE (OBLIGATION)** - Includes use by all livestock authorized to graze on National Forest System lands under grazing or livestock use permits including those livestock under temporary nonuse for personal or range resource protection purposes.

**PERSONS-AT-ONE-TIME (PAOT)** - A recreation capacity measurement term indicating the number of people who can use a facility or area at one time.

**PLANNED IGNITIONS** - A fire started by a deliberate management action.

**PLANNING HORIZON** - The planning horizon is 50 years for all resources except timber, which is 150 years. The 50-year horizon is divided into tree periods. The first and second periods are 10 years each, and the third period is 30 years.

**POLE TIMBER** - Live trees of at least five inches in diameter at breast height, but smaller than the minimum utilization standard for sawtimber.

**POLICY** - A guiding principle which is based on a specific decision or set of decisions.

**PRECOMMERCIAL THINNING** - The practice of removing some of the trees less than merchantable size from a stand so that the remaining trees will grow faster.

**PREDATOR** - One that preys, destroys, or devours--usually an animal that lives by preying on other animals.

**PRESCRIBED FIRE** - A wildland fire burning under specified conditions which will accomplish certain planned objectives. The fire may result from either planned or unplanned ignitions. Plans for use of unplanned ignitions for this purpose must be approved by the Regional Forester.

**PRESCRIPTION** - A predesignated set of criteria established for the use of prescribed fire to accomplish specific land and resource management objectives. See "Management Prescription."

**PRESENT NET VALUE (PNV)** - The difference between the discounted benefits and the discounted costs over a given time period.

**PRESENT VALUE COST (PVC)** - The sum of each year's costs, discounted to the present.

**PRESENT VALUE BENEFIT (PVB)** - The sum of each year's benefit values, discounted to the present.

**PRESERVATION** - See "Visual Quality Objective (VQO)".

**PRIMITIVE ROADS** - Roads constructed with no regard for grade control or designed drainage, sometimes by merely repeatedly driving over an area. These roads are single lane, usually with native surfacing and sometimes passable with four-wheel drive vehicles only, especially in wet weather.

**PRIMITIVE ROS CLASS** - A classification of the recreation opportunity spectrum characterized by an essentially unmodified environment, where trails may be present but structures are rare, and where probability of isolation from the sights and sounds of man is extremely high.

**PROGRAM BUDGET** - The fiscal planning document for estimating short- and long-range dollar needs by program area.

**PROGRAM DEVELOPMENT AND BUDGETING (PD&B)** - The process by which activities for the Forest are proposed and funded.

**PROGRAMMED HARVEST** - The part of the potential yield that is scheduled for harvesting. It is based on current demand, funding, and multiple use considerations.

**PROJECTS** - Work schedule prescribed for a project area to accomplish management prescriptions. Projects can be for operation, maintenance, and protection (OMP) or for investment purposes. OMP projects are for ongoing work and are generally considered one year at a time. Investments can be of multiyear duration. A project is organized for managerial convenience, and is described by location, activities, outputs, effects, work force, dollars, time, and responsibility for execution.

**PUBLICS** - A specific part of a population that can be grouped together by the resource manager because of some common interest or purpose.

**PUBLIC ISSUE** - A subject or question of widespread public interest relating to management of the National Forest System.

**RANGE ALLOTMENT** - An area designated for use of a prescribed number and kind of livestock under one management plan.

**RANGE CONDITION** - The state of health of the range based on what it is naturally capable of producing.

**RAPTORS** - Bird of prey with a strong notched beak and sharp talons, such as the eagle, hawk, owl, etc.

**REAL DOLLAR VALUE** - A monetary value that compensates for the effects of inflation.

**RECREATION CAPACITY** - The number of people, measured in persons-at-one-time (PAOT), that can take advantage of the recreation opportunity at any one time without substantially diminishing the quality of the experience sought after.

**RECREATION EXPERIENCE DEVELOPMENT LEVEL** - A classification (using a 1 to 5 scale) of the level of development in camp and picnic sites as to the types of recreation opportunities and modifications to the environment that can be expected.

**RECREATION INFORMATION MANAGEMENT (RIM)** - The Forest Service system for recording recreation facility condition and use.

**RECREATION MANAGEMENT AREA** - An area of several thousand acres where the management emphasis is on recreation and where there is direction given to establish a Recreation Area Management Plan.

**RECREATION OPPORTUNITY** - Availability of a real choice for a user to participate in a preferred activity within a preferred setting, in order to realize those satisfying experiences which are desired.

**RECREATION OPPORTUNITY SPECTRUM (ROS)** - A method of measuring the ability of the Forest land to meet the various types of demands imposed by a variety of recreation uses.

**RECREATION RESIDENCES** - Houses or cabins on National Forest System land that are not the primary residence of the owner.

**RECREATION VISITOR DAY (RVD)** - Twelve visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

**RECREATION LIVESTOCK** - Animals used primarily in conjunction with recreation such as horses, mules, etc.

**REDUCED SERVICE MANAGEMENT (RSM)** - Management of recreation facilities below optimum maintenance standards.

**REFORESTATION** - The natural or artificial restocking of an area with forest trees.

**REFORESTATION BACKLOG** - Areas that need to have trees reestablished. This can be done by planting, seeding, or preparing the site for natural regeneration.

**REGION** - For Regional planning purposes, the standard administrative Region of the Forest Service, administered by the official responsible for preparing a Regional Guide.

**REGIONAL GUIDE** - The guide developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and establishes management standards and guidelines for the National Forest System lands of a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

**REGULATED FOREST** - A forest having an ideal distribution of age classes and where control of timber harvest is in accordance with tree growth and other management decisions.

**REMOVAL CUT (FINAL CUT)** - The removal of the last seed bearers or shelter trees after regeneration is established under a shelterwood method.

**RESEARCH NATURAL AREAS (RNA)** - An area in as near a natural condition which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.

**RESOURCE MANAGEMENT PLAN** - A Plan developed prior to the Forest Plan that outlines the activities and projects for a particular resource element independently of considerations for other resources. Such Plans are superseded by the Forest Plan.

**RESTRICTED ROAD** - A Forest road on which motorized vehicle use is restricted as to times or seasons of use, types of vehicles, vehicle equipment, or type of activity specified in orders issued under the authority of 36 CFR 261.

**RETENTION** - See "Visual Quality Objectives (VQO)".

**RIGHT-OF-WAY (ROW)** - An accurately located strip of land with defined width, point of beginning, and point of ending. It is the area within which the user has authority to conduct operations approved or granted by the landowner in an authorizing document, such as a permit, easement, lease, license, or Memorandum of Understanding (MOU).

**RIPARIAN** - Areas of land that are directly influenced by water. They usually have visible vegetative or physical characteristics reflecting this water influence. Stream sides, lake borders, or marshes are typical riparian areas.

**RIPARIAN AREAS** - Streams, lakes, ponds, wetlands, floodplains, and their associated aquatic and riparian ecosystems.

**RIPARIAN ECOSYSTEM** - A transitional between the aquatic ecosystem and the adjacent upland terrestrial ecosystem and is identified by soil characteristics and distinctive vegetation communities that require free or unbounded water.

**ROAD** - A general term denoting a way for purposes of travel by vehicles greater than 40 inches in width. (FSM 7721.15c.)

**ROAD MAINTENANCE LEVELS** - Levels are described as follows:

Level 1 - Road normally closed to vehicle traffic.

Level 2 - Road open for limited passage of traffic but not normally suitable for passenger cars.

Level 3 - Road open for public traffic including passenger cars, but may not be smooth or comfortable.

Level 4 - Road suitable for all types of vehicles, generally smooth to travel, and dust may be controlled.

Level 5 - Road is smooth and dust free, and the surface is skid resistant if paved.

**ROADED NATURAL** - A classification of the recreation opportunity spectrum that characterizes a predominately natural environment with evidence of moderate permanent alternate resources and resource utilization. Evidence of the sights and sounds of man is moderate, but in harmony with the natural environment. Opportunities exist for both social interaction and moderate isolation from sights and sounds



of man.

#### E-16

**ROADLESS AREA REVIEW AND EVALUATION II (RARE II)** - The national inventory of roadless and undeveloped areas within the National Forest and Grasslands. This refers to the second such assessment, which was documented in the Final Environmental Impact Statement of the Roadless Area Review and Evaluation, January 1979.

**ROTATION** - The planned number of years between the formation of a regeneration of trees and its final cutting at a specified stage of maturity.

**ROUNDWOOD** - Timber and fuelwood prepared in the round state-from felled trees to material trimmed, barked, and crosscut (logs, transmission poles, etc.).

**RPA PROGRAM** - The Forest and Rangeland Renewable Resources Planning Act of 1974. Also refers to the National Assessment and Recommended Program developed to fulfill the requirements of the Act. The most recent recommended program was done in 1980.

**RURAL** - A recreation opportunity spectrum classification for areas characterized by a substantially modified natural environment. Sights and sounds of man are evident. Renewable resource modification and utilization practices enhance specific recreation activities or provide soil and vegetative cover protection.

**SAPLING** - As used in timber survey, a size class definition; trees 1.0 to 4.9 inches at DBH.

**SAWTIMBER** - Live trees that equal or exceed the minimum utilization standards.

**SEASONAL FACILITY** - A facility which can be operated only as climatic conditions and structural and administrative limitations allow. The facility may be closed at times during the normal operating year to all or certain classes of use for reasons of weather, fire hazard, resource protection, or public safety. (FSM 7705.52.)

**SEDIMENTARY ROCKS** - Rocks formed by the accumulation and settling of suspended solid materials in water or from air. A characteristic feature of these rocks is a layered structure.

**SEED TREE CUTTING** - Removal in one cut of the mature timber crop from an area, except for a small number of seed bearers left singly or in small groups.

**SEEDLINGS** - Live trees less than 5 inches in diameter at breast height.

**SEMIPRIMITIVE MOTORIZED** - A classification of the recreation opportunity spectrum characterized by a predominantly unmodified natural environment in a location that provides good to moderate isolation from sites and sounds of man except for facilities/travel routes sufficient to support motorized recreational travel opportunities which present at least moderate challenge, risk, and a high degree of skill testing.

**SEMIPRIMITIVE NONMOTORIZED** - A classification of the recreation opportunity spectrum characterized by a predominantly unmodified natural environment of a size and location that provides a good to moderate opportunity for isolation from sights and sounds of man. The area is large enough to permit overnight foot travel within the area, and presents opportunity for interaction with the natural environment with moderate challenge, risk, and use of a high degree of outdoor skills.

**SENSITIVE SPECIES** - Plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations.

#### E-17

**SENSITIVITY LEVEL** - A particular degree of measure of viewer interest in scenic qualities of the landscape. Three sensitivity levels are employed, each identifying a different level of user concern for the visual environment.

- Level 1 - Highest sensitivity
- Level 2 - Average sensitivity
- Level 3 - Lowest sensitivity

**SERIAL CONDITION** - The unique characteristics of a biotic community which is a developmental, transitory stage in an orderly ecologic succession involving changes in species, structure, and community processes with time.

**SHEET EROSION** - The removal of a fairly uniform layer of soil from the land surface by runoff water, without the development of conspicuous water channels.

**SHELTERWOOD** - The cutting method that describes the silvicultural system in which, in order to provide a source of seed and/or protection for regeneration, the old crop (the shelterwood) is removed in two or more successive shelterwood cuttings. The first cutting is ordinarily the seed cutting, though it may be preceded by a preparatory cutting, and the last is the final cutting. Any intervening cuttings is termed removal cutting. An even-aged stand results.

**SHORT-TERM FACILITY** - A facility developed and operated for a limited period of time which will cease to exist as a transportation facility after the purpose for which it was constructed is completed, and the occupied land is reclaimed and managed for natural resource purposes. (FSM 7705.32.)

**SILVICULTURAL SYSTEM** - A management process whereby Forest are tended, harvested, and replaced resulting in a Forest of distinctive form. Systems are classified according to the method of carrying out the fellings that remove the mature crop and provide for regeneration and according to the type of Forest thereby produced.

**(SINGLE) TREE SELECTION** - The cutting method that describes the silvicultural system in which trees are removed individually, here and there, each year over an entire forest or stand. The resultant stand usually regenerates naturally and becomes all-aged.

**SINGLE-STORIED STANDS** - A stand of trees in which the canopy is contained in one layer.

**SITE INDEX** - A numerical evaluation of the quality of land for plant productivity.

**SLASH** - The residue left on the ground after timber cutting and/or accumulating there as a result of storm, fire, or other damage. It includes unused logs, uprooted stumps, broken or uprooted stems, branches, twigs, leaves, bark, and chips.

**SNAG** - A nonliving standing tree. The interior of the snag may be sound or rotted.

**SOCIAL IMPACT ANALYSIS** - A social assessment process that establishes the cultural and economic

conditions, and the physical resource inventory of a specific geographic area, in order to forecast and control disruptive changes resulting from forest resource management activities.

**SOCIAL RESOURCE UNIT (SRU)** - An SRU is a geographic area tied together by a common physical, social, and economic environment. The SRU concept provides resource managers with a defined geographic unit of analysis that shows the relationship between physical and human resources. The SRU is used as a planning and implementation tool for forecasting and managing the social impacts resulting from changes in resource use on a Regional level.

#### E-18

**SOIL EROSION** - The detachment and movement of soil from the land surface by water or wind.

**SOIL PRODUCTIVITY** - The capacity of a soil to produce a specific crop such as fiber, forage, etc., under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients and length of growing season.

**SPECIAL USE PERMIT** - A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of National Forest System land for some special purpose.

**SPECIFIED ROAD** - A road, including related transportation facilities and appurtenances, shown on Sale Area Map and listed in Table A9 of the Timber Sale Contract. (B5.2 TS Contract and FSM 2431.24--5&6.)

**STAND (TREE STAND)** - An aggregation of trees or other vegetation occupying a specific area and sufficiently uniform in composition (species), age arrangement, and condition as to be distinguishable from the Forest or other vegetation or other land cover on adjoining areas.

**STANDARD AND GUIDELINE** - A principle requiring a specific level of attainment, a rule to measure against; a mandatory requirement.

**SUBSIDENCE** - Surface caving or distortion due to underground excavations.

**SUCCESSIONAL STAGE** - A stage or recognizable condition of a plant community that occurs during its development from bare ground to climax; for example, coniferous forests often progress through six recognized stages: grass-forb; shrub-seedling; pole-sapling; young; mature; old growth.

**SUITABILITY** - The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices. See also "Timber classification."

**SUITABLE FOREST LAND** - Lands allocated to timber management as a result of the three-stage suitability analysis.

**SUPPRESSION** - An act extinguishing or confining fire.

**TARGETS** - A quantifiable output. Assignments made to the Forest by the Regional Forester.

**TECHNICALLY SUITABLE FOREST LAND** - Land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions. There is reasonable assurance that such lands can be adequately restocked as provided in 36 CFR 219.13 (h)(3).

**TEMPORARY ROAD** - A road that will be physically obliterated and seeded after its primary use is

completed; i.e., spur road for logging. It will never be used again.

**THERMAL COVER** - Cover used by animals to ameliorate effects of weather; for elk, a stand of coniferous trees 40 feet or taller with an average crown closure of 70 percent or more.

**THINNING** - A felling made in an immature stand primarily to maintain or accelerate diameter increment and also to improve the average form of the remaining trees without permanently breaking the canopy. An intermediate cutting.

#### E-19

**THREATENED SPECIES** - Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future.

**TIMBER CLASSIFICATION** - Forested land is classified under each of the land management alternatives according to how it relates to the management of the timber resource. The following are definitions of timber classifications used for this purpose:

1. Nonforest Land - Lands never having or incapable of having greater than 10 percent of the area occupied by forest trees and lands formerly forested and currently developed for nonforest use.
2. Forest Land - Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use. Lands developed for nonforest use include areas for crops, improved pasture, residential, or administrative areas, improved roads of any width and adjoining road clearing and powerline clearing of any width. The term occupancy when used to define forest land will be measured by canopy cover of live forest trees at maturity. The minimum area for classification of forest land is one acre. Unimproved roads, trails, streams, and clearings in forest areas are classified as forest if they are less than 120 feet in width.
3. Forest Land Suitable for Commercial Harvest - Land that is managed for timber production on a regulated basis.
4. Unsuitable Forest Land (Not Suited) - Forest land that is not managed for timber production because: (1) the land has been withdrawn by Congress, Secretary, or Chief; (2) technology is not available to prevent irreversible damage to soils, productivity, or watershed conditions; (3) there is no reasonable assurance that lands can be adequately restocked within 5 years after final harvest based on existing technology and knowledge; (4) there is at present, a lack of adequate information to responses to timber management activities; or (5) timber management is inconsistent with or not cost-efficient in meeting the management requirements and multiple-use objectives specified in the Forest Plan.
5. Tentatively Suitable (Commercial Forest Land) - Forest land which is producing or is capable of producing crops of industrial wood and (1) has not been withdrawn by Congress, the Secretary, or Chief; (2) existing technology and knowledge is available to ensure timber production without irreversible damage to soils, productivity, or watershed conditions; and (3) existing technology and knowledge provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

**TIMBER STAND IMPROVEMENT (TSI)** - Measure such as thinning, pruning, release cutting, prescribed fire, girdling, weeding, or poisoning of unwanted trees aimed at improving growing condition of the remaining trees.

**TRACTOR LOGGING** - Any logging method which uses a tractor as the motive power for transporting logs from the stumps to a collecting point--whether by dragging or carrying the logs.

**TRADEOFF EVALUATION PROCESS (TEP)** - A process whereby factors, issues, elements, etc., are evaluated with regard to the tradeoffs that would occur.

**TRAIL MAINTENANCE LEVEL** - Categories outlined in the Management Information Handbook describing the type and intensity of maintenance for trails.

## E-20

**TRANSITORY RANGE** - Land that is suitable for grazing use of a nonenduring nature over a period of time. For example, on particularly disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage.

**TRAVEL MANAGEMENT** - The administrative decisions on the location and timing of road and trail closures.

**TWO-STORIED STANDS** - A stand of trees whose crown structure is divided into two distinct layers.

**UNEVEN-AGED MANAGEMENT** - The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single tree selection and group selection

**UNIVERSAL SOIL LOSS EQUATION (USLE)** - An empirical erosion model, originally designed for agricultural situations that computes long-term average soil losses from sheet and rill erosion under specific conditions. Recent research has provided methods so that USLE can also be used to estimate sheet and rill erosion for Forest Management activities.

**UNPLANNED IGNITION** - A fire started at random by either natural or human causes, or a deliberate incendiary fire.

**UPRATING** - Increasing the capacity of an existing electrical transmission system.

**URBAN ROS CLASS** - A classification of the Recreation Opportunity Spectrum in which the natural setting is dominated by man-made structures and the sights and sounds of man predominate.

**UTILIZATION STANDARDS** - Standards guiding the projection of timber yields and the use and removal of timber. The standards are described in terms of minimum diameter at breast height, minimum length, and percent soundness of the wood, as appropriate.

**VARIETY CLASS** - A classification system for establishing three visual landscape categories according to the relative importance of the visual features. This classification system is based on the premise that all landscapes have some visual values, but those with the most variety or diversity of visual features have the greatest potential for high scenic value.

**VEGETATIVE MANIPULATION** - The change of one vegetation type to another. It can be done by a tractor, chemicals, or fire. Usually, this is done to increase forage for livestock and can be a beneficial tool for wildlife.

**VIABLE POPULATIONS** - A number of individuals of a species sufficient to ensure the long-term existence of the species in natural self-sustaining populations adequately distributed throughout their region.

**VISUAL QUALITY OBJECTIVE (VQO)** - Categories of acceptable landscape alteration measured in degrees of deviation from the natural appearing landscape.

Preservation (P) - A Visual Quality Objective that provides for ecological change only.

Partial Retention (PR) - A Visual Quality Objective which in general means man's activities may be evident but remain visually subordinate to the characteristic landscape.

#### E-21

Retention (R) - A Visual Quality Objective which in general means man's activities may not be evident and must remain subordinate to the characteristic landscape.

Modification (M) - A Visual Quality Objective meaning man's activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.

Maximum Modification (MM) - A Visual Quality Objective meaning man's activity may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background.

Enhancement (E) - A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists.

Rehabilitation (R) - A short-term management alternative used to return existing visual impacts in the natural landscape to a desired visual quality.

**VISUAL RESOURCE** - The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

**WATERSHED** - The entire area that contributes water to a drainage system or stream.

**WHEELING** - The use of a single electrical transmission system by more than one supplier.

**WILDERNESS** - Areas designated by congressional action under the 1964 Wilderness Act and the 1984 Utah Wilderness Act. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature with the imprint of man's activity substantially unnoticeable; have outstanding opportunities for solitude or a primitive and unconfined type of recreation; include at least 5,000 acres or is of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and geologic interest.

**WILDFIRE** - Any wildland fire that is not a prescribed fire.

**WILDLIFE AND FISH USER DAY (WFUD)** - Twelve visitor hours which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

**WILDLIFE HABITAT DIVERSITY** - The distribution and abundance of different plant and animal communities and species within a specific area.

**WILDLIFE HABITAT EFFECTIVENESS** - The character of locations where wildlife are not disturbed by human activities.

**WINDOW** - A critical segment of terrain through which right-of-way could pass in traversing from point of origin to destination.

**WINTER RANGE** - See "Big-Game Winter Range".

**WITHDRAWAL** - An order removing specific land areas from availability for certain uses.

#### E-22

**WOOD FIBER PRODUCTION** - The growing, tending, harvesting, and regeneration of harvestable trees.

**WORK CENTER** - A facility where crews assemble and are direct toward their various work assignments. A work center can be located at an administrative site. A work center normally will include storage and warehousing facilities and may include crew housing.

**YEAR-ROUND ECONOMICS** - Economies based on employees working year-round as opposed to seasonal employment.

**YELLOW CAKE** - The final precipitate formed in the milling process of uranium ore.

**ZONE OF INFLUENCE (ZOI)** - The area influenced by Forest Service management activities.

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# Forest Plan Monitoring and Evaluation Report

1992-2000

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USDA, Forest Service, Region 4  
Manti-La Sal National Forest

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## INTRODUCTION

### Background

The Record of Decision on the Environmental Impact Statement for the Manti-La Sal National Forest Land and Resource Management Plan (Forest Plan) was signed in November of 1986. Regulations (36 CFR 219.11 (d)) require the monitoring of Forest Plan implementation. This is accomplished on a sample basis. The results may demonstrate needed changes in management direction (36 CFR 219.12 (k)) or in the way direction is carried out on the ground. Forest-wide and site specific monitoring elements are listed in the Forest Plan, Table IV-1 on pages IV-3 to IV-13.

Following the initial five years of Forest Plan implementation the Forest conducted a broad review of plan direction, guidance, objectives and desired future condition. Results of the review are summarized in the 1987-1991 monitoring and evaluation report.

This report builds upon this foundation by presenting monitoring data gathered for each monitoring item listed in Table IV-1 since 1991 and then evaluating trends since 1987. Conclusions and recommended actions are also presented in this report by monitoring item.

Narratives in this report were organized by functional resource area followed by specific items to be monitored as displayed in Table IV-1. Each monitoring item describes the purpose of the monitoring item followed by monitoring methods, monitoring results, a general discussion, synopsis, recommended action(s), and responsibility.

A list of Forest Plan amendments to date is also presented.

### Conclusions

Most monitoring identified in the Plan has occurred. Monitoring of individual management activities for compliance with Plan standards and guidelines has been good. Specific areas of concern that were identified as a result of evaluation of the monitoring data are discussed under individual resources. Activity schedules identified in Appendix A of the Plan have been implemented to varying degrees. In some cases, the schedules have been completed and in other cases, rates of implementation have varied considerably from the schedule.

### Recommendations

- The objectives listed in Table III-1 on page III-6 of the Forest Plan need to be reviewed and compared against actual accomplishments. This should be accomplished and reported in next year's report. Each of the objectives needs to be reviewed and reaffirmed, changed, extended, or deleted as appropriate. The appropriate time to consider this work is forest plan revision.
- The activities listed in Appendix A of the Forest Plan need to be reviewed and compared against actual accomplishments. This should be accomplished and reported in next year's report. Each of the schedules in Appendix A needs to be reviewed and reaffirmed, changed, extended, or deleted. The appropriate time to consider this work is forest plan revision.

- The tie between monitoring and Forest Plan Objectives and Goals/Desired Future Condition needs to be strengthened. These ties should be better reflected in next year's report. Revision of the forest plan will provide an opportunity to address this issue also.
- There is also a need to increase monitoring and evaluation by groups of specialists several years after project implementation, to assess how the project activity contributed to meeting Forest Plan objectives and moving toward the goals and desired future conditions for the Forest.
- Priorities also need to be established for monitoring elements to ensure that important items are accomplished with available funding.



## RECREATION RESOURCE

### Developed Site Condition

The purpose of this monitoring is to verify predicted conditions of developed facilities. Monitoring will be conducted in developed recreation sites.

**Methods** - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and INFRA inventories, conducts routine site inspections, and reviews operation and maintenance plans. The electronic RIM database was discontinued in 1986. It was replaced by the INFRA and MM databases in the late 1990's, which are still under development and will later be merged into a single database. Reporting describes site condition in the context of "Key Measures and Standards" and quantifies the degree to which each is being met. Reporting also identifies, by constructed feature, annual maintenance, deferred maintenance, and capital improvement needs. Data is maintained annually.

Since RIM was discontinued, an average "Reference Percentage" (MM) of ten "Critical National Standards" will be used as a measure of overall site condition. According to the Forest Plan, a RIM Condition Class below 2 is considered "variation which would cause further evaluation and/or change in management direction." RIM Condition Class 2 is roughly equivalent to an average MM Reference Percentage of National Critical Standards of 21-30%. Therefore, sites with a Reference Percentage of greater than 30% are cause for concern. Perhaps more importantly, these sites also fail to meet Critical National Standards.

**Results** - The Forest has recently completed inventories and condition surveys for most developed sites, including: campgrounds, picnic areas, trailheads, interpretive sites, and angler parking areas. The database will be completed and refined in FY 2001-02. Draft data suggests that there has little net change in the collective condition of developed sites. There are proportionately more sites above Class 2 and none below Class 3. This is an improvement over the previous period. However, 52% of the recorded sites (33) are in Class 2 and another 16% (10) are in Class 3. These sites fail to meet Critical National Standards.

RIM CONDITON CLASS	MM REFERENCE %	DEVELOPED SITES
CLASS 1, SATISFACTORY	0-20%	20
CLASS 2, SUBSTANDARD	21-30%	33
CLASS 3, HEAVY MAINT	31-50%	10
CLASS 4, REPLACEMENT	>50%	0

**Discussion** - As resources are made available to address deferred maintenance and capital improvement needs, particularly regarding issues of public health and safety and accessibility, developed site conditions are expected to continue to improve throughout the next monitoring period. At the current rate of improvement, all developed sites are expected to be above Class 3 by the end of the next monitoring period. However, a continued and concerted emphasis on monitoring and improvement will be necessary to ensure that all developed sites meet at least Critical National Standards by the end of this period.

**Synopsis** - There are no longer any sites below Condition Class 3 and there are proportionately more sites above Class 2, which is an improvement over the previous monitoring period. However, 68% of all recorded

sites are in Class 2 or 3 and require improvement to meet Critical National Standards. Furthermore, as some sites have improved from lower classes, others have deteriorated from higher classes. This reflects the need to maintain improvements once they have been made, which resources may not permit. Heavy maintenance and reconstruction projects scheduled during the next few years will continue to shift some sites to higher Condition Classes. Other sites, meanwhile, may continue to deteriorate until they become a higher priority or resources are made available for improvement.

**Action** - Continue the maintenance of all sites to prevent further deterioration, to the degree possible. Aggressively address deferred maintenance needs, particularly in those facilities in Condition Class 3, with an emphasis on meeting Critical National Standards. Seek innovative ways to meet all Key Measures and Standards at all sites.

**Responsibility** - Forest and Ranger District Recreation Staffs

## Vegetative Management

The purpose of this monitoring is to predict hazardous conditions and evaluate aesthetic conditions at recreation sites and areas. Monitoring will be conducted in developed recreation sites and concentrated use areas (CUA) of general forest areas (GFA).

**Methods** - The District staff person in charge of recreation compiles field data from site and area inventories and condition surveys, conducts routine site and area inspections, and takes photographs from established photo points. The Code-A-Site campsite inspection program has been discontinued and has not yet been replaced. Field data is currently collected using a form appropriate to the purpose. Hazard trees are identified by visual inspection and increment boring. Aesthetic conditions are described in qualitative terms relative to other locations. Reporting identifies the presence of hazard trees and describes aesthetic conditions in the context of vegetative cover. Data is maintained every three to five years.

**Results** - Hazard tree evaluations were conducted annually in developed recreation sites and remediation measures were implemented almost immediately. Similar remediation measures have been implemented in CUA's where hazards have been identified, though not as aggressively. Additional remediation is planned for the next monitoring period.

There has been an overall improvement of aesthetic conditions in developed recreation sites. However, there has been a general deterioration of aesthetic conditions in CUA's during this monitoring period. Inspections have been completed and several dispersed campsites were identified as having extreme impact. These sites have either been closed and successfully rehabilitated or developed, as appropriate. Aesthetic conditions have since improved at each of these sites. Additional dispersed campsites are now being considered for closure or development. In many other campsites, methods of mitigating impacts are being aggressively devised and implemented. Twelve-Mile Canyon contains several popular CUA's and is heavily impacted, as are CUA's located on parcels of State land recently added to the Forest. These locations require condition surveys and analysis, planned for FY 2001-02.

**Discussion** - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in the size and number of CUA's. This growth is particularly pronounced in the use of ATV's, and noticeable impacts to vegetation (loss) in CUA's are growing

proportionately. Since this growth is expected to continue, there is a high potential for further impacts to aesthetic conditions in dispersed areas and a resulting loss of dispersed camping opportunities, if these impacts cannot be mitigated. Maintaining or improving aesthetic conditions in CUA's under increased use and with inadequate resources may prove to be a challenge, and the degree to which this can be accomplished should be monitored closely during the following monitoring period.

**Synopsis** – Hazard tree evaluations and remediation measures have been completed annually in developed recreation sites and in CUA's where hazards have been identified. Though aesthetic conditions have generally improved in developed recreation sites, they have generally deteriorated in CUA's during this monitoring period. However, several dispersed campsites with extreme impacts have been closed or developed and impacts to many other areas have been successfully mitigated. Aesthetic conditions in these areas have since improved. Condition surveys continue to be completed, but a greater emphasis on monitoring and mitigation will be necessary to address increasing use and associated impacts to visual quality.

**Action** - Continue hazard tree evaluation and remediation in developed recreation sites and CUA's, where hazards are identified. Maintain or improve aesthetic conditions in developed recreation sites; re-establish vegetation where aesthetic conditions have been adversely affected. Survey and assess aesthetic conditions in CUA's in Twelve-Mile Canyon and on State parcels recently added to the Forest, and identify sites to be closed or developed. Continue to monitor all other inventoried CUA's. Develop methods to maintain or reduce vegetation impacts to protect visual quality and preserve dispersed camping opportunities.

**Responsibility** – Forest and Ranger District Recreation Staffs

### Developed Site Use - Public Sector

The purpose of this monitoring is to verify that the amount of use and degree of social interaction in developed sites is within the range specified for the Recreation Opportunity Spectrum (ROS) Class. Monitoring will be conducted in developed sites.

**Methods** - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and conducts routine site inspections. The electronic RIM database was discontinued in 1986. Sampling methods include traffic counters, field observation, and concessionaire use reports. Results of the National Recreation Use Monitoring (NRUM) Program will also be added to the monitoring data in FY 2002. ROS social setting criteria are applied to the data. Reporting describes use and identifies the MM Development Scale of each site in the context of "Key measures and Standards" and quantifies the degree to which each is being met. Development Scale approximately correlates to ROS Class as shown in the table below (2000 MM User Guide). Data is maintained annually.

ROS CLASS	DEVELOPMENT SCALE
URBAN	5
RURAL	4
ROADED NATURAL	3
SEMI-PRIMITIVE	2
PRIMITIVE	1

**Results** – Developed sites have largely been managed in a manner consistent with ROS Classes. However, some sites receive more or less use than design capacity. Consequently, some sites may have experienced slight shifts to more or less primitive social settings, but these shifts have not likely affected the social setting by as much as 10%. Unfortunately, MM data is incomplete, from which Development Scale is drawn, but the table below delineates the percentage of each zone’s developed sites within each Development Scale, according to data currently available. The MM database will be completed and refined in FY 2001-02.

DEVELOPMENT SCALE	NORTH ZONE (48)	SOUTH ZONE (14)	FOREST TOTAL (62)
5	0%	0%	0%
4	21%	7%	18%
3	67%	57%	65%
2	13%	36%	18%
1	0%	0%	0%

**Discussion** – The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in the use of many developed sites. Compounded by Utah family and group sizes that are generally much larger than average, site occupancies often exceed design capacity, particularly in campgrounds and picnic areas. This may have shifted some sites from more primitive to less primitive social settings, but this shift is generally limited to weekends and holidays. A few other sites receive less use than design capacity. Nizhoni Campground and Ferron Canyon Picnic Area, for example, are not well used, despite being highly developed. The reasons for this are uncertain. Sites such as these may have shifted from less primitive to more primitive social settings, but this shift is generally limited to weekdays and shoulder seasons. These shifts should be assessed and monitored so that appropriate developed site ROS Classes may be maintained.

**Synopsis** – Developed sites have largely been managed in a manner consistent with ROS Classes. Rapidly increasing use in some sites, little use in other sites, and large average party sizes may cumulatively threaten to change ROS social settings, however, and the degree to which this may occur or may have already occurred should be assessed. This is unlikely to affect the social setting by as much as 10%. Nevertheless, the ROS and Development Scale should be monitored and mitigation methods should be developed.

**Action** - Improve the accuracy of use reporting at some sites, such as trailheads and interpretive sites, which continues to be based largely on crude estimates and is often derived inconsistently between Districts. Continue to manage developed sites according to designed Development Scale and monitor social settings for ROS Class compliance. Assess the degree to which changes in use and large party sizes may have cumulatively affected the ROS. Develop methods to mitigate undesirable ROS shifts, if such shifts are identified.

**Responsibility** - Forest and Ranger District Recreation Staffs

## Developed Site Use – Private Sector

The purpose of this monitoring is to verify predicted conditions of private developed facilities. Monitoring will be conducted in developed sites and management areas.

**Methods** - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and INFRA inventories, conducts routine site inspections, and reviews operation and maintenance plans. The electronic RIM database was discontinued in 1986. It was replaced by the INFRA and MM databases in the late 1990's, which are still under development and will later be merged into a single database. The special-use permit component of the MM database has not yet been developed, but reporting will describe site condition in the context of "Key Measures and Standards" and quantify the degree to which each is being met. "Critical National Standards" will be particularly important in future monitoring. Reporting will also describe occupancy. Data is maintained annually.

**Results** - The Forest has monitored private developed facilities and taken appropriate actions to ensure compliance with permits, laws, policies, and standards. However, recreation residences are overdue for site inspections and require additional permit enforcement. The Skyhaven Resort at Ferron Reservoir has ceased operations, been sold, and is now attempting to obtain another permit, but they have not yet satisfied the application requirements and financial viability is in question. Despite attempts to reopen it, the Blue Mountain Ski Area remains inoperable as well. No private developed sites have been reported vacant.

**Discussion** – Increasing workloads and large energy development projects are expected to make it more difficult to effectively monitor private developed sites. Additional personnel and/or increased efficiencies will be necessary to achieve Critical National Standards, once they have been finalized, and to maintain adequate monitoring. Furthermore, demand for private developed sites (SUP's) is increasing and will have to be addressed.

**Synopsis** - The Forest has monitored private developed facilities and taken appropriate actions to ensure compliance with permits, laws, policies, and standards. Due to increasing workloads, however, recreation residences have been somewhat neglected and require site inspections and permit enforcement. This will be emphasized in FY 2002. The special-use component of the MM database will support and facilitate future monitoring and reporting.

**Action** - Continue monitoring use, occupancy, and condition of private developed sites. Inspect recreation residences and take appropriate management actions, as necessary, to obtain compliance with permits, laws, policies, and standards. Seek ways to enhance Forest monitoring capabilities, particularly regarding recreation residences.

**Responsibility** - Forest Recreation, Lands, and Engineering and Ranger District Recreation Staffs

## Dispersed Campsite Condition

The purpose of this monitoring is to verify predicted conditions of dispersed campsites. Monitoring will be conducted in dispersed campsites.

**Methods** - The District staff person in charge of recreation compiles field data from site inventories and condition surveys and conducts routine site inspections. The Code-A-Site campsite inspection program has been discontinued and has not yet been replaced. Field data is currently collected using a form appropriate to the purpose. Reporting typically describes campsite condition in the contexts of soil and vegetation, infrastructure (if any), water or adjacent riparian or wetland resources, and other attributes. Reporting also identifies the level of impact (light-extreme). Campsites that cannot be maintained in impact levels light-heavy and those identified as "extreme" will be closed. At least 10 % of the data is maintained annually.

**Results** – There has been a general deterioration of dispersed campsites during this monitoring period. Campsite inspections have been completed and several sites were identified as having extreme impact. These sites have either been closed and successfully rehabilitated or developed, as appropriate. Most of these sites are located in Huntington Canyon. Additional campsites are currently being considered for closure or development. In many other campsites, methods of mitigating impacts are being aggressively devised and implemented. Twelve-Mile Canyon has become a very popular area for dispersed camping and is heavily impacted, as are areas of the parcels of State land recently added to the Forest. Campsites in these locations require additional condition surveys and analysis, planned for FY 2001-02.

**Discussion** - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in dispersed camping. This growth is particularly pronounced in the use of ATV's, and the impacts to dispersed campsites are growing proportionately. Since this growth is expected to continue, there is a high potential for increased impacts to dispersed campsites and a resulting loss of dispersed camping opportunities, if these impacts cannot be mitigated. Maintaining or reducing impact levels in campsites under increased use and with inadequate resources may prove to be a challenge, and the degree to which this can be accomplished should be monitored closely.

**Synopsis** - There has been a general deterioration of dispersed campsites during this monitoring period. However, several campsites with extreme impacts have been closed or developed and impacts to many others have been successfully mitigated. Inventories and condition surveys continue to be completed and maintained, but a greater emphasis on monitoring and mitigation will be necessary to address increasing use and impacts.

**Action** - Inventory and survey dispersed campsites in Twelve-Mile Canyon and on State parcels recently added to the Forest, and identify sites to be closed or developed. Continue to closely monitor all other inventoried campsites. Develop methods to maintain or reduce current impact levels to preserve existing dispersed camping opportunities.

**Responsibility** – Forest and Ranger District Recreation Staffs

## Dispersed Area Use

The purpose of this monitoring is to verify that the amount of use and degree of social interaction in dispersed areas is within the range specified for the Recreation Opportunity Spectrum (ROS) Class. Monitoring will be conducted in dispersed areas.

**Methods** - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and conducts routine area inspections. The electronic RIM database was discontinued in

1986. Sampling methods include traffic counters and field observation. Results of the National Recreation Use Monitoring (NRUM) Program will also be added to the monitoring data in FY 2002. ROS social setting criteria are applied to the data. Reporting describes use and delineates the relative percentages of each dispersed area (GFA) within each ROS Class in the context of "Key measures and Standards" and quantifies the degree to which each is being met. Data is maintained annually.

**Results** - Dispersed areas have largely been managed in a manner consistent with ROS Classes. However, high use and impacts to natural resources in some "concentrated use areas" have resulted in both site closures and infrastructure development, as appropriate. Consequently, some areas have experienced highly localized, site-specific shifts to more or less primitive social settings, perhaps affecting some dispersed areas by more than 10%. Unfortunately, MM data is incomplete, from which ROS Class is now drawn, but the table below delineates the average percentage of each zone's GFA's within each ROS Class, according to data currently available. The MM database will be completed and refined in FY 2001-02.

ROS CLASS	NORTH ZONE (11)	SOUTH ZONE (0)	FOREST TOTAL (11)
URBAN	0%	NO DATA	0%
RURAL	0%	NO DATA	0%
ROADED NATURAL	88%	NO DATA	88%
SEMI-PRIM MOTOR	4%	NO DATA	4%
SEMI-PRIM NON	8%	NO DATA	8%
PRIMITIVE	0%	NO DATA	0%

**Discussion** - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in dispersed area use. Since this growth is expected to continue, there is a high potential for ROS "creep" from more primitive to less primitive social settings. This may present challenges in maintaining the greatest possible range of ROS opportunities and will need to be monitored closely.

**Synopsis** - Dispersed areas have largely been managed in a manner consistent with ROS Classes. Site closures, site developments, and rapidly increasing use may cumulatively threaten to change ROS social settings, however, and the degree to which this may occur or may have already occurred should be assessed. Under the circumstances, the ROS should be closely monitored and mitigation methods should be developed.

**Action** - Improve the accuracy of use reporting, which continues to be based largely on crude estimates and is often derived inconsistently between Districts. Continue to closely monitor social settings for ROS Class compliance. Assess the degree to which recent site closures and infrastructure developments may have cumulatively affected the ROS. Develop methods to mitigate undesirable ROS shifts, if such shifts are identified.

**Responsibility** - Forest and Ranger District Recreation Staffs

## Trail Condition

The purpose of this monitoring is to verify predicted conditions of developed trails. Monitoring will be conducted on developed trails used for recreation.

**Methods** - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and INFRA inventories, conducts routine trail inspections, and prepares hiking opportunity guides. Reporting describes site condition in the context of "Key Measures and Standards" and quantifies the degree to which each is being met. Reporting also identifies, by constructed feature, annual maintenance, deferred maintenance, and capital improvement needs. At least 5% of the data is maintained annually.

An average "Reference Percentage" (MM) of four "Critical National Standards" will be used as a measure of overall trail condition. A Reference Percentage of 30% is considered to be the Regional Acceptable Work Standard. Therefore, trails with a Reference Percentage of greater than 30% are cause for concern.

**Results** - The Forest has recently completed inventories and condition surveys for most developed trails. The database will be completed and refined in FY 2001-02. Of the 138 trails recorded, all have Reference Percentages greater than 30%. These trails fail to meet the Regional Acceptable Work Standard and Critical National Standards. However, the MM database requires refinement and the condition of many of these trails may be misrepresented. Nevertheless, there is clearly a great need to improve Forest trail conditions.

**Discussion** - As resources are made available to address deferred maintenance and capital improvement needs, particularly regarding issues of public health and safety, trail conditions are expected to improve throughout the next monitoring period. Recent and planned trail projects and the recruitment of a new Forest-wide trail crew will contribute to this improvement. At the current rate of improvement, most developed trails are expected to have Reference Percentages of less than 30% by the end of the next monitoring period. However, a continued and concerted emphasis on monitoring and improvement will be necessary to ensure that all developed trails meet at least Critical National Standards by the end of this period.

**Synopsis** - It is unclear whether or not trails have improved during the monitoring period because early data was largely anecdotal and current data needs refinement. It is clear, however, that there is a great need to improve Forest trails conditions. According to current MM data, all recorded trails (138) fail to meet the Regional Acceptable Work Standard and Critical National Standards. Recent and planned trail maintenance and reconstruction projects and the recruitment of a new Forest-wide trail crew will gradually contribute to the overall improvement of the trail system. As some trails are improved, however, others may continue to deteriorate until they become a higher priority or resources are made available for improvement.

**Action** - Continue the maintenance of all trails to prevent further deterioration, to the degree possible. Aggressively address deferred maintenance needs with an emphasis on meeting Critical National Standards. Seek innovative ways to meet all Key Measures and Standards on all trails. Expand partnership opportunities resulting in trail improvements.

**Responsibility** - Forest and Ranger District Recreation Staffs



## Vehicle Travel

The purpose of this monitoring is to verify predicted conditions of general forest areas (GFA). Monitoring will be conducted on roads, trails, and GFA's.

**Methods** - The District staff person in charge of recreation inspects travel corridors (roads and trails) and general forest areas to determine the amount and extent of vehicle travel impacts on Forest resources and users. Reporting describes unauthorized travel routes that have been pioneered, impacts to natural resources and visual quality, and the effects of these impacts on users. A Forest roads analysis is planned for FY 2002, which will contribute further monitoring data. At least 20% of the data is maintained annually.

**Results** - Forest travel management has improved as a whole. Some roads and trails have been upgraded to withstand all-weather traffic and reduce vehicle impacts to adjacent areas. Road, trail, and area closures have been implemented when use violates the Travel Plan, conflicts with management goals, substantially reduces visual quality, or otherwise results in unacceptable impacts to natural resources. However, the Travel Map is out of date and does not reflect these closures or changes in permitted uses. Consequently, some users become confused or frustrated when they find that the map is not consistent with current management. This may occasionally result in further violations of the Travel Plan.

**Discussion** - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in vehicle traffic on roads and trails. This growth is particularly pronounced in the use of ATV's, and the impacts to adjacent GFA's are growing proportionately. Since this growth is expected to continue, there is a high potential for increased impacts to GFA's and a resulting loss of vehicular access, if these impacts cannot be mitigated. Enforcing the Travel Plan and managing impacts under increased use and with inadequate resources may prove to be a challenge.

**Synopsis** - Travel routes have been managed to minimize environmental impacts. As travel routes are gradually improved to withstand all-weather traffic and reduce pioneering, there may be less impact resulting from poor route conditions. However, rapidly increasing vehicle use, particularly ATV's, may result in a net increase in pioneering and greater impacts to natural resources and other users. Closures and restrictions have been implemented as necessary, but the Travel Map does not reflect these changes and needs revision. This should be paired with a user education program. Close monitoring will be necessary to achieve multiple resource management goals and prevent the loss of vehicular access.

**Action** - Continue to monitor vehicle use and Travel Plan compliance. Aggressively enforce the Travel Plan. Revise the Travel Map to reflect current management and permitted uses. Develop a user education program and improve signing. Upgrade popular travel routes for all-weather use. Prepare and implement restrictions and closures as necessary.

**Responsibility** - Forest and Ranger District Recreation Staffs

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## CULTURAL RESOURCE

### **Project Compliance with Forest Direction management requirements on ground disturbing projects.**

The purpose of this monitoring is to verify protection of cultural resources. Monitoring will be conducted at the project and site levels.

**Methods** - Forest cultural resource specialists, including District and Forest archaeologists, will monitor randomly selected projects to ensure that cultural resource protection measures recommended in inventory reports are being followed. This information will be reported annually.

**Results** - Forest and District archaeologists completed monitoring several projects between 1991 and 2000. Monitoring occurred both during and after project implementation, and results indicated that cultural resources had been protected from adverse effects.

**Discussion** - The Forest has taken a proactive stance to ensure that project managers consider effects to cultural resources. This involves an active program of early identification of cultural resource workloads in project planning; field inventory of projects; reporting and consultation with the Utah State Historic Preservation Office; meetings (including on-the-ground reviews and delineations of protective site buffer areas) between archaeologists and project administrators to coordinate protection of cultural resources; project implementation monitoring; and post-implementation monitoring of randomly selected projects.

**Synopsis** - No cultural resources were irreparably damaged or destroyed as a result of project implementation. Crazy Bird Rockshelter (42SV892), a National Register-eligible site, was determined to be at-risk by ground subsidence resulting from planned subsurface mining activities. A data-recovery effort was initiated in the summer of 1997 to limit adverse impacts from the proposed project. One small rockshelter experienced partial collapse of the sandstone overhang, resulting in partial damage to cultural resources. That site, and two additional others that are considered to be at-risk from ground subsidence, are being continually monitored.

**Action** - Project implementation appears to adequately consider cultural resources. However, the number of projects reviewed for post-project implementation is relatively small. It is suggested that approximately 1 project implemented for each broad Forest function (e.g. minerals or timber) be monitored annually.

**Responsibility** - Recreation Staff, Forest Archaeologist

### **Protection Of Significant Cultural Resource Properties**

The purpose of this monitoring is to assess the condition of significant cultural resources and determine damages caused by unauthorized and/or uncontrollable agents. Monitoring will be conducted at the cultural resource site level.

**Methods** - Forest and District archaeologists, law enforcement personnel and other qualified specialists will conduct field reviews of selected sites deemed to be at "high risk" and compare site conditions with base level data (e.g. cultural resource site records, still and video photography). Use of Forest Law Enforcement Officer

and law enforcement personnel hired on contract and through interagency agreements to conduct routine monitoring and patrols at selected archaeological sites. Employ still-life and video photography to assess the condition of cultural resources and to provide base level data. Update existing cultural resource site records. Utilize various types of surveillance to protect significant cultural resources.

**Results** - This table summarizes site protection, monitoring and enhancement efforts and observed/reported cases of unauthorized damages during the previous ten-year period.

Year	Sites Monitored	Sites Enhanced	Sites Protected	Estimated Cases Of Illegal damage
1991	91	0	200	5
1992		no data available		
1993		no data available		
1994		no data available		
1995	52	2	2	2
1996	46	2	12	2
1997	24	2	8	2
1998	50	4	0	0
1999	41	3	0	0
2000	60	3	1	1

Sites Monitored: Number of archaeological sites where site conditions were recorded in a systematic way. In 1989, the Forest participated in an interagency effort to determine the types and locations of sites vulnerable to vandalism using GIS. Between 1989 and 1991, approximately 200 sites were documented through a volunteer partnership with the Sierra Club. Beginning in 1998, the site steward program, utilizing volunteers in a proactive stance geared toward site protection, has monitored over 20 sites. During this reporting period, the entry of spatial data for archaeological sites and inventory projects into a Geographic Information System (GIS), provides base-level data for continual site monitoring.

Sites Enhanced: Number of historic properties where data recovery, site stabilization or other maintenance activities occurred. During this reporting period, site stabilization/restoration efforts were undertaken for the Great Basin Research Station, Stuart and North Cottonwood ranger stations; major data recovery effort was undertaken at Crazy Bird Rockshelter (42SV896).

Sites Protected: Number of sites actually visited by law enforcement personnel for purposes of informal monitoring and/or sites placed under surveillance. Presence of law enforcement personnel on routine patrols most likely affords protection to a significant number of surrounding sites, especially in areas of high site density.

Estimated cases of illegal damage: Number of observed/documentated cases of unauthorized excavation/site damage. Beginning in 1991, formal law enforcement investigations were commenced on five separate incidents of unauthorized digging. Indictments, trials and sentencing were carried out on all cases.

**Discussion** - The precise times of occurrence for incidents of illegal vandalism are difficult to determine. However, the ability to make this determination is increasing with improved base-level resource data that is continually being acquired through the methods mentioned above. Overall, efforts to investigate and prosecute illegal vandalism has increased since the early 1980s; much of this is probably due to heightened efforts in both

the Forest Service and other federal and state agency efforts in the arenas of public education, awareness, and involvement with cultural resources. Law enforcement, though not high profile, is believed to have significantly contributed to this decrease.

Incidents of damage by controllable natural agents, while acknowledged to occur, are more difficult to detect. Structural deterioration of prehistoric ruins, disturbance of subsurface archaeological deposits, and erosion due to the effects of wildfire, will continue on a long-term basis. Enhanced properties where data recovery or stabilization efforts were undertaken are shown in the table above.

**Synopsis** - Illegal vandalism to archaeological resources is being treated through a balanced program involving routine patrols, active investigation and prosecution of antiquities violations, surveillance, updating of base-level data through several media and the offering of and participation in public education, awareness and public involvement efforts with other agencies and public groups. This approach appears to be effective.

**Action** - Continue funding of law enforcement efforts and site steward program, and continue to upgrade surveillance equipment as needed; continue law enforcement agreements for shared services, increase efforts to fund ruins preservation, and continue to find unique ways of involving the public in protection and enhancement efforts.

**Responsibility** - Recreation Staff, Heritage Staff, Forest Law Enforcement Officer, and District Rangers

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## VISUAL RESOURCE

### Compliance With Visual Quality Objectives

The purpose of this monitoring report is to verify predicted visual conditions of Forest land, water and vegetative activities. Forest-wide direction states: "Forest Resource uses or activities should meet the adopted VQO as displayed on the Planned Visual Quality Objective Map (Appendix F, Forest Plan)." Other Plan direction directs activities to blend with the natural landscape and discusses rehabilitation and enhancement of existing conditions.

**Methods** - Analyze the results of man's activities as they relate to the Visual Management System and determine compliance with assigned visual quality objectives. Field Review is the chosen method.

**Results** – Monitoring was completed as per projects listed below (Discussion). In most cases, compliance with Visual Quality Objectives has been achieved.

The Forest Plan seems to be silent concerning timeframes to achieve VQO's. As far as I can determine, compliance with Forest-wide direction can take more than one or two years to fully comply.

**Discussion** – I visited the following projects for evaluation:

1. Bear Ridge Green Aspen Timber Sale. The VQO for Bear Ridge is "Modification". My review indicates that the VQO was met.
2. Spoon Creek Green Aspen Timber Sale. The VQO for Spoon Creek is "Partial Retention" in the foreground and "Modification" in the middleground view zone. My review indicates that the VQO's were met.
3. Maverick Point Timber Sale. This sale was harvested about 40 years ago. The VQO is "Partial Retention". My evaluation indicates that the VQO is met.
4. Timber Sale activities adjacent to the Elk Ridge Road near Kigalia Ranger Station. Recent harvest activities. The VQO is "Partial Retention" in the Foreground and "Modification" in the Middleground. My review indicates that some of the slash material could have been cleaned up better; however, given a few more years, the VQO will be met.
5. Timber Sale activities on the SW side of Abajo Peak. This sale was harvested about 40 years ago. The VQO is "Partial Retention". The VQO has been met.

**Synopsis** – Maintain Visual Quality as outlined in the Manti-La Sal National Forest Land and Resource Management Plan. As Forest Plan revisions are completed, monitoring procedures should adopt direction from the Scenery Management System.

**Action** – Continue to monitor for Visual Quality. As Forest plan revisions are completed, monitor as per the Scenery Management System.

**Responsibility** – Recreation Staff and Landscape Architect.

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## WILDERNESS RESOURCE

### Wilderness Campsite Condition

The purpose of this monitoring is to verify predicted physical conditions of wilderness campsites. Monitoring will occur annually and be reported at three year intervals.

**Methods** - The district staff person in charge of recreation will inventory, field check and analyze site conditions for compliance with the primitive ROS class requirements and the Forest Plan Standards and Guides.

**Results** - The Dark Canyon Wilderness sites continue to be monitored annually. All sites have been maintained within a code-a-site category moderate or light condition.

**Discussion** - Over the past 3 years the number of sites used by visitors had decreased in number. This has been documented through the code-a-site process. Sites have been managed to not exceed code-a-site category light or moderate. Sites near water sources receive the greatest amount of impact. Sites have not had to be closed because of too much use or any other reason. The Peavine Corridor also receives annual monitoring and follow-up management.

**Synopsis** - The number of code-a-site inventories completed continues to increase, but the number of sites being used has decreased. All sites that have been inventoried have been maintained within a code-a-site category moderate or light condition. All sites were inventoried during the planning cycle.

**Action** - Continue to monitor sites and inventory their conditions annually, as new sites are identified, add them to the inventory schedule.

**Responsibility** - District Recreation Staff, District Ranger

### Amount And Distribution Of Use

The purpose of this monitoring is to verify that the amount of use and social interaction at campsites and along trails is within the primitive ROS experience and setting guidelines.

**Methods** - Monitoring is conducted using trail registration forms, on-site trail counts, and campsite and trailhead counts. The Forest has initiated the National Recreation Visitor Monitoring (NRVM) surveys across the forest, including within Dark Canyon. Wilderness exit points were monitored and data collected on the number of visitors, visitor satisfaction, visitor point of origin, and other data. Use appeared to continue to be light.

**Results** - Recreation use reporting and accuracy has been intensified since preparation of the Land Management Plan. The NRVM will provide statistically valid data on the use within Dark Canyon. The results of this survey will be available in the summer of 2002.

**Discussion** - The Wilderness Implementation Schedule has been prepared (1994). It has designated that party size be limited to 15 keeping groups small. This will minimize the contact with other parties (on trails and at campsites) within the primitive ROS class guidelines as it applies to Dark Canyon. The NRVM will be repeated

at 5 year intervals, but use of campgrounds will continue to be monitored on an annual basis. Wilderness use though will not be correlated with any particular campsite.

**Synopsis** - The Wilderness Implementation Schedule is complete; it adopted party size and use monitoring methods, to assist in maintaining the social experiences appropriate for Dark Canyon.

**Action** - Implement the Wilderness Implementation Schedule. Continue to monitor use and report annually as requested. Develop budgetary requests to maintain wilderness settings and conditions.

**Responsibility** - District Recreation Staff, District Ranger

## WILDLIFE AND FISH

### Management Indicator Species

#### Mule Deer and Elk

The purpose of this monitoring is to determine how the big-game populations on the Forest are doing when compared to the Forest Management Goal of "Maintain or improve habitat carrying capacity for elk and deer" and the Desired Future Condition of "Populations of deer and elk would increase over current levels" and "Big-game winter range capacity could be maintained..."

**Methods** - Four main items are monitored to make this analysis. These are: 1. Aerial reconnaissance counts of elk winter ranges, 2. Browse and pellet transects, 3. Vegetation trend studies, and 4. Herd composition and harvest. Data on these items has been obtained from interagency field reviews and/or Utah Division of Wildlife publications.

**Results** - The available data is summarized as follows.

#### 1. Aerial Trend Counts (aerial counts are only made for elk)

##### Counts Made During the Winters Of

Herd Unit	86 - 87	87 - 88	88 - 89	89 - 90	90 - 91	91 - 92	92 - 93	93 - 94	94 - 95	95 - 96	96 - 97	97 - 98	98 - 99
Manti Herd	3,065	4,154	6,074	*596	*425	7,697		7,265		7,932		9,188	
La Sal Herd	607	362	418	502	1,012	1,231	1,459		1,772				
San Juan Herd				163	296		361		684		773		

\* Counts made in Central Region only.

## 2. Browse and Pellet Transects

Average Deer / Elk Days Use per Hectare by Year															
<u>Herd Unit</u>	<u>85 -</u> <u>86</u>	<u>86 -</u> <u>87</u>	<u>87 -</u> <u>88</u>	<u>88 -</u> <u>89</u>	<u>89 -</u> <u>90</u>	<u>90 -</u> <u>91</u>	<u>91 -</u> <u>92</u>	<u>92 -</u> <u>93</u>	<u>93 -</u> <u>94</u>	<u>94 -</u> <u>95</u>	<u>95 -</u> <u>96</u>	<u>96 -</u> <u>97</u>	<u>97 -</u> <u>98</u>	<u>98 -</u> <u>99</u>	<u>99 -</u> <u>00</u>
Manti Elk	24	27	27	31	40	37	37	40	33	54	40	48			
La Sal Elk			18	19	14	33	33	48	39	78	35	44			
San Juan Elk															
NE Manti Deer	61	54	108	112	108	110	94	53	62	74	36	51			
SE Manti Deer	49	32	43	50	41	39	24	25	17	31	24	35			
NW Manti Deer	47	56	69	35	92	53	59	30	11						
SW Manti Deer	36	43	35	32	42	22	7	13	39						
S. Nebo Deer	18	71	50	19	48	47	17								
Elk Ridge Deer	46	54	50	58	*41 *37	*87 *76	*69 *61	86	95	103	85	83			
Blue Mountain Deer	106	116	84	72	73	73	*91 *77	*117 *104	*100 *90	123	81				
La Sal Mountain Deer	47	43	67	79	72	84	*107 *89	*103 *87	*111 *106	99	65				

\* top # according to 1994 & 1997 Big Game Annual Report

\* bottom # according to 1992 Big Game Annual Report

1997 was the last year any information was recorded on the browse and pellet transects.

Browse and pellet transects (browse transects are no longer used).

Deer Trend Studies

The following studies were installed in key benchmark areas in cooperation with the Bureau of Land Management and Utah Division of Wildlife Resources. These, and others that have (see Range Trend) or will be installed, are to be re-read every 5 to 10 years to determine vegetation trend (habitat).

### 3. Utah Big Game Range Trend Studies

Ranger District / Herd Unit	Study Location	Year Installed	Years Assessed
<b>Ferron/Price R.D.</b>			
<b>Manti - Manti</b>	Huntington Canyon	1988	1994,1999
	Howard FS Chaining	1988	1994,1999
	Middle Mountain	1988	1994,1999
	East Mountain	1988	1994,1999
	Trail Mountain Exclosure	1988	1994,1999
	Miles Point	1988	1994,1999
	North Horn Cap	1988	1994,1989
	North Horn Rock Canyon	1988	1994,1999
	Black Dragon	1988	1994,1999
	South Horn Exclosure	1988	1994,1999
	South Horn ¼ Corner	1988	1994,1999
	Dry Mountain	1988	1994,1999
	Birch Creek Chaining	1988	1994,1999
	South of Dry Wash	1988	1994,1999
	Scab Hollow	1988	1994,1999
	Upper Hole Trail	1988	1994,1999
	Box Canyon Knolls	1988	1994,1999
	Muddy Creek	1994	1999
	Little Nelson Mountain	1994	1999
	South Sage Flat	1994	1999
Wildcat Knolls	1994	1999	
Danish Bench	1994	1999	
Joes Valley Overlook	1994	1999	
<b>Sanpete R.D.</b>			
<b>Manti - Manti</b>	Deep Creek	1983	1989,1997
	Dry Creek Chaining	1989	1997
	Oak Creek Ridge Aspen	1989	1997
	Oak Creek Ridge Seeding	1989	1997
	Julius Pasture	1989	1997

### 3. Utah Big Game Range Trend Studies - Continued

Ranger District / Herd Unit	Study Location	Year Installed	Years Assessed	
<b>Monticello R.D.</b>				
San Juan - Blue Mtn.	Alkali Point	1986	1994, 1999	
	Brushy Basin	1986	1994, 1999	
	Gold Queen Basin	1986	1994, 1999	
	Camp Jackson Reservoir	1986	1994, 1999	
	Jackson Ridge	1986	1994, 1999	
	Harts Draw Reservoir	1986	1994, 1999	
	Shay Mountain	1986	1994, 1999	
	Peters Point	1986	1994, 1999	
	Harts Draw	1986	1994, 1999	
	Harts Point	1986	1994, 1999	
	Shay Mesa	1986	1994, 1999	
	Shingle Mill	1986	1994, 1999	
	<b>Monticello R.D.</b>			
	San Juan - Elk Ridge	Black Mesa	1986	1999
Texas Flat		1986	1999	
Harmony Flat		1986	1999	
Lower Lost Park		1986	1999	
Deer Flat		1986	1999	
Kigalia Point		1986	1999	
Woodenshoe		1986	1999	
Gooseberry		1986	1999	
North Long Point		1986	1999	
Wild Cow Point		1986	1999	
South Plain		1986	1999	
Ruin Park		1986	1999	
Davis Pocket		1986	1999	
The Wilderness		1986	1999	
Mormon Pasture Point		1986	1999	
North Cottonwood		1986	1999	
* Salt Creek Mesa			1999	
* Milk Ranch Point		1999		
* Chippean Ridge		1999		
* Lower Deer Flat		1999		
<b>Moab R.D.</b>				
La Sal Mountain	Two Mile Chaining	1987	1994, 1999	
	East LaSal Pass	1987	1994, 1999	
	Buck Hollow	1987	1994, 1999	
	Slaughter Flat	1987	1994, 1999	
	Amasas Back	1987	1994, 1999	
	Bald Mesa	1987	1994, 1999	
	Round Mountain	1987	1994, 1999	
	Black Ridge	1987	1994, 1999	
	Taylor Flat	1987	1994, 1999	
	Upper Fisher Valley	1987	1994, 1999	
	North Beaver Mesa	1987	1994, 1999	
	Polar Below Rim	1987	1994, 1999	
	Beaver Canyon	1987	1994, 1999	

\* These sites were added in the 1999 trend studies guide

#### 4. Herd Composition Data

Herd Unit		Year												
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Moab Elk	Bulls / 100 Cows	21	23	11	14	17	16	18	11	14	15		21	
	Calves/100Cows	58	48	51	60	51	51	47	51	45	49		49	
Manti Elk	Bulls / 100 Cows	20	24	17	15	15	25	14	11	13	18	12	18	17
	Calves/100Cows	49	52	51	42	46	42	47	46	58	43	62	59	53
San Juan Elk	Bulls / 100 Cows				22	31	38	27	24	27	26		24	
	Calves/100Cows				61	61	52	56	57	54	54		44	
LaSal Mtn. Deer	Fawns/100 Does		56	70	63	62	57	46	43	48	44	43	53	47
	Bucks/100 Does		14	16	13	9	7	9	7	5	7	6	12	8
Blue Mtn. Deer	Fawns/100 Does		72	75	60	58	62	73	56	55	59	51	64	65
	Bucks/100Does		20	15	17	7	7	9	11	11	8	15	11	13
Elk Ridge Deer	Fawns/100 Does	78	59	68	48	48	48	55	38	47	37	36	50	48
	Bucks /100 Does		39	33	43	50	46	55	42	32	33	25	22	28
NE Manti Deer	Fawns/100 Does	64	88	79	79	70	52	40	44	67	52	53		
	Bucks100 Does	12	10	19	11	10	6	7	9	9	16	13		
SE Manti Deer	Fawns /100 Does	64	69	69	67	51	46	55	41	54	45			
	Bucks/ 100 Does	12	17	10	8	7	5	11	9	6	14	13		
NW Manti Deer	Fawns /100 Does	79	78	66	70	78	59	86	81	71	80	82	77	75
	Bucks /100 Does	8	10	4	3	5	5	3	6	3	7	10	11	9
SW Manti Deer	Fawns /100 Does	93	83	98	87	83	77	86	72	66	40	70		
	Bucks /100 Does	10	11	12	3	5	6	8	5	1	5	12		
S. Nebo Deer	Fawns /100 Does	91	94	69	80	68	79	87	63	63	81	82		
	Bucks/100 Does	8	7	4	8	3	6	6	3	3	3	6		

**Discussion** - Herd composition and aerial counts provide good short-term data for basing annual harvest recommendations. The vegetative trend data is good for looking at the long-term objectives of managing vegetation to achieve herd objectives of providing good quality and quantity forage. On a short-term basis it is difficult to separate the influences of weather from the influences of habitat management. The long-term vegetation trend studies show if changes in vegetation are moving toward or away from desired future condition and this information will be useful when revising the Forest Plan. Many of the studies have been in place long enough now that good trend data is available. In general the trend assessments are stable for soils, browse, and herbaceous understory. However, some studies show slight improvements and a few show slight decreases in trends.

The elk herds found on the Forest have stabilized or are increasing slightly. Most of the herds have reached the DWR population objectives. However, the mule deer herds are not faring as well. Drought conditions continue to impact fawn recruitment and survival throughout southeastern Utah. The populations of deer herds found on the Forest range from 43 to 75 percent of the herd unit objectives.

**Synopsis** – While elk herds found on the Forest are doing well, the effects of drought has been shown in reduced productivity of the mule deer herds and in some of the vegetation studies. Other factors such as predation and disease also impact individual big-game animals as well as populations. It is difficult to determine the exact cause for population declines. Most likely there are a combination of factors involved to varying degrees with each population.

**Action** – Browse and pellet group transects have proven to be of limited value as indicators of population levels or vegetative conditions. Therefore, this type of monitoring is not cost effective and should be discontinued. However, the Forest should continue the other monitoring efforts to insure the population levels of big game are in line with carrying capacity as outlined in the Forest Plan.

**Responsibility** - District Range and Wildlife Staff; and Forest Ecosystem Staff.

### **Macroinvertebrates (For baseline stations or as needed for select project activities.)**

The purpose of this monitoring is to evaluate the water quality and to determine the diversity of aquatic life the site is able to support or has the potential to support. Macroinvertebrates serve as natural monitors of management activities undertaken within each watershed.

**Methods** - The Forest Land and Resource Management plan calls for monitoring macroinvertebrates, at baseline stations, every five years (2-6 sites are monitored on a different district each year). Sampling of macroinvertebrates is conducted with a modified surber net and follows the procedures outlined in FSH R-4 2609.23, March 1985, Fisheries Habitat Surveys Handbook. All samples through 1997 were analyzed by the National Aquatic Ecosystem Monitoring Center out of Provo, UT under the direction of Fred Magnum. From 1998 to present the samples have been analyzed by the National Aquatic Monitoring Center out of Logan, UT under the direction of Mark Vinson.

**Results** - The macroinvertebrate monitoring program was primarily started after the flood and landslide events of 1983 and 1984. Most stations were sampled in 1984 and the rotation of sampling between districts began after 1984. Aquatic macroinvertebrate conditions across the Manti-La Sal National Forest vary from stream to stream. Some communities have improved since 1992 while others have not changed or have decreased since 1992. Biotic Condition Index (BCI) has been the only method used in this report to show trends and whether or not Forest Plan Standards are met. The BCI is one of three Standards in the Forest Plan and probably best represents the stream health and water quality at the sample point in the stream. Data for the other indices, Standing Crop, and Diversity Index (DAT) are available at all the sample sites and can be looked at on a site specific basis. In general, these indices are a little more problematic for determining trend information. DAT can be high (apparently indicating excellent conditions) sometimes in a severely stressed community with a low number of species but where each species had close to the same number of organisms. Standing Crop is a measured weight or biomass of a sample and problems can occur when a single large insect such as a Pteronarcyidae (a stonefly family with relatively large individuals) within one sample is present. The results can show a high standing crop (good conditions), when in fact stream health problems may exist. Absence of that one individual could give a markedly lower Standing Crop. The following table shows the year each stream was sampled, apparent trend, and whether or not the BCI meets the Forest Plan Standard ( $BCI \geq 75$ ).



**Biotic Condition Index**

Stream	92	93	94	95	96	97	98	99	00	Trend	Meets Forest Plan Standard
										(+) positive (-) negative (0) stable	
<b>Sanpete District</b>											
Twelvemile Creek						82				+ since '84	Yes
Manti Creek						94				+ since '84	Yes
Oak Cr near Spring City						77				- since '84	Yes
Chicken Creek						62				- since '86	No
Pigeon Creek						72				- since '84	No
<b>Ferron-Price Districts</b>											
Straight Canyon				80						+ since '84	Yes
Muddy Creek				69						0	No
Ferron Creek				72						- since '84	No
Lowery Water				69						- since '84	No
Duck Fork				98						N/A	Yes
Fish Creek	59	65	70	47				77	77	+	No
Seely Creek				73						- since '91	No
Huntington Ck below Fks			78	78						0	Yes
South Fork Eccles Creek			66							- since '84	No
Left Fk Huntington Creek			74							- since '84	No
Upper Huntington Creek			72							- since '84	No
Eccles Cr above S. Fk.			59							- since '84	No
Wildcat Hollow			72			92				+	Yes
Gentry Hollow			76			80				+	Yes
Nuck Woodward Canyon		83	79	80			57			-	No
<b>Moab-Monticello Districts</b>											
Pack Creek	68									N/A	No
Mill Creek	91									N/A	Yes
Beaver Creek 1							75			N/A	Yes
Beaver Creek 2							67			N/A	No
Chicken Creek 1							79			N/A	Yes
Chicken Creek 2							67			N/A	No
Geyser Creek 1							40			N/A	No
Geyser Creek 2							74			N/A	No
Geyser Creek 3							54			N/A	No
La Sal Creek 2							59			N/A	No
La Sal Creek 2B							70			N/A	No
La Sal Creek 3							88			N/A	Yes
South Fork Beaver Creek							64			N/A	No
Upper La Sal Creek							54			N/A	No
Indian Cr by Shay Mt. Rd.		84								+ since '82	Yes
Indian Cr at FS Boundary			63							- since '87	No
Johnson Creek		86								N/A	Yes

- \* BCI values are an average of the spring and fall samples.. Conditions indicated by BCI values are: Above 90 = Excellent, 80 - 90 = Good, 72 - 79 = Fair, Below 72 = Poor. The Forest Plan Standard for the BCI is  $\geq$  75.
- \* N/A is used when the sample site has been monitored only one year. No trend can be determined

**Discussion** - The Plan identified a sampling frequency of five years and an index change of 20% requiring further evaluation. It appears that many of the stream macroinvertebrate populations have gone downward in trend since 1984. There are two streams that have remained constant and others that show upward or downward trends. Of the streams where trend can be determined, eleven show a downward trend since the earliest sampling in 1884 and only four show a positive trend. Out of the 37 streams displayed, 23 do not meet the Forest plan standard for BCI and 14 do, according to the most recent sample taken. There is considerable variability in measuring macroinvertebrate populations and by using only one index, there appears to be some overall downward trends in many streams. Other indices should be looked at on a case-by-case basis to determine if conditions are below their potential. There is typically large variation in the measurement of macroinvertebrate communities and the Habitat Condition Index (HCI) could be determined in future sampling to describe the overall quality of the aquatic habitat of a stream.

**Synopsis** - Stream conditions across the Forest generally do not appear to be improving except for 4 out of 11 (27%) of the streams where trend can be determined. Water quality parameters and other indices including Habitat Condition Index should be analyzed on a case-by-case basis to better conclude if the conditions in these streams are worsening.

**Action** - Biotic Condition Index has been the primary method used to determine the condition of the aquatic community and it indicates that many streams show downward changes. Using just one index to quantify a community condition can lead to erroneous decisions. The Biotic Condition Index and the Habitat Condition Index need to be conducted together in order to better evaluate the aquatic habitat condition of our streams.

Future Monitoring should be conducted more intensively on streams that show downward trends or ones that do not meet the Forest Plan standard for BCI. Many of the streams in the Moab-Monticello Districts have only been sampled once for project specific analysis (Moab Range EA, 2001 and native cutthroat projects) and should be continued as time and money allows. The use of macroinvertebrate indices can be an excellent way to show the response from management changes. A one or two year sampling rotation would be recommended for those streams below Forest Plan standards or those showing a downward trend, especially if distinct land management changes will be occurring in the watershed. A four year rotation for all the other sites should be accomplished and would provide more data and better interpretation of conditions in these streams.

A new methodology has been established in 2000 according to Nationally establish standards (Mark Vincent, National Aquatic Monitoring Center, Logan, UT, personal communication 6/2001). Two types of samples should be taken:

1. Collect a qualitative sample using a .009m<sup>2</sup> Surber net and composite macroinvertebrates from the first four consecutive fast-water (e.g. riffles, runs) habitat units.
2. Collect a single 10-minute qualitative sample taken from all major habitat types approximately in proportion to their occurrence.

Since 1979, when the first macroinvertebrate samples were collected on the Manti-La Sal National Forest, all samples have been only quantitatively analyzed with a .009m<sup>2</sup> surber net. Instead of four riffles composited into one sample, (as required with the new protocol) three samples from an individual riffle were taken. The results of the three samples were then averaged. No Qualitative samples have been collected to date. This new protocol may initially have some crossover problems. The Bug Lab from Logan is currently working with the Forest's to develop this crossover to the new methodology so that old and dew data can be analyzed for trend information. The first year or so, many of the sample sites should be collected both ways to determine

what the differences are, if any. It is highly recommended that long-term trend analysis include pre 2001 and post 2001 sampling data so that trend analysis can be most meaningful.

**Responsibility** - Forest Fishery Biologist and District Wildlife Biologists.

## Golden Eagles

Golden eagle monitoring as a Management Indicator Species is designed to aid in determining the impacts of Forest Plan implementation on this species.

**Methods** - The Utah Division of Wildlife Resources, in concert with several mining companies, routinely inventories areas where golden eagles are known to nest. Each pair of golden eagles occupies a territory which contains from one to seven nests. Generally eagles return to the same territory year after year. They may maintain (or "tend") one or more of the nests and subsequently may lay eggs in one of the tended nests. By inventorying inactive (not tended), tended, and active nests it is possible to monitor golden eagle activity.

**Results** - The result of these inventories is displayed in tabular form in the following table:

### GOLDEN EAGLE MONITORING

Year	Total Nests Including old dilapidated nests, nests not surveyed, and nests not found.	Total Nests Excluding old dilapidated nests, nests not surveyed, and nests not found.	Percent Inactive	Percent Tended	Percent Active	Percent Tended & Active
1981		50	64	20	16	36
1982		32	84	0	16	16
1983						
1984						
1985						
1986		36	75	19	6	25
1987		41	58	29	12	41
1988		39	59	33	8	41
1989		56	71	22	7	29
1990		64	65	25	10	35
1991		41	68	17	14	31
1992						
1993						
1994	30	29	97	3	0	3
1995						
1996						
1997	89	71	56	32	11	44
1998	141	55	65	18	17	35
1999	146	64	77	14	9	23
2000	146	69	69	19	12	30

Percent totals were only given for the nests surveyed. Excluding old dilapidated nest, nests not surveyed, and nest not found.

**Discussion and Synopsis** - When comparing the percent of nests tended and active the data is fairly uniform considering the variation in sample size. The number of active nests may appear to be low however; these numbers are very similar to those from other golden eagle surveys in the Rocky Mountain West. Raptor research has shown that raptor species often do not nest when the amount of prey low for the given area. Although no specific studies have been conducted on the Manti-La Sal National Forest, this tendency appears to hold true.

**Action** - Continue the monitoring program.

**Responsibility** - District Wildlife Staff and District Rangers

## Blue Grouse/Northern Goshawk

Blue grouse monitoring was intended to indicate condition of mature timber.

**Methods** - The Forest Plan calls for monitoring the harvest records, spring territory surveys and summer brood counts. Data collected by the Utah Division of Wildlife Resources was to be used for this analysis. As noted in the 1987-1991 Monitoring and Evaluation Report, for many years the use of Blue Grouse as a management indicator species for mature timber has been questioned.

Many people felt that the northern goshawk would be a better indicator. The Forest has inventoried and monitored for northern goshawks since 1992. In the spring of 2000 a decision was made to change the programmatic management direction for the six National Forests in Utah, relative to northern goshawk habitat. This decision amended the Forest Plan by adding management direction in the form of goals and objectives, standards and guidelines to be applied to management activities that could affect goshawk habitat. Goshawk standard (j) was modified in a forest plan amendment July 5, 2001.

The 2000 amendment also included monitoring requirements. One of the main focuses of this monitoring is aimed at answering the question; "Are known goshawk territories on national forests remaining occupied?" This question is to be answered by annually monitoring a sample of goshawk territories to determine the percent occupancy.

**Results** - Data to date indicates that there is a stable population of goshawks on both the Manti and La Sal Divisions of the Forest. In 1999 ten of twenty territories monitored were active, or fifty percent. Except for special studies the Utah Division of Wildlife Resources has stopped collecting the required data for Blue Grouse.

**Discussion** - It would be very difficult and costly for the Forest to collect data on Blue Grouse and the value of such data is questionable as outlined above. Therefore this monitoring has not been and will not be completed.

**Synopsis** - Data indicates that there is a stable population of goshawks on both the Manti and La Sal Divisions of the Forest. In 1999 ten of twenty territories monitored were active, or fifty percent.

**Action** - The Forest should evaluate the appropriateness of Blue grouse as a Management Indicator Species. The forest should continue monitoring goshawk.

**Responsibility** - District Wildlife Staff and District Rangers.

## Abert Squirrel

**Methods** - The Forest Plan calls for monitoring Abert squirrel habitat by surveying the percent ponderosa pine in mature class every ten years.

**Results** - Since the Forest Plan was approved, 2,049 acres of Ponderosa pine have been inventoried on the Monticello Ranger District. The area inventoried is in the vicinity of Gooseberry Guard Station. Three percent of this area contains mature Ponderosa Pine. Ponderosa pine 18 inches DBH or larger is classified as mature.

**Discussion** - Three percent mature is thought to be representative of the Ponderosa pine found elsewhere on the Monticello Ranger District. Mountain Pine beetle activity on Elk Ridge continues to reduce the mature stands creating more open stands.

**Synopsis** – Three percent mature Ponderosa pine is adequate to maintain Abert squirrels only if it is dispersed in clumps throughout the type. The clumps with inter-locking crowns are necessary for nesting. Additional monitoring of the juxtaposition of mature Ponderosa pine is needed to better evaluate Abert squirrel habitat.

In 1992 and 1993 the Utah Division of Wildlife Resources (DWR) conducted a cooperative study of the Abert Squirrel population status, trend and habitat use on the Monticello Ranger District. This study concluded: "The number of Abert squirrels in this area seems to be increasing, or at least stable."

**Action** – Continued monitoring of Abert habitat by surveying the percent ponderosa pine should take place with several thousand acres inventoried every ten years. In addition the population status should be monitored every ten years using methodologies similar to the DWR study conducted during 1992 and 1993. Page II-33 of the Forest Land and Resource Management Plan calls for monitoring Abert squirrel populations.

**Responsibility** – Monticello Ranger District Staff and Ecosystem Staff.

## Habitat Improvement Accomplishment

Fish and Wildlife habitat improvements are tracked in four categories. These are: Nonstructural Wildlife Habitat Improvement, Structural Wildlife Habitat Improvement, Nonstructural Fish Habitat Improvement, and Structural Fish Habitat Improvements.

**Methods** - These improvements are accomplished by altering vegetation (burning, roller-chopping, pruning, and herbicides), constructing water developments (ponds, springs, and rain catchments), improving flat-water fishing (adding hiding cover, removing unwanted vegetation, and fish), and improving stream fishing (check dams, reservoirs, willow plantings, rock placement, and construction of barriers).

**Results - Accomplishments**

Improvement Type	Year Accomplished												
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Nonstruct. Wildlife Habitat Impr. (acres)	1049	2400	2200	2800	----	1400	----	----	410	0	700	2800	0
Structural Wildlife Habitat Impr. (struc.)	0	3	3	5	----	1	----	----	0	0	0	0	0
Nonstructural Fish Habitat Impr. (acres)	145	0	0	0	----	10	----	----	0	12	0	0	0
Structural Fish Habitat Impr. (struc.)	36	140	21	17	----	33	----	----	*0	*2.5	*5.5	*0	*1.5

\* From 1996 on, this was reported in miles of stream improved.

**Discussion** – The completed improvements do not follow the Activity Schedules as outlined in the Forest Land and Resource Management Plan. This is because of changes in funding levels within and between the different programs, the Forest could not (or was not allowed to burn) on some years, and because we were able to take advantage of Challenge Cost Share Projects when alternative funding sources were available. As a whole the accomplishments move the Forest towards meeting the Desired Conditions for Fish and Wildlife as outlined in the Forest Land and Resource Management Plan.

**Synopsis** - Completed improvements do not follow the Activity Schedules as outlined in the Forest Land and Resource Management Plan because funding levels have varied for the different programs. Challenge Cost Share funding has been an important source of alternative funding. Accomplishments are moving the Forest towards meeting the Desired Conditions for Fish and Wildlife but at a different rate than is shown in the Plan.

**Action** - Continue to take advantage of alternative funding sources.

**Responsibility** - Forest Range, Watershed, and Wildlife Staff.

## RANGE RESOURCES

### Allotment Carrying Capacity

One of the Forest Plan Goals is to balance livestock grazing permit obligation with the range carrying capacity. Since the inception of the Forest, there has been a history of grazing permits exceeding available carrying capacity. Over the years the range improvement efforts, adjustments of livestock permits, and overall improved range management systems and practices have gradually restored the range to where permit obligations and estimated grazing capacity are fairly close to balancing.

Largely as a result of Public Law 104-19, during the last seven years, an accelerated effort to re-evaluate each allotment has been undertaken. This re-evaluation will include completion of a NEPA analysis on each allotment.

**Methods** - The grazing capacity is determined from monitoring the range and livestock use on an allotment basis as specified in the allotment management plan and/or in the methodologies prescribed in the Range Analysis Handbooks. This normally involves evaluation of long-term trend studies, grazing impact (use studies) on specific bench marks, and/or use intensity mapping where the actual use is compared against prescribed use levels for several years.

**Results** - The allotments are evaluated according to the standard and if adjustments are needed they are worked out with the respective permittees on each particular allotment based on the degree of management, the levels of available forage, cooperative practices, and coordination with other uses and activities on the land. Because of the history of overstocking most adjustments have been downward, but occasionally some upward adjustments have been made. This status summary is shown on the following tables (which depict status as of April 1992, the last Forest Plan Monitoring Report date, and currently, for comparison).

#### LIVESTOCK GRAZING CAPACITY STATUS (4/92)

District	Number of Livestock Permittees	Number of Permitted Sheep	Number of Permitted Cattle	Permitted Animal Months Sheep	Permitted Animal Months Cattle	Permitted Level M - AUM's	Estimated Grazing Capacity M - AUM's	Difference Between Obligations & Capacity	Number of Grazing Allotments.
Sanpete	86*	21,951	5,292	58,474	16,718	39,622	29,796	9,826	33
Ferron	119	25,656	5,274	75,573	17,843	45,919	42,038	3,881	27
Price	84	36,670	2,052	103,451	6,916	40,162	38,257	1,905	42
Moab**	15	0	3,226	0	12,232	16,142	15,630	512	12
Monticello	12	0	3,794	0	15,197	20,060	19,765	295	6
<b>TOTAL</b>	<b>306</b>	<b>84,277</b>	<b>19,636</b>	<b>237,498</b>	<b>68,906</b>	<b>161,905</b>	<b>145,486</b>	<b>16,419</b>	<b>130</b>

\*Wales Association permit (20) counted as 1. \*\*8 Horses with 24 AM's and 29 AUM's counted.

#### LIVESTOCK GRAZING CAPACITY STATUS (3/01)

District	Number of Livestock Permittees	Number of Permitted Sheep	Number of Permitted Cattle	Permitted Animal Months Sheep	Permitted Animal Months Cattle	Permitted Level M - AUM's	Estimated Grazing Capacity M - AUM's*	Difference Between Obligations & Capacity	Number of Grazing Allotments.
Sanpete	105	26,784	4,778	66,763	14,925	39,730			38
Ferron	106	19,531	5,131	58,602	17,550	40,747			24
Price	51	29,071	1,619	80,512	5,145	30,945			42
Moab**	14	0	3,785	0	11,571	15,274			12
Monticello	14	0	3,512	0	13,688	18,068			16
<b>TOTAL</b>	<b>290</b>	<b>75,386</b>	<b>18,825</b>	<b>205,877</b>	<b>61,763</b>	<b>144,764</b>	<b>145,486</b>	<b>722</b>	<b>126</b>

\*Estimated grazing capacity is not provided by District in current reports. Some allotments have been combined and are administered by different Districts than in 1992.

**Discussion** - Permitted livestock use has decreased from 175,334 AUM's in 1980 as shown in the Forest Plan to 144,764 AUM's in 2000. Actual grazing use has been considerably less than permitted, especially the last few years due to the drought. It has fluctuated from a low of 126,927 AUM's in 1990 to 155,100 AUM's in 1988. The estimated grazing capacity has only been summarized every three or four years, and currently the Districts' summary has shown a downward level. The Forest Plan estimated the carrying capacity in 1980 at 142,248 AUM's with an average for the first 10 years of the plan at 153,800 and the potential based on improvement and better management identified in the Plan to get to approximately 160,000 AUM's in 1996-2005. In 1986 it was estimated at 152,000 and the most recent summary (2001) indicates it has dropped back down to 145,486 AUM's (the same as estimated in 1992). The current number reflects better information that has been gained from studying some allotments, but also reflects to some degree the effects of the current drought. On a Forest wide basis, the difference between the permitted level and the estimated capacity has been greatly reduced to 722 AUM's. This reduction is due to the accelerated effort to re-evaluate each allotment (including renewed NEPA documentation). As part of these analyzes the capacity of each allotment is better aligned with the permitted numbers.

**Synopsis** - Permitted use has gradually decreased and is now very close to the current capacity. Actual use has been fairly close to estimated capacity the last few years.

**Action** - The planned action to complete the re-evaluation of all allotments on the Forest.

**Responsibility** - Range Staff and District Rangers

## Long-Term Range Trend

Long-term permanently located range trend studies are located on all grazing allotments. These studies are located on designated benchmark areas where changes can more easily be detected. Data collected includes plant composition, forage production, ground cover, and soil stability.

**Methods** - Four different methods have been used, over the years, to collect Range Trend data. These methods are:

1. Photo plot-chart quadrant
2. Parker 3 step
3. Photo plot site analysis
4. Nested frequency

Data collected from these various study methods has been summarized and is located in the Allotment Study Folder filed on each District.

**Results** - {Photo plot-chart quadrats}: There a total of 9 active photo plot quadrant studies on the forest. These studies were established in the late 1940's and early 1950's. They have been read at approximately each ten years interval since establishment. Data from these studies show that, in general, composition of desirable plant species and ground cover has increased over the years. These studies are not tied to any specific allotment but are used to determine long-term changes.



Parker 3 Step: Transects have mostly been discontinued and are not presently used to determine condition and trend on allotment. They contain very good photo records.

Photo Plot-Site Analysis: These studies are present on most allotments. Some of these studies have been in place over 20 years and data collection has been used to determine Range conditions and trend and also help firm up allotment capacities.

Nested frequency: This new study method is being installed on allotments and will gradually replace the photo plot-site analysis studies. Most have not been in-place long enough to give trend information, but the information collected is more measurable for statistical purposes.

**Discussion** - The number of trend studies established on each allotment varies depending on the size of the allotment and need for trend information. Many small sheep allotments may have only one or two studies, while a cattle allotment with several units may have up to twenty studies. Data collection is scheduled at three to five year interval on most allotments, and depends on the allotment use schedule and need for the data.

The data provides site specific information to aid in determining if the area is moving toward the desired future condition or other Forest plan objectives (see attached example).

During the last seven years the focus has been to complete studies of those allotments being re-valuated. This information is then used in the planning process to aid in making the best decisions concerning management of each respective allotment.

**Synopsis** - Photo plot-chart quadrat studies show that in general composition of desirable plant species and ground cover has increased over the years. These studies are not tied to a specific allotment but are used to determine long-term changes. Studies have been conducted on many allotments and for the majority of the sites are improving.

**Action** - Long term quadrant studies need to continue, other studies need to be correlated and converted to nested frequency method. Where trend is not going toward desired objectives the management practice affecting the change needs modification.

**Responsibility** - District and Forest Range Staff

## Range Condition

Range Analysis has been completed on all grazing allotments within the Manti-La Sal N.F. The analysis was started in the mid 1950's and mostly completed by the early 80's. There are several of the early analyzed allotments that have been re-analyzed and updated. There are also several allotments that presently need to be re-analyzed as the basic data and allotment maps are not adequate for making resource decisions on grazing management. There are some allotments that do not need re-analysis because the basic data and maps are still adequate for making grazing resource decisions, even though the data is over 20 years old.

**Methods** - All allotments were analyzed using the Region-4 Range Allotment Analysis Handbook FSH 2209.21 (dated before 1986) for instructions and guidance. This analysis resulted in a determination of range suitability, vegetation cover types, and range condition and trend all designated on an allotment map, along with acreage by types and a tentative capacity for the allotment.

**Results** - All range analysis data and maps have been compiled and completed and data summaries are in each Allotment 2210 Folders. The data is still being used for developing and modifying allotment management plans.

**Discussion** - The allotments needing re-analysis should be based on the need for new allotment basic data. This need may be the result of extensive re-vegetation or, changes in allotment boundaries, changes in use or other activities as well as changes in management.

Allotments needing re-analysis are prioritized by the Ranger Districts in their Range Action Plans.

Since the Revision of the Range Allotment Analysis Handbook 2209.21 in 1986, in which the Range Analysis procedures and methods were changed, new analysis has not been done. The procedures and methods in the present Handbook contain different methods to do the analysis. Certain study procedures are adequate, but most Forests are struggling to make the current system work for analyzing individual allotments. Baseline data is being collected and as soil mapping is completed the ecological mapping units based on vegetation and soil will be made and old and new data collated to display ecological capabilities and limitations.

**Synopsis** - All allotments have been analyzed under the pre-1986 methodology. Baseline data is being collected in more ecological terms that will aid in re-analysis to the current standards. All range analysis data and maps have been compiled and completed and data summaries are in each Allotment 2210 Folders. The data is still being used for developing and modifying allotment management plans.

**Action** - Allotment re-analysis should be based on the need for new allotment basic data. This need may be the result of extensive re-vegetation, changes in allotment boundaries, changes in use or other activities as well as changes in management. All allotments need to be gradually converted to new range analysis procedures for ecological basis in lieu of condition.

**Responsibility** - District and Forest Range Staff

## **Allotment Field Inspection, Administration, And Use Reporting**

Range Allotment field inspections are done on the majority of allotments each year for the purpose of insuring permittees are following the allotment management plan and the annual operating plan.

**Methods** - Allotment inspection is completed by making a visit to each allotment area. Inspections include livestock numbers and use patterns, status of maintenance of range improvements, compliance with annual plan of use, checking for unauthorized livestock use, use by big game, and other activity uses and impacts on the forage or soil resources.

**Results** - When inspections show problems, contact is made with the permittee or others. If unauthorized use is occurring appropriate action is taken. Field checks verify permittee information and use data is compiled annually for allotment records and for upward reporting. Field checks also provide for compliance checks with management practices, standards and guidelines and to see if changes in allotment management are needed. Of inspected allotments, approximately 75% are in compliance and on most of the others appropriate action is taken by the permittees to correct deficiencies. On about 1-2% of the allotments some permit action is initiated in order to correct problems.

During the last seven years the focus of these inspections has been on those allotments being re-evaluated. Because of the effort to re-evaluate all allotments, the number of inspections being made on those allotments not being evaluated in the near future has been reduced. However, in order to meet direction for updated information on range allotment improvements, all allotments have received at least some inspection over the last two years.

**Synopsis** - Allotment inspection is done by visiting each allotment area. Of inspected allotments, approximately 75% are in compliance and on most of the others appropriate action is taken by the permittees to correct deficiencies. On about 1-2% of the allotments some permit action is initiated in order to correct problems.

**Action** - Continue field inspection, provide for monitoring and compliance with the terms and conditions of the grazing permit and for action for unauthorized uses and practices.

**Responsibility** - District Rangers

## Range Forage Treatment Practices

For most range forage treatment projects, a site analysis Range Study Transect is installed before treatment and re-read during the 2nd and 5th year after treatment. These studies are designed to measure the success or failure of the individual project and why or how they could be improved.

**Methods** - A Site Analysis Range Study Transect is either installed permanently or randomly on each project site before treatment and re-read again during the 2nd and 5th year after treatment. These studies reflect changes in vegetation composition by weight. Photographs are normally included.

**Results** - Study data are compiled and copies sent to S.O. and filed in the District Project File Folders. Data is also used to determine the success or failure of the project and further action needed to maintain the project.

**Synopsis** - The analyses show the success or failure of each specific treatment and why.

**Action** - This practice should continue for acquisition of knowledge and development of appropriate management practices and prescriptions as well as for employee development and growth. Especially in the 1990's these studies have been useful in identifying areas where noxious weeds or other undesirable species (such as cheat grass) have increased. This information is valuable in planning how to prevent the invasion of undesirable species on future projects.

**Responsibility** - District and Forest Range Staff.

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## TIMBER RESOURCE

### Adequate Restocking Of Lands Within 5 Years Of Final Harvest

The purpose of this monitoring is to verify that adequate stocking has been accomplished within 5 years of final harvest.

#### **Methods** - Silvicultural Examination

**Results** - Generally natural regeneration in ponderosa pine is quite successful. In the Engelmann spruce type, stands are not treated with a final harvest since this treatment is not applicable to this forest type<sup>1</sup>. Plantation survival studies for the first year have been averaging over 90 percent, those for the third year are approximately 70 percent.

Final removal or clear-cutting is used to manage aspen and aspen mixed conifer forests. These treatments plan for natural regeneration of aspen by root sprouting.

**Discussion** – Regeneration of aspen and aspen/mixed conifer stands have generally been successful on the Manti Division of the Manti-LaSal when the stands have been protected from livestock grazing or when regeneration treatments have covered a large enough area to disperse wild and domestic ungulate use.

The LaSal division has had repeated difficulties regenerating aspen due to the small amount of aspen regenerated (stands are usually less than an acre in size) and the lack of protection from ungulate grazing. Subsequent treatments will incorporate protection from both wild and domestic ungulate grazing. Because of the small amount of acres that have been treated, no report of their status is currently available.

**Synopsis** - Aspen harvests are almost always clear-cuts where all trees except wildlife designated trees and groups are removed. The exceptions are the three Four Mile sales in which an appeal caused a special mitigation to be applied. This mitigation allowed the retention of all non-merchantable stems (less than 8 inches in diameter). Aspen regenerate by root sprouts when the above ground stems are removed or killed. Retention of the stems partially suppressed regeneration where the stems were left. An analysis is planned to be completed in 2002 that compares sprouting response in plots with residual stems and without.

Initial reviews of the aspen harvest on the Manti Division indicate that, barring unforeseen circumstances, the harvest units will be certified as stocked at the third year exam. Stocking surveys are scheduled 2 to 3 years after harvest to allow the root suckering to respond to the harvest. See attached table of projects.

**Action** - Continue to conduct first and third year plantation survival surveys, followed by certification at the third year exam when appropriate. Conduct fifth year stocking surveys to confirm survival or certify survival.

#### **Responsibility** – Forest and District Silviculturists

The following table contains a list of harvest acres that meet the criteria listed for final harvest since 1991.

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<sup>1</sup> Engelmann spruce stands under the South Manti EIS were treated with a salvage harvest and do not fall under the conditions of the report.

Sale Name	Unit #	Acres	Veg. Type	Year Harvested	First Year Survey	Third Year Survey	Fifth Year Survey	Year Certified	Ranger District	Remarks
4 Mile I	1	80	Aspen	1993	1996	1999	2001	1996	Sanpete	
	2	23	Aspen	1993	1996	1999	2001	1996	Sanpete	
4 Mile II	1	30	Aspen	1998	2000	2002	2004		Sanpete	
	2	61	Aspen	1998	2000	2002	2004		Sanpete	
4 Mile III	3	47	Aspen	1998	2001	2003	2005		Sanpete	
Bear Ridge	1	23	Aspen	1998	2001	2003	2005		Price	
	2	24	Aspen	1998	2001	2003	2005		Price	
	3	21	Aspen	1999	2001	2003	2005		Price	
	4	30	Aspen	1999	2001	2003	2005		Price	
	5	38	Aspen	1998	2001	2003	2005		Price	
	6	15	Aspen	1998	2001	2003	2005		Price	
	7	38	Aspen	1999	2001	2003	2005		Price	
	8	5	Aspen	1999	2001	2003	2005		Price	
Spoon Creek I	1	14	Aspen	1993	1996	1997	2000	1997	Ferron	
	2	24	Aspen	1993	1996	1997	2000	1997	Ferron	

Sale Name	Unit #	Acres	Veg. Type	Year Harvested	First Year Survey	Third Year Survey	Fifth Year Survey	Year Certified	Ranger District	Remarks
	3	56	Aspen	1993	1996	1997	2000	1997	Ferron	
Spoon Creek II	1	8	Aspen	1998	2001	2003	2005		Ferron	
	2	6	Aspen	1999	2001	2003	2005		Ferron	
	3	16	Aspen	1999	2001	2003	2005		Ferron	
	4	3	Aspen	1998	2001	2003	2005		Ferron	
	5	9	Aspen	1999	2001	2003	2005		Ferron	
	6	8	Aspen	1998	2001	2003	2005		Ferron	
	9	1	Aspen	1998	2001	2003	2005		Ferron	
	10	6	Aspen	1998	2001	2003	2005		Ferron	
	11	12	Aspen	1998	2001	2003	2005		Ferron	
Spoon Creek III	1	15	Aspen	2000	2002	2004	2006		Ferron	
	2	8	Aspen	2000	2002	2004	2006		Ferron	
Spoon Creek III	3	4	Aspen	2000	2002	2004	2006		Ferron	
	4	32	Aspen	2000	2002	2004	2006		Ferron	
	5	18	Aspen	2000	2002	2004	2006		Ferron	
	6	11	Aspen	2000	2002	2004	2006		Ferron	

Sale Name	Unit #	Acres	Veg. Type	Year Harvested	First Year Survey	Third Year Survey	Fifth Year Survey	Year Certified	Ranger District	Remarks
	7	14	Aspen	2000	2002	2004	2006		Ferron	
	8	16	Aspen	2000	2002	2004	2006		Ferron	
	9	7	Aspen	2000	2002	2004	2006		Ferron	
Spoon Creek IV	11	18	Aspen						Ferron	Sold Not Harvested
	12	28	Aspen						Ferron	Sold Not Harvested
	13	36	Aspen						Ferron	Sold Not Harvested
	14	11	Aspen						Ferron	Sold Not Harvested
	15	9	Aspen						Ferron	Sold Not Harvested



## Maximum Size Of Openings Created By Clearcutting

The purpose of this monitoring is to verify that maximum opening size created by clear-cutting is limited. The maximum size opening created by timber sales is limited to 40-acres unless approved by the Regional Forester or results from salvaging in areas following natural events such as fires and insect attacks.

**Methods** - The size of created openings can be found on Sale Area Maps and other Timber Sale Contract documents.

**Results** - Timber harvesting has created openings of the Forest greater than 40 acres by clear-cutting. This has been specifically applied to the aspen and aspen/mixed conifer types. See attached table.

**Discussion** - Shelterwood harvesting, and selection methods have been utilized in harvesting the conifer types on the forest. Some group selection has occurred associated with insect and dwarf mistletoe infestations that have resulted in small clear-cuts approaching three acres in size.

The Kigalia timber sale, located in an active mountain pine beetle infestation, resulted in an area of 120 acres being understocked when additional mortality trees were harvested following the normal operations.

Units with the South Manti EA timber sales did exceed 40-acres but they were the result of salvage from a spruce beetle infestation.

**Synopsis** – Since 1991 4 units have exceeded the 40-acre limitation on created openings. All were applied after receiving the Regional Foresters approval.

**Action** - Continue to monitor any harvesting plans that utilize clear-cutting methods.

**Responsibility** – Forest and District Silviculturist

Project Name	Unit	Acres	Vegetation Type	District	Remarks
4 Mile I	1	80	Aspen	Sanpete	Certified Stocked 1996, > 5000 trees/acre
4 Mile II	2	61	Aspen	Sanpete	Stocking adequately, should certify in 2002
4 Mile III	3	47	Aspen	Sanpete	No data yet.
Spoon Cr. I	3	56	Aspen	Ferron	Certified stocked 1997, > 5000 trees/acre

## Harvesting Practices In Retention, Partial Retention And Riparian Areas.

The purpose of this monitoring is to assure proper harvesting practices are performed in retention, partial retention, and riparian areas.

**Methods** - In order to monitor the harvesting practices the Forest Landscape Architect and the Forest Hydrologist are involved in the ID Team reviews of the proposed projects and in reviewing the silvicultural prescriptions before the projects are approved. Post-sale reviews show how well the predicted results compare with the actual results.

**Results** - Timber sale requirements and design have avoided harvesting in riparian areas. Post-harvest reviews of several sales, completed since the last monitoring report, indicate that VQOs are met or will be met within an acceptable time period (please see the Visual Resource section presented earlier in this Monitoring Report for specific monitoring results).

**Discussion** - During the ID Team interaction, riparian and Visual Quality Objectives are reviewed and all aspects of the projects are discussed to assure that they are acceptable with the objectives. In some cases involving salvage harvest during significant bark beetle mortality events, additional trees are killed by the beetles during logging operations and some of these dead trees are also harvested. This results in the area being understocked causing impacts to the visual and wildlife values. Post-sale reviews are usually made by one to a few individuals.

**Synopsis** - Post-harvest reviews completed since the last monitoring report, indicate that VQOs are met or will be met within an acceptable time period (please see the Visual Resource section presented earlier in this Monitoring Report for specific monitoring results).

**Action** - Continue the review process during NEPA evaluation and during post sale reviews.

**Responsibility** - District Rangers, Forest Landscape Architect, Forest Hydrologist, and Timber Staff

## Timber Sale Action Program

The purpose of this monitoring is to ascertain that timber sales are offered on schedule and that the Allowable Sale Quantity (ASQ) is not exceeded during the decade.

**Methods** - Review the Five-Year Action Plan, the Annual Timber Cut and Sold Report, and the Forest Land Management Plan.

**Results** – The Forest Plan set the ASQ (annual average) at 3.16 MMBF for sawtimber and 2.5 MMBF for other products, for a total of 5.66 MMBF allowable from regulated lands as an annual average (Table A-9, page A-24). Table A-12B (page A-28) schedules total sales of 61.45 MMBF for all products (sawtimber and other, from regulated and unregulated lands) for the period from 1986 through 1995, an average of 6.15 MMBF per year. Available information for volume sold, removed, and offered for sale is shown on the following table.

Manti-La Sal National Forest  
1987-2000 Monitoring and Evaluation Report

Fiscal Year	Volume Sold (MBF)						Volume Removed (MBF)						Volume Offered (MBF) *		
	Sawtimber	Pulpwood	Poles	Posts	Fuelwood	Total	Sawtimber	Pulpwood	Poles	Posts	Fuelwood	Total	Regular	Salvage	Total
1987	1745	0	29	13	3674	5461	1713	5	44	13	3920	5695	908	101	1009
1988	3459	820	33	5	5101	9418	1664	0	28	12	3691	5395	2590	50	2640
1989	281	3	21	4	3746	4055	1235	823	38	4	6005	8105	0	0	0
1990	1771	75	122	9	2293	4270	2323	0	17	7	2759	5106	1693	1188	2881
1991	1655	0	23	5	4246	5929	819	75	127	12	2329	3362	254	130	384
1992	3679	0	25	2	2149	5855	3094	0	23	2	2432	5551	520	3074	3594
1993	1402	0	20	8	2117	3547	1207	0	32	9	3253	4501	2439	2077	4516
1994	2525	0	36	4	1551	4116	1626	0	40	5	1859	3530	325	873	1198
1995	890	0	42	5	1250	2187	2071	0	328	5	1416	3820	40	2102	2142
1996	2378	708	23	6	1134	4249	3317	0	23	6	1051	4397	0	11078	11078
1997	21402	0	9	3	853	22267	3135	174	8	3	882	4202	0	15880	15880
1998	2248	0	5	3	854	3110	6292	522	5	3	920	7742	1019	0	1019
1999	975	0	5	2	937	1919	6787	12	5	2	751	7557	0	0	0
2000	773	0	4	11	806	1594	10288	56	3	3	679	11029	31	204	235
<b>Total</b>	45183	1606	397	80	30711	77977	45571	1667	721	86	31947	79992	9819	36757	46576
<b>Average</b>	3227	115	28	6	2194	5570	3255	119	52	6	2282	5714	701	2626	3327

\* Volume offered does not include personal use or small commercial sales (includes sales following the gate tracking system, typically commercial sawtimber).

**Discussion** – The average annual volume sold for all products of 5.57 MMBF does not exceed the total ASQ of 5.66 MMBF. The average annual sawtimber volume sold of 3.23 MMBF does slightly exceed the ASQ for sawtimber of 3.16 MMBF but much of this volume was salvage (as shown under the breakdown for volumes under Volume Offered). ASQ is provided as required under implementing regulations (36 CFR 219) for the National Forest Management Act (NFMA). The Regulations at 36 CFR 219.2(c)(2) clarify that, “Nothing in this paragraph prohibits salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger of insect and disease attack or where such harvests are consistent with silvicultural and environmental standards. Such timber may either substitute for timber that would otherwise be sold under the plan or, if not feasible, be sold over and above the planned volume.” The salvage harvest of killed or imminently susceptible timber to epidemic bark beetle attack makes up the majority of volume sold for the past several years. Additionally, most of the volume of fuelwood sold was harvested from management areas that were not used in the calculation of the timber base from which the ASQ was derived.

**Synopsis** - The volumes of timber and fuelwood sold is within allowable amounts as defined by the Forest Plan and the NFMA.

**Action** - Emphasize efforts in scheduling, utilizing the Gates program which will result in proper planning, timing, and implementation of the program.

**Responsibility** - District Rangers and Timber Staff

## Reforestation And Timber Stand Improvement Accomplishment

The purpose of this monitoring is to insure all projects that identify a reforestation and/or a timber stand improvement need are accomplished.

**Methods** - This is accomplished by reviewing annual reforestation and TSI accomplishments..

**Results** – The silvicultural prescriptions identify reforestation and timber stand improvement needs. These needs are tracked within the Rocky Mountain Resource Information System (RMRIS). When the reforestation or timber stand improvement project is accomplished the need is completed in the database.

**Discussion** – When a need is recorded in the database this information is forwarded to the Regional and then the Washington office at the end of each fiscal year. When funds are allocated to the Forest, the need for the reforestation or timber stand improvement project is verified by the outstanding acres in need of treatment.

**Synopsis** - Present reviews indicate reforestation and timber stand improvement needs are being accomplished. See table below for a summary by fiscal year and by each division. The vegetation and work differs between the Manti and La Sal Division and therefore the activities have been listed separately by fiscal year.

**Action** - Continue the review and auditing process presently being used.

**Responsibility** – Forest and District Silviculturists

The following table lists all completed harvest units in the South Manti Analysis area as of Sept. 2001. The Olga, Oley, and Camel sales from the South Manti EA have been completed and all the post harvest work has been completed. Data for reforestation projects prior 1995 is sketchy and involve only a few acres of planting.

The Baldy, Duck and Six sales have only a few units left to harvest and it is expected that they will be completed by the end of 2001.

The slash from the logging and the weed/thin activity is lopped to a 24-inch height and scattered in the openings and skid trails. This provides microsites for planting and reduces soil movement. The weed/thin treatment fells damaged trees and spaces the clumps of healthy trees, less than 7 inches in diameter, to 11 by 11 foot spacing. All logged units have received both slash work and weed/thin. It is anticipated that some of the helicopter units will not need weed/thinning because there is insufficient existing trees under 7 inches in diameter to warrant treatment. It is therefore expected that only 50 percent of the units to be logged will require weed/thin.

Following these activities the units are ready to be planted. Review of the units following harvest indicated that few Engelmann spruce, capable of providing seed, survived the spruce beetle. It is therefore expected that 70 percent of all acres will require planting to ensure that Engelmann spruce will be at least 50 percent of the future stand composition.

The seed used to grow trees planted in the South Manti Project area was collected in August 1995. Manual direction at that time required the seed to be collected within 50 miles of the site and within the same 500-foot elevation band. One-third of the seed was collected within several South Manti EA units at the 9500-10000 elevations, at the 10000-10500 foot elevations, and at the 10500-11000 elevations. The rest of the seed was collected at Philadelphia Flat, Seeley Creek, and Danish Knoll just above Ephraim Canyon.

The units are planted with Engelmann spruce grown at the Coeur d'Alene nursery with seed collected from the area in 1995. The container stock used to reforest these units is known as summer stock since it can be planted in June and July when the units are free of snow. This seedling only grows roots the first growing season and therefore is not surveyed for survival until the fall of the second growing season. During the second growing season the seedling will put on new shoot and diameter growth as well as continuing to grow additional roots.

A few bare-root 2-year-old seedlings have been planted in the Olga timber sale. This was to compare the survival and growth with the summer container stock. The monitoring results, at this time, indicate the summer container stock is superior to the bare-root stock for these sites. During the 2000 plantings, 1-year-old container seedlings will be planted to compare their survival and growth with the summer container seedlings.

The survival and growth of the planted trees will be monitored 3 times during a 5-year period. If the units meet or exceed minimum stocking requirements with healthy vigorous seedlings (based on the silvicultural prescription) the units will be certified as stocked. Should the units fall below minimum stocking requirements the units will be evaluated for re-planting, as in the case the Timber Canyon units 1 and 2.

The units have been monitored for animal damage from domestic livestock and from gophers. Several units contained sufficient damage from gophers that treatment was applied during the summer of 2001. The treated units are listed in the following tables.

/s/ Diane M. Cote  
DIANE M. COTE  
Forest Silviculturist

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/ Completed	3 <sup>rd</sup> Year Survey Planned/ Completed	Remarks
<b>1997 Program</b>									
Timber Canyon	1	28	6/96	6/96	7/97	214	9/98	-	Units due to delay of rains by 3 weeks
Timber Canyon	2	31	6/96	6/96	7/97	210	9/98	-	
Timber Canyon	3-12	246	6/96	6/96	6/97	346	9/98	8/00	
12 Mile	7-9	78	6/95	6/95	7/97	303	9/98	8/00	
<b>1998 Program</b>									
Timber Canyon	7-9	25	6/96	6/96	7/98	252	9/99	8/01	
12 Mile	1-6,10-13	142	6/95	6/95	7/98	401	9/98	8/01	
Baldy	9	40	6/97	6/97	7/98	248	9/98	8/01	
Camel	14	14	6/97	6/97	7/98	233	9/98	8/01	
Olga	1-2	173	6/97	6/97	7/98	197	9/98	8/01	
<b>1999 Program</b>									
Oley	3,4	168	6/98	6/98	7/99	302	9/00	2002	

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/ Completed	3 <sup>rd</sup> Year Survey Planned/ Completed	Remarks
<b>1999 Program</b>									
Baldy	9	70	6/97	6/97	7/99	360	9/00	2002	Finished Unit
Baldy	10	8	10/99	10/99	7/99	375	9/00	2002	Leftover trees
Timber Canyon	1-2	59	6/96	6/96	7/99	478	9/00	2002	Replant
Strawberry	1	28	NA	NA	7/99	366	9/00	2002	
<b>2000 Program</b>									
Baldy	10	80	10/99	10/99	7/00	423	9/01	2003	Partial Plant
Six	28	100	10/99	10/99	7/00	441	9/01	2003	
Six	31	38	10/99	10/99	7/00	398	9/01	2003	
Six	34	91	10/99	10/99	7/00	458	9/01	2003	
<b>2001 Program</b>									
Baldy	8	8	7/00	7/00	7/01	386	2002	2004	
Baldy	10	75	10/99	10/99	7/01	350	2002	2004	Partial Plant

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/ Completed	3 <sup>rd</sup> Year Survey Planned/ Completed	Remarks
Baldy	11	20	10/99	10/99	7/01	412	2002	2004	
<b>2001 Program</b>									
Baldy	12	40	10/99	10/99	7/01	523	2002	2004	
Baldy	23	38	10/00	10/00	7/01	363	2002	2004	Hoe Planted
Baldy	24	28	10/00	10/00	7/01	376	2002	2004	Hoe Planted
Baldy	26	62	10/00	10/00	7/01	483	2002	2004	Hoe Planted
Camel	14	14	6/97	6/97	7/01	388	2002	2004	Replant, bareroot stock failed
Olga	1	24	6/97	6/97	7/01	313	2002	2004	
Duck	20	115	10/00	10/00	7/01	386	2002	2004	Hoe Planted
Duck	21	44	10/00	10/00	7/01	387	2002	2004	
Duck	16	9	10/00	10/00	7/01	423	2002	2004	



Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/Completed	3 <sup>rd</sup> Year Survey Planned/Completed	Remarks
Duck	18	27	Six	25	19	470	2002	2004	
<b>2001 Program</b>									
Six	5	56	8/00	8/00	7/01	431	2002	2004	
Six	25	19	10/00	10/00	7/01	469	2002	2004	

The following table lists those areas where reforestation and timber stand improvement (TSI - precommercial thinning treatments) have been applied on the Moab and Monticello Ranger Districts from 1991 to 2001. Monitoring continues. On the Monticello District the North Elks I, North Elks IIA, North Elks IIB, Kigalia, Chimney Park, and Twin Springs Timber Sales have been completed between 1991 and 1992. The Dead Goose Timber Sale will be completed in 2002. The Roc Creek, Sawmill Pond 1, 2, and 3, Hop Creek, and Willow Basin Timber Sales have been completed on the Moab District. These are all primarily ponderosa pine thinning and salvage timber sales with some incidental aspen treatment included.

Some post-sale treatments (primarily slash disposal and TSI) have not been completed in the Kigalia, Chimney Park, and Twin Springs Timber Sale areas. Drought conditions, short burn windows, and National prescribed burn restrictions in 2000 have limited our ability to complete these treatments. Planting is planned within the Chimney Park Timber Sale salvage areas in 2002.

The slash from the logging and the weed/thin activity is lopped to an 18-inch height and scattered in open areas. This reduces fire hazards and provides site protection. Current weed/thin treatments fell damaged or unhealthy trees and spaces the healthy young trees, less than 8 inches in diameter, to 15 by 15 foot spacing. Precommercial thinning treatments have also been applied to harvested areas and to other young seedling, sapling, and pole size stands that were harvested in the 1960s to 1970s. Thinning treatments from 1992 to 1995 were generally done at 12 by 12 foot spacing.

400 acres of thinning reported in 1998 were accomplished utilizing prescribed fire on Deadman Point and Kigalia Point. Fire was applied to the understory with the objective of removing seedling and sapling size trees under the mid-age and mature overstory trees to reduce fire hazard and improve growth of residual trees. The treatment was partially effective, but mortality was more extensive than anticipated in some areas due to fuel concentrations and continuous ladder fuels in areas of dense trees. The fire resistance of larger ponderosa pine and the susceptibility of young seedling and sapling size trees to fire limits our ability to successfully uniformly thin using fire in ponderosa pine.

The seed used to grow trees planted in the Kigalia Project area was collected in September, 1997 on north and south Elk Ridge, Monticello District following current seed collection elevation, zone, and transfer requirements. Planted seedlings were grown in containers for one season at the Coeur d'Alene nursery.

The seed used to grow trees planted in 1993 were collected on the Monticello District following the current seed collection elevation, zone, and transfer requirements at that time. Planted seedlings were two-year old bare root stock grown at the Lucky Peak Nursery.

The survival and growth of the planted trees are monitored 3 times during a 5-year period. If the units meet or exceed minimum stocking requirements with healthy vigorous seedlings (based on the silvicultural prescription) the units are certified as stocked. Should the units fall below minimum stocking requirements the units will be evaluated for re-planting, as in the case the North Elks I and Roc Creek units. Planted units have been monitored for animal damage from wildlife, livestock, and from gophers.

/s/ Greg T. Montgomery

GREG T. MONTGOMERY  
Forest Silviculturist

Project Name	Unit Numbers	Acres	Date Slash Work Completed	Date Thinning Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/ Completed	3 <sup>rd</sup> Year Survey Planned/ Completed	Remarks
<b>1991 Program</b>									
Maverick Point & Chippean Ridge		793		9/91					Monticello RD
<b>1992 Program</b>									
Roc Creek		30		8/92					Moab RD
		100		9/92					
Maverick Point		57		9/92					Monticello RD
<b>1993 Program</b>									
North Elks I T.S.		71			5/93	350	9/93	9/95	Monticello RD 52% survival 3 <sup>rd</sup> year. Replant 2002
Roc Creek T.S.		29			5/93	350	9/93	9/95	Moab RD 69% survival 3 <sup>rd</sup> year.
Roc Creek T.S.		78		9/93					Moab RD
<b>1993 Program</b>									
West Paradox		60		9/93					Moab RD
Maverick Point		169		9/93					Monticello RD
South Cottonwood		56		9/93					Monticello RD
<b>1994 Program</b>									
Sawmill Pond		75		9/94					Moab RD

Project Name	Unit Numbers	Acres	Date Slash Work Completed	Date Thinning Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/ Completed	3 <sup>rd</sup> Year Survey Planned/ Completed	Remarks
<p><i>North Elks I areas planted in 1993 were openings created by mountain pine beetle induced tree mortality and fire in ponderosa pine stands. Although stands are suitable, soils are clay to rocky. Planting was primarily a failure. The North Elks I planting area is scheduled for replant in 2002. They were machine scarified in 2001. Areas planted in the Roc Creek Timber Sale area will be reviewed in FY 2002, and, if appropriate, scheduled for replanting. Areas planted in Roc Creek were openings created by a fire in the sale area in 1992 and small openings created during the timber sale activities.</i></p>									
<b>1995 Program</b>									
North Long Point		47		7/95					Monticello RD
		92		8/95					
		56		9/95					
West Paradox		50		7/95					Moab RD
		190		9/95					
<b>1995 Program</b>									
Sawmill Pond		42		9/95					Moab RD
		133		10/94					
<b>1996 Program</b>									
North Long Point		41		9/96					Monticello RD
North Elks		86		9/96					Monticello RD
<b>1997 Program</b>									
Kigalia Point		6		9/97					Monticello RD
West Paradox		294		9/97					Moab RD
<b>1998 Program</b>									
Kigalia Point		300		9/98					Monticello RD Prescribed Fire
Deadman Point		100		8/98					Monticello RD Prescribed Fire
North Elks II		40		8/98					Monticello RD

Project Name	Unit Numbers	Acres	Date Slash Work Completed	Date Thinning Completed	Date Planted	Ave. Trees Planted Per/Acre	1 <sup>st</sup> Year Survey Planned/ Completed	3 <sup>rd</sup> Year Survey Planned/ Completed	Remarks
<b>1998 Program</b>									
North Long Point		70		9/98					Monticello RD
Paradox		191		8/98					Moab RD
<b>1999 Program</b>									
North Long Point		129		9/99					Monticello RD
				10/99					
Twin Springs		138		9/99					Monticello RD
Paradox		33		9/99					Moab RD
<b>2000 Program</b>									
Chimney Park		300		9/00					Monticello RD
<b>2001 Program</b>									
Kigalia T.S.	1	19	5/01		5/01	225	10/01	2003	Monticello RD
	2	37	5/01		5/01	225	10/01	2003	
	3	27	5/01		5/01	225	10/01	2003	
	4	70	5/01		5/01	275	10/01	2003	
	6	28	5/01		5/01	275	10/01	2003	
	7	71	5/01		5/01	275	10/01	2003	
	8	8			2002		2003	2005	
<b>2001 Program</b>									
<p><i>The areas planted in 2001 were openings created by mountain pine beetle induced tree mortality in ponderosa pine stands. Areas are suitable, but rocky with high competition from grass and brush. Planting areas were machine scarified using a Salmon River Blade in FY 2000.</i></p> <p><i>The TSI contract is not awarded for FY 2001 at this time. 300 acres of treatment are planned for this FY.</i></p>									

## Fuelwood Consumption And Supply

The purpose of this monitoring is to determine whether fuelwood availability is meeting the demand for its use.

**Methods** - Field observations are continually being made of fuelwood availability, reviewing the number of permits being issued, and feedback from the fuelwood permit holders.

**Results** - From all indications there is an adequate fuelwood supply to meet the present demand and that predicted for the foreseeable future. Volume of fuelwood sold from 1987 through 2000 is shown in the following table:

Fiscal	Fuelwood
Year	Sold (MBF)
1987	3674
1988	5101
1989	3746
1990	2293
1991	4246
1992	2149
1993	2117
1994	1551
1995	1250
1996	1134
1997	853
1998	854
1999	937
2000	806
<b>Total</b>	30711
<b>Average</b>	2194

**Discussion** - The demand for fuelwood, as indicated by volume sold, over the period of the Forest Plan, has been variable from year to year but has been decreasing overall. This decline can be attributed to three main factors: (1) the relatively low cost of other heating fuels such as natural gas, fuel oil and coal, (2) more restrictions on smoke emissions from fireplaces and stoves along the Wasatch front, and (3) readily available and inexpensive firewood available from sawmills in Gunnison and Wellington that have been established for the past several years.

The Forest's present fuelwood quantity remains quite adequate with no problems in the foreseeable future considering the mortality resulting from insect and disease. The available species, location, and cost do not always meet public desires.

**Synopsis** - Fuelwood supplies are meeting present demand and no problems are anticipated for the foreseeable future.

**Action** - Continue to anticipate fuelwood demands based on past use curves and any changes that may occur to influence future demand curves.

**Responsibility** - District Rangers

## **Verify Classification Of Suitable And Unsuitable Lands**

The purpose of this monitoring is to verify the classification of suitable and unsuitable lands for timber management.

**Methods** - Examine lands during silvicultural exams, timber sale inventories, and other opportunities when field visits are being made. This information is kept with the analysis records at present and is not in digital form

**Results** - As a general rule the classifications in the Forest Land Management Plan are accurate. Some minor errors have been found relating to the map locations and references in the Plan. At this time, a new vegetation map is being developed. This digital map is 90 percent complete. The remaining 10 percent is scheduled to be completed in fiscal year 2002. It is based on mapping completed by the Forest Botanist. Following completion of the vegetation map, data from land type associations and soils resource inventories will be used to prepare an initial suited/unsuited for timber harvest map. Silviculturists, using stand examinations to verify and correct any errors will review the data.

**Discussion** - The minor discrepancies that are being found relate to timber stands being located improperly on maps and incorrect management coding. There have been no major problems identified, to date, with classification problems. Following completion of the vegetation map, suitability data from old NEPA analysis will be used to verify and update the new map.

**Synopsis** - No significant problems have been identified to date with the original land classification.

**Action** - Continue validating classification information.

**Responsibility** – Forest and District Silviculturists

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## SOIL RESOURCE

### Soil Survey Activities

The purpose of this item is to track accomplishments in conducting progressive soil surveys and making soil resource information available. This includes the number of acre mapped, soil survey reports completed, and information made available for Forest and public use through GIS and the internet.

**Methods** - Reporting consists of acres mapped, reports written for order three intensity soil surveys, and the types of information available on the intranet and internet.

**Results** - Order 3 SRI's have been published by the NRCS covering the La Sal Division, part of the Abajo Division, and the San Pitch Division. The Forest Service has completed an Order 3 survey for the Abajo Division; however, documentation remains in draft form.

The Soil Resource Inventory for the Manti Division has been under development over the last 10 to 15 years. The inventory is unpublished and has not been correlated to adjacent published soil inventories. The map unit descriptions are in draft form and were last edited in December 1997. Recent analysis of the SRI for the Manti Division found that consistency, completeness, and good documentation of supporting data did not fully meet Regional or National standards. The initial field work and raw data collected in the inventory is of good quality and is adequate to further develop map unit descriptions and interpretations. The draft map unit descriptions, at this time, do not always accurately reflect what is on the ground well enough to be utilized for development of site specific plans.

**Discussion** – In the near future, the Forest will not complete and publish standard soil surveys. Instead, work will be directed toward the completion of landtype and landtype association mapping, and the completion of GIS coverages and databases correlated with existing soil resource inventory information.

**Synopsis** – Landtype and landtype association mapping and databases will provide the information needed for Forest Plan revision and most project planning.

**Action** - A combination of contracting and Forest personnel will be used to finalize map units, develop the appropriate databases, and provide user interfaces in NRIS, ArcView and ArcInfo. All products for the Manti Division are expected to be complete in 2002.

**Responsibility** - Ecosystems Staff Officer, Forest Hydrologist, and Forest Resource Information Manager.

### Project Impact Evaluation For Any Soil Disturbing Activities That Have Potential Of Altering Soil Productivity

**Methods** – Most NEPA analyses include management requirements and mitigation measures designed to limit adverse effects to soil productivity. These measures typically focus on restricting activities in order to limit soil compaction and on prompt revegetation.

**Results** – Implementation is routinely documented in timber sale administrators' and minerals inspectors' reports. Implementation associated with other activities is not as well documented. It is assumed that management requirements and mitigating measures were implemented. No reports documenting effectiveness monitoring were readily found for the reporting period.

**Discussion** – Generally, reviews of management activities have not identified significant concerns with compaction (e.g., impacting >15% of timber harvest units with skid trails and landings), erosion (evident signs such as ravel, gulying, pedestals), or revegetation. Better methods of tracking monitoring information recorded as a part of administrators' and inspectors' reports is needed, as well as better regulated monitoring and reporting for other activity areas.

**Synopsis** – General evidence suggests that soil productivity is being maintained by implementation of effective best management practices as planned in NEPA assessments. Better tracking and consolidation of monitoring data is needed to verify this contention or identify activities of concern.

**Action** - Develop user-friendly forms that can be used to systematically document implementation and effectiveness of specific measures. Use and contribute to the RO-Biophysical Resources intranet-based monitoring network.

**Responsibility** - Forest Hydrologist, project field inspectors

### **Sequential Photo Points Of Vehicular Travel Damage.**

This monitoring was intended to evaluate adverse soil and watershed impacts from motorized vehicles. Upon evidence of excessive damage, there would be an evaluation of closure, travel plans, and rehabilitation needs.

**Methods** - The Forest Land and Resource Management Plan notes that this would be accomplished through sequential photo points of vehicular travel damage. Evaluation has been made through field inspections and documented by some photographs, however sequential photo points have not been set up.

**Results** - Plans are being developed to close and rehabilitate unclassified roads and trails where resource damage has occurred and where these roads or tracks serve no need for Forest use and management.

**Discussion** - Most vehicular travel damage to natural resources is caused by recreational activities. Travel maps and regulations are available to the public in an effort to minimize resource damage and use conflicts; however, they are not entirely effective in the face of increasing use.

**Synopsis** - Vehicular travel damage is periodically assessed at the District or Division scale and at the project scale. Unauthorized use is expanding faster than the Forest can achieve control or rehabilitation. Systematic monitoring of damages has not been done.

**Action** - Continue to make inspections and evaluation of vehicular travel damage and close and rehabilitate roads or other areas damaged by vehicles as appropriate. Consider using other tools to monitor unauthorized use and the extension of unclassified roads and trails; photo points are not a useful monitoring tool given the scale of this problem.

**Responsibility** - Forest Watershed, Engineering & Recreation Staffs and District Watershed & Rec. Staffs

## WATER

### Compliance With State Water Quality Standards

#### *Baseline Monitoring*

The purpose of this monitoring is to establish a baseline for chemical and physical characteristics of the water flowing from the National Forest and to demonstrate compliance with the water quality standards for the States of Utah and Colorado.

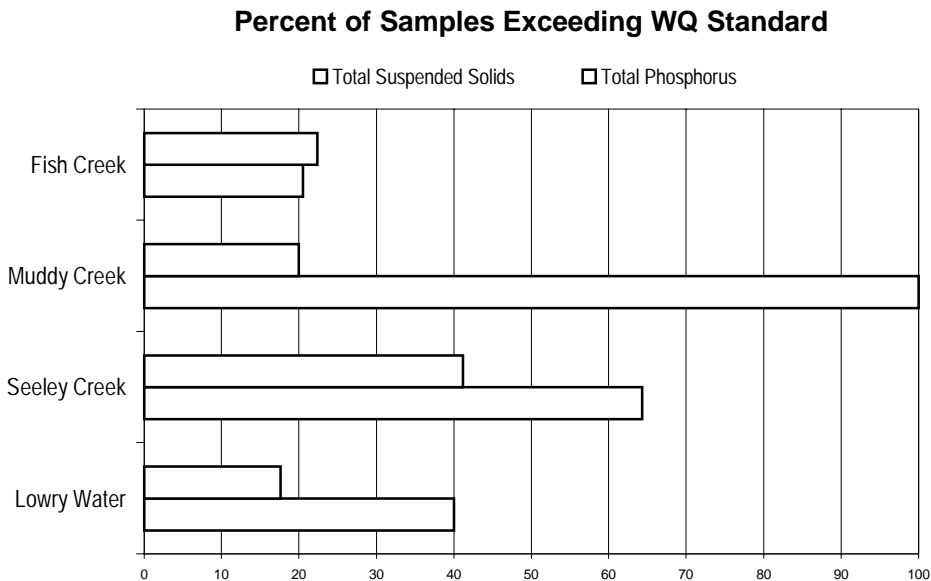
Samples are to be collected at 3 to 5 year intervals and compared to the State's Water Quality Standards to determine if standards have been violated and compared to the previous samples to determine if changes have occurred.

**Methods** – Sampling and reporting methods vary depending on specific objectives of the monitoring and agreed upon sampling and QA/QC protocols.

The USGS maintains several gages on and near the National Forest and measures streamflow and some water quality characteristics. This data is available on USGS Internet sites.

The Forest has established several sampling stations for baseline data as part of the cooperative monitoring project with the Utah Division of Water Quality. Forest personnel collect the samples following the State's protocols and the State analyses the samples. The following are long-term baseline stations: Lowry Water, Seeley and Muddy Creeks (San Rafael River basin), and Fish Creek (Price River basin).

**Results** - Based on the data from the cooperative monitoring project, the baseline stations generally meet the water quality standards for their designated uses except for total suspended solids and total phosphorus.



The following tables further describe the number of samples for each station and the range of values associated with the exceedances.

Lowry Water

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
PH	6.5 – 9.0	17	1	9.1
Minimum dissolved oxygen	6.5 mg/l	17	1	5.2
Total phosphorus	0.05 mg/l	17	3	0.07 - 0.52
Total suspended solids	35 (most restrictive value – associated with aquatic life standard)	15	6	98 - 574
Iron	1.0	8	2	1.5, 1.2

Seeley Creek

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
Minimum dissolved oxygen	6.5	17	1	6.0
Total suspended solids	35	14	9	41 - 930
Total phosphorus	0.05	17	7	0.056 - 0.29
Iron	1.0	9	2	

Muddy Creek

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
Total suspended solids	35	3	3	212 - 734
Total phosphorus	0.05	4	2	0.12 - 0.20
Iron	1.0	3	1	

Fish Creek

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
PH	6.5 – 9.0	75	1	9.2
Minimum dissolved oxygen	6.5 mg/l	78	3	4.8 - 5.7
Total suspended solids	35	73	15	38 - 597
Total phosphorus	0.05	85	18	0.06 - 2.3
Iron	1.0	36	2	

**Discussion** – The exceedances for total phosphorus and suspended sediment generally occur on the same dates and may be associated with spring runoff or storm flows from summer thunderstorms. Streamflow data and/or information about weather conditions is not in the database. The causes of the iron exceedances have not been determined.

The current baseline data does not well represent the overall quality of water the Forest produces. Several of the baseline stations are at locations influenced by Mancos shales, which even in their undisturbed state, are a source of phosphorus and total dissolved and suspended solids .

### *Project Monitoring*

The purpose of this monitoring is to ensure that selected activities on National Forest System lands comply with water quality standards.

**Methods** - Each mining company that operates on the National Forest is required by stipulations in the lease and mine plans to monitor the hydrologic conditions including the chemical and physical characteristics of the surface water. There are 12 mines with portals on the National Forest and 4 more with portals off of the Forest that mine under the Forest. Each of these operations conducts monitoring. About 160 stations are monitored in this fashion. About 1600 locations have been sampled as a part of the pre-mining investigations.

**Results** - The mining companies prepare annual reports as a requirement of their leases and generally report that the samples are within the state standards. High phosphates have been detected but are believed to be the result of natural processes.

**Discussion** - Many water quality samples have been collected over the years; however, the data has not been analyzed for any trends.

**Synopsis** - Much sampling has been done; little data analysis or synthesis have been done.

**Action** - Continue to cooperate with Utah Division of Water Quality, permittees, leasees, mining companies, and others. Require data to be submitted to a State or national data base, such as those maintained by Utah DOGM or STORET.

Coordinate the collection of water chemistry samples and macro-invertebrate to improve the interpretation of both data sets.

**Responsibility** - Forest Hydrologist

## **Change In Riparian Areas Due To Land Management**

This monitoring is to identify the type and conditions of the riparian areas on the Manti-La Sal National Forest so that we can quantitatively address the issues of management effects on riparian areas and plan our activities to reach the desired future conditions.

**Methods** - Sequential photo points and site analysis.

**Results** - The Forest selected a Riparian Demonstration Project in Hop Creek on the Moab Ranger District and initiated improvements both through in-channel construction and changes in livestock management. Photos were taken before and after construction to document these conditions. The area was inspected in 2000. Approximately 1/3 of the structures had failed; 1/3 were damaged and at risk; and 1/3 were acceptable. The enclosure fence around the upper portion of the area was in poor condition and had not served its purpose.

Changes in livestock management had not resulted in the anticipated improvement. Maintenance/reconstruction of the in-channel structures and the enclosure fence is scheduled for 2001. Livestock management changes are being evaluated as part of allotment plan revision scheduled for completion in the spring of 2002.

Site analysis has been done using the 1992 Region 4 Level 2 Riparian Inventory protocol. Inventories were completed under contract in 1992 and 1997.

**Discussion and Synopsis** – Following the initial inventory, no sequential photos or site analysis has been done. Both the vegetation and stream channel information are based on ocular evaluations instead of quantitative measurement. Additionally, the stream classification system has changed since 1997, making interpretation of the information in the reports difficult.

Additional inventory and monitoring methods have since been developed. There is an increasing emphasis on measurements at representative sites within an individual riparian area or stream reach. The national data standards and the NRIS database are designed around this philosophy and may result in changes in monitoring techniques.

Sequential photos document changes but may not provide sufficient information about causes or consequences.

Currently, wetlands which are not part of a streamside riparian area are mapped as inclusions in other vegetative units. There is a need to delineate and classify wetlands as separate entities in order to determine the type, extent, distribution, and condition of wetlands across the Forest.

**Action** – Develop site or project specific monitoring objectives and tailor the monitoring technique to the objective while meeting national data standards.

Inventory wetlands and evaluate their condition and any impacts of Forest activities.

**Responsibility** - District Rangers, Ecosystems Staff, and ID team including hydrologist, biologists, and range specialists.

## **Watershed Improvement Accomplishment**

The Forest Plan identifies several areas that need watershed improvement; management units where the primary emphasis is watershed protection and improvement are shown as WPE management units on the Plan map. Projects in these and other locations are identified in Table A-15. Watershed improvements are accomplished when the acres are treated.

**Methods** - Acres improved as reported in MAR reports.

**Results** - Table A-15 of the Forest Plan shows a planned implementation rate of 470 acres per year. Annual accomplishments vary year to year based on funding, staffing, fire seasons, and weather conditions and fall short of the Forest Plan objective.

Following are the accomplished acres as reported in MAR for the past five years: 2000 – 30 acres, 1999 – 50 acres, 1998 – 11 acres, 1997 – 0, 1996 – 11 acres.

**Discussion and Synopsis** -. Watershed treatments include erosion and sediment control by contour trenching, gully plugs, stream revetments, and revegetation of areas that have insufficient vegetation. Funding to construct watershed improvements is generally available, but funding for advance planning is not as readily available. Project surveys, plans and EA's must be prepared in advance of project implementation. Additional watershed and related resources staffing is needed to prepare the documentation and manage the implementation for improvement projects.

**Action** – Additional staffing is planned for 2002. In the interim, district and SO specialists will prepare plans and the associated documentation as time permits.

**Responsibility** – Forest Hydrologist, District Watershed Staffs, Leadership Team

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## MINERALS

### Number Of Reports Prepared.

This item includes site investigations to determine the geologic characteristics of a project area. It includes only in-service generated projects.

**Methods** - Site investigations are completed and geologic reports are generated. They are monitored by keeping track of how many requests are made and how many of the requests are completed within the time frames requested.

**Results** - The expected workload was projected during a time when the number of requests were high. This was during 1984-1986 when site investigations were being done for repair of damages that occurred during the flood/landslide years of 1984-1986. During 1986 and 1987 the number of requests for geologic investigations were in line with the ten-year plan predictions. This was due to intensive efforts to complete repairs with emergency money obtained. Requests for geologic investigations decreased from 1988 to the present. The workload shifted from damage repairs to investigations for new water developments and timber sale land stability investigations.

**Discussion** - Because of drought conditions, the number of requests decreased to approximately 2-3 per year for each year from 1987 to the present.

**Synopsis** - Since the number of requests have decreased the number completed decreased proportionately. Of the requests received, site investigations and reports were submitted within required time frames.

**Action** - We will continue to respond to requests for geologic services as received from other staff groups. No change is recommended.

**Responsibility** - Minerals/Engineering Staff

### Landslide Movement

An inventory of landslides was compiled on USGS 7.5 minute topographic quadrangles in 1983 and 1986. This inventory is continuously updated as new landslides occur and are mapped. A monitoring program was initiated to monitor the flow rate of landslides that could continue to cause damage to facilities and streams. Several project related land stability analyses have been completed for projects such as salvage timber sales, prescribed burns, pipelines, roads, and drill pads.

**Methods** - As landslides are discovered they are mapped and classified on the inventory using field observations and aerial photography. The flow of landslides is measured by placing stakes at strategic locations along the slides and measuring displacement over time. Project management personnel inspect project areas for new landslides. If discovered, they are mapped and analyzed. See Results below for further discussion.

**Results** - Hundreds of new landslides were inventoried and mapped during the flood/landslide years of 1983 through 1986. Flow monitoring of 8 landslides continued through 1985 to detect the rate of downslope movement. Monitoring of all of the landslides except the Seeley Creek and Boulger Canyon slides was discontinued in 1987 because drought conditions caused slope conditions to stabilize. Drought conditions have continued through the present. Formal monitoring of the Seeley Creek and Boulger Canyon landslides has since been discontinued though they are inspected on occasion to determine if significant movement has occurred. Only minor landslides/slumps have occurred in the last ten years that have damaged roads (Twelve Mile Canyon, Joes Valley, and Trough Springs Ridge). Road repairs were made and water was adequately drained to prevent further movement.

**Discussion** - Monitoring of landslides resulted in increasing our knowledge of what geologic conditions influence land stability. The landslide inventory and monitoring program resulted in completion of a land stability map of the Manti Division based on the occurrence of landslides, slope, aspect, and geologic conditions.

**Synopsis** - Monitoring has kept pace with the need to assess land stability. For those landslides that have stabilized or are no longer a threat to facilities and resources, monitoring has been discontinued.

**Action** - As landslides occur they should be classified and added to the inventory. Monitoring of existing and new landslides should be initiated if the landslides are determined to be a threat to facilities or protected resources. No change to the Forest Plan is recommended.

**Responsibility** - Minerals/Engineering Staff

## Number Of Plans/Leases Completed And Administered

This includes NEPA analyses, processing and administration of minerals operating plans and leases. The Forest Service reacts to proposals for mineral leases or operations submitted by operators (locatable/salable) or other regulatory agencies (BLM and OSM/UDOGM). The Forest Service does not have control over what and how many proposals are submitted. Federal regulations and MOU's with other agencies determine time requirements for the Forest Service to react to these proposals in preparing NEPA analyses and making approve/not approve, consent/not consent, and object/not object decisions.

**Methods** - Applications for mineral operations are evaluated through the NEPA process by interdisciplinary teams. They are either approved or not approved by the responsible official based on the results of NEPA analyses.

**Results** - Applications received each year since 1986 have deviated significantly from Forest Plan predictions.

Locatable mineral operations proposed for uranium and gold mining have decreased to 0 each year from a predicted level of 50 to 60 each year. Two gypsum mines have been approved on the SanPitch Division of the Uinta National Forest administered by the Manti-La Sal National Forest. Another gypsum mine already operating on private inholdings in this area is being evaluated under a proposed plan of operations to expand onto NFS lands. It is expected to be approved early in FY-2002. The potential for gypsum mines was not evaluated in the Forest Plan. The present workload involves administration of 1 uranium mine that has been

reclaimed by the operator. The mine is being monitored for success of vegetation standards regarding bond release. All other uranium mines that were permitted under Forest Service regulations have been reclaimed and meet required revegetation standards. The three gypsum mines are being administered to standard.

Salable mineral operations have decreased from approximately 10 each year to 1 or 2 each year due to a decrease in demand for road surfacing gravels, riprap and building stone. The decrease in demand is proportionate to other mineral activities which require road improvements and the decreased need for materials to repair flood and landslide damages. The Forest Service has developed several gravel pits for surfacing of Forest Roads. These are being operated and reclaimed in accordance with the Forest Service operating plans and NEPA analyses, including reclamation.

Oil and gas leasing and drilling operations have been significantly less than predicted in the Forest Plan, but are expected to increase under the Bush Administration National Energy Policy. Leasing was discontinued from 1987 to 1992 after passage of the Onshore Oil and Gas Leasing Reform Act of 1987 because it rendered almost all leasing recommendations in Forest Plans and Final EISs obsolete. The Final Environmental Impact Statement for Oil and Gas on Lands Administered by the Manti-La Sal National Forest was completed in 1992 and the final Record of Decision released in January of 1994. Leasing resumed in 1994 with approximately 100,000 acres being leased annually. Only two wildcat wells were drilled on the Forest between 1987 and 2000. One wildcat well was drilled in 2001 and it is expected that 2 will be drilled in 2002. Maintenance of 7 existing gas production wells has continued.

Coal leasing has lagged behind the predictions. It was anticipated that approximately 24 new lease actions would be proposed and processed for the ten year period following Forest Plan completion (1987 to 1997). We have completed analyses for and consented to 7 new leases from 1987 through 2000. Approximately 10 lease modifications (add up to 160 acres to an existing lease) have been processed.

The economics of coal mining have changed significantly since Forest Plan completion due to the increased use of the longwall mining method in place of conventional room-and-pillar mining. Mining efficiency has generally increased from a production rate of 16 tons/miner/day to 63.7 tons/miner/day. Mining efficiency has increased at the expense of the number of available jobs.

**Discussion** - See above

**Synopsis** - The number of plans processed has decreased but the complexity of each plan and the associated NEPA analyses have increased. The workload is generally the same as in 1986.

**Action** - Resources need to be maintained at a level adequate to accomplish the workload.

**Responsibility** - Minerals/Engineering Staff

## **Compliance With Terms Of Completed Plans**

Once mining operations are approved or leases are issued compliance inspections are required to assure compliance with the terms of approval and lease stipulations. Reviews need to be completed on a periodic basis to assure compliance with requirements for mitigating impacts.

**Methods** - Site inspections are required to determine compliance with requirements for mining operations. In addition, mine plans are reviewed for compliance with lease stipulations.

**Results** - Office reviews for compliance with terms of approval have been conducted as required and show general compliance. On the ground inspections for multi-year operations are often postponed or are less frequent than the ideal due to a high workload related to approval of new proposals. Since mine plan inspections for coal mines are generally the responsibility of the Utah Division of Oil, Gas, and Mining, compliance inspections for coal mines are not conducted as often as other types of mining operations.

Inspections of new active operations that have the greatest potential for environmental effects are given priority and have been monitored frequently (at least once per week). Inspection of other multi-year operations are being done but to a minimum level needed to assure compliance. They are not being done as often as would be ideal as outlined in the Forest Plan.

**Discussion** - See above

**Synopsis** - In general, operations are in compliance with requirements. When non-compliance situations are discovered, appropriate action is taken.

**Action** - Compliance inspections are being done at a minimum but sufficient level. Additional resources are needed if the frequency of mine plan inspections is to be increased.

**Responsibility** - Minerals/Engineering Staff

## **Subsidence And Hydrologic Monitoring**

The purpose of monitoring is to track the impacts to resources, enforce required mitigations, and help make decisions for future leasing and mining proposals. Subsidence and hydrologic monitoring of coal mine areas is required to be completed each year. This is the responsibility of the coal mine operators in accordance with the Surface Mining Control and Reclamation Act and the coal mining regulations (30 CFR 700 to end).

**Methods** - Conventional ground surveys, ground observations, aerial photogrammetry, computer modeling, measurement of water flow and quality.

**Results** - A photogrammetric subsidence monitoring program coordinated by the Forest Service proved to be unsuccessful and was discontinued in 1987. The participating companies initiated independent programs consistent with the mining regulations and lease stipulations in 1987 and 1988. These mines include the Crandall Canyon, Trail Mountain, StarPoint, White Oak, and Hiawatha Mines. There is a continuous record of subsidence monitoring from 1988 to the present.

There is a continuous record of subsidence monitoring for those companies that originally elected to implement independent programs in 1980. These mines include the Skyline, SUFCO, Des-Bee-Dove, Cottonwood/Wilberg, and Deer Creek Mines.

Hydrologic monitoring has been completed for each mine as required by the mining regulations.

**Discussion** - The mining companies submit hydrologic monitoring reports to the Utah Division of Oil, Gas and Mining on a quarterly basis. They compile subsidence and hydrologic monitoring results on an annual basis and submit annual reports to DOGM. Copies of the annual reports are sent to the Forest Service for information and review upon request.

**Synopsis** - Except for 1981 to 1987 when subsidence monitoring data was lost, subsidence monitoring has been continuous and in accordance with the Forest Plan, mining regulations, and lease stipulations. For the years lost, observable subsidence effects have been monitored and recorded.

Hydrologic monitoring has been conducted by the mines in accordance with the Forest Plan, mining regulations, and lease stipulations.

Since so much information is compiled by the mining companies, it is difficult to effectively track potential impacts. Utah Division of Oil, Gas and Mining (DOGM) and the Forest Service do not have the resources available to continuously review and interpret the submitted information to determine if the mines are causing slow, gradual changes in hydrologic conditions. Obvious or abrupt changes are more easily detected and are rare. All hydrologic monitoring data are now submitted to the Utah Division of Oil, Gas and Mining in digital format and is entered into an electronic database. All past monitoring data has also been entered into the database. The information is available for review by the public through the Utah Division of Oil, Gas and Mining's website.

**Action** - Additional resources are needed to adequately track effects.

The Forest and DOGM have digitized hydrologic monitoring data for automated (computer) processing. Additional personnel and funding would be required for Forest Service or UDOGM personnel to review this information on a scheduled basis to confirm effect analyses submitted by mine companies in monthly monitoring reports and annual reports.

**Responsibility** - Minerals/Engineering Staff, Utah Division of Oil, Gas and Mining (DOGM)

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## PROTECTION

### (Air Quality) Whether Utah And Colorado State Air Quality Standards Are Met

Forest Service activities are required to comply with the procedural and substantive aspects of State requirements for air quality protection. Prescribed fire is the primary activity affecting air quality. There are no Class I airsheds on the Manti-La Sal National Forest; however, several nearby National Parks are.

#### *Prescribed Fire*

**Methods** - Compliance with weather forecast, burning index and visual observation of smoke dispersal plus number of complaints.

**Results** - Prescribed fire plans include evaluation and predictions for smoke management which comply with the State Requirements. Prior to any prescribed burning the State of Utah has been notified and necessary meteorological data has been obtained. No notices of violations of state air quality standards have been received.

#### **Discussion and Synopsis –**

**Action** – Comply with State requirements and procedures; continue using effective smoke management practices. Document implementation and effectiveness of practices as part of the record-keeping associated with burn plans.

**Responsibility** – Forest FMO, Forest Hydrologist

#### *Lichen Biomonitoring*

In addition to smoke management, the Forest has inventoried and is monitoring lichens.

**Methods** – The Forest has 15 reference sites; 2 on the San Pitch Division, 7 on the Manti Division, and 3 each on the La Sal and Abajo Divisions. Initial site characterization and subsequent monitoring has been done through cooperative agreement with Brigham Young University. Monitoring is at 3-8 year intervals.

**Results** – BYU has collected 143 lichen species in 48 genera from the reference sites. Pollution-sensitive indicator species have been identified at each site and selected species have been collected for analysis of bioaccumulation of heavy metals and other pollution-related elements. Results are available in periodic reports from BYU to the Forest, the most recent is December 2000.

**Discussion and Synopsis** – The high species diversity, general absence of pollution-damaged thalli, and relatively high number of sensitive indicator species per site indicate that air pollution has not significantly affected lichen flora. However, there are several areas of concern. The sites on the San Pitch Division and several on the Manti Division have elevated heavy metal concentrations at or near thresholds of concern similar to sites adjacent of the heavily populated and industrialized areas of the Wasatch Front. The sites on the Abajo Division have elevated sulfur concentrations and may be affected by power plants in the Four Corners area.

**Action** – Continue cooperative monitoring. Evaluate monitoring intervals for reference sites at or near threshold concentrations for one or more parameters. Add reference sites in the vicinity of already identified areas of concern.

**Responsibility** – Forest Hydrologist.

### **(Fire) Number Of Wildfires And Acres Burned - 1987-2000**

The purpose of the monitoring is to verify if there is a 20% increase in Wildfires and Acres Burned above the five-year average, and National Fire Management Analysis System (NFMAS).

**Methods** - Evaluation annually using frequency by size class, distribution, intensity levels and acres burned from individual fire reports.

**Results – Fire Numbers** From 1982 –1991 a five-year time frame was selected as a monitoring period (1987 to 1991). During this five-year period, for two years the number of fires (45 and greater) exceeded the average plus 20%. These years were 1988 and 1989. From 1987 until 2000 there were six years where the number of fires exceeded the 1987 to 1991 average plus 20 percent. These years were 1989, 1994, 1995, 1996, 1997 and 2000.

**Results – Fire Acres** From 1982 –1991 a five-year time frame was selected as a monitoring period (1987 to 1991). During this five-year period, an average plus 20% acre number was determined equaling 476.6 acres. During this same five-year period, two years 1987 and 1988 exceeded the average. From 1987 to 2000 there were no years that exceeded the average.

**Discussion** – The number of fires and acres burned varies greatly due to regional weather conditions. Continue monitoring annually.

**Synopsis** - The number of wildfires are expected to be within NFMAS and the 5-year average, however acres burned from 1987 to 2000 have stayed below the 5 year average.

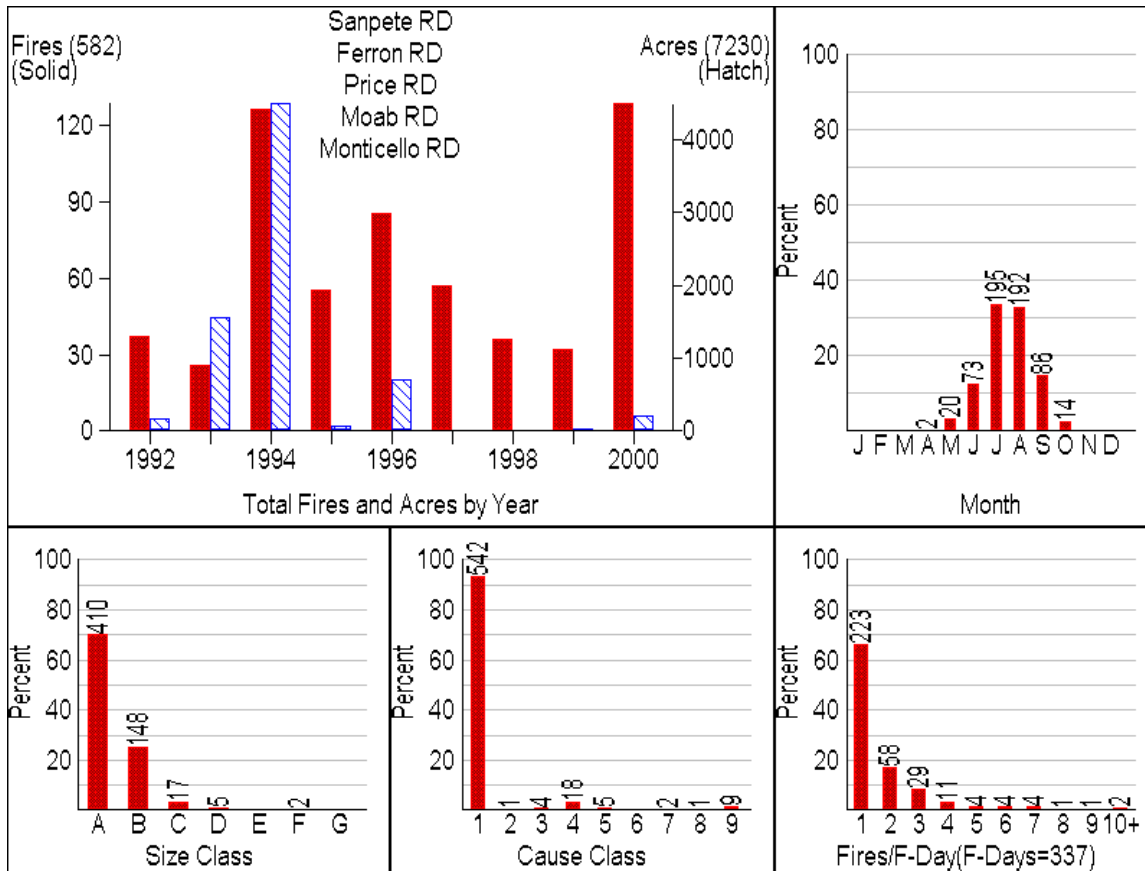
**Action** - Continue monitoring and reporting annually. Update NFMAS every 5 years.

**Responsibility** - Fire Staff and Fire Management Officer

For number of fires and acres burned from 1992 to 2000, see the graphs below.

For number of fires and acres burned from 1982 to 1991 see M-L Forest Monitoring Technical Report pages 3-69 and 3-68.





**(Fire) Number Of Wildfires And Acres Burned (Human Caused). 1987-2000**

The purpose of the monitoring is to verify if there is a 20% increase in human caused Wildfires and resulting Acres Burned above the five-year average. Information is based on National Fire Management Analysis System (NFMAS) data.

**Methods** - Evaluation annually using frequency by size class, distribution, intensity levels and acres burned from individual fire reports. Reference the attached PCHA analysis for the base line data for the years 1970 thru 1998. Data for the years 1999 and 2000 has been included in the results noted below.

**Results – Fire Numbers** - From 1982 –1991 there were 47 human caused fires on the Forest. During the five-year time frame selected as a monitoring period (1987 to 1991) there were 27 human caused fires or an average of 5.4 fires per year.

From the period 1982 till 1986 the following year exceeded the five-year monitoring period average plus 20%:  
1982 - 08 fires

From the period 1987 till 2000 the following years exceeded the five-year monitoring period average plus 20%:  
1987- 10 fires  
1991- 07 fires  
2000 - 09 fires

**Results – Fire Acres** - From 1982 – 1991 human caused fires contributed to 153 acres of wildfire on the Forest. During the five-year time frame selected as a monitoring period (1987 to 1991) 136 acres burned due to human caused fires or an average of 27 acres per year.

From the period 1982 till 1986 no years exceeded the five-year monitoring period average plus 20%.

From the period 1987 till 2000 the following years exceeded the five-year monitoring period average plus 20%:

- 1987 – 71 acres
- 1988 – 55 acres

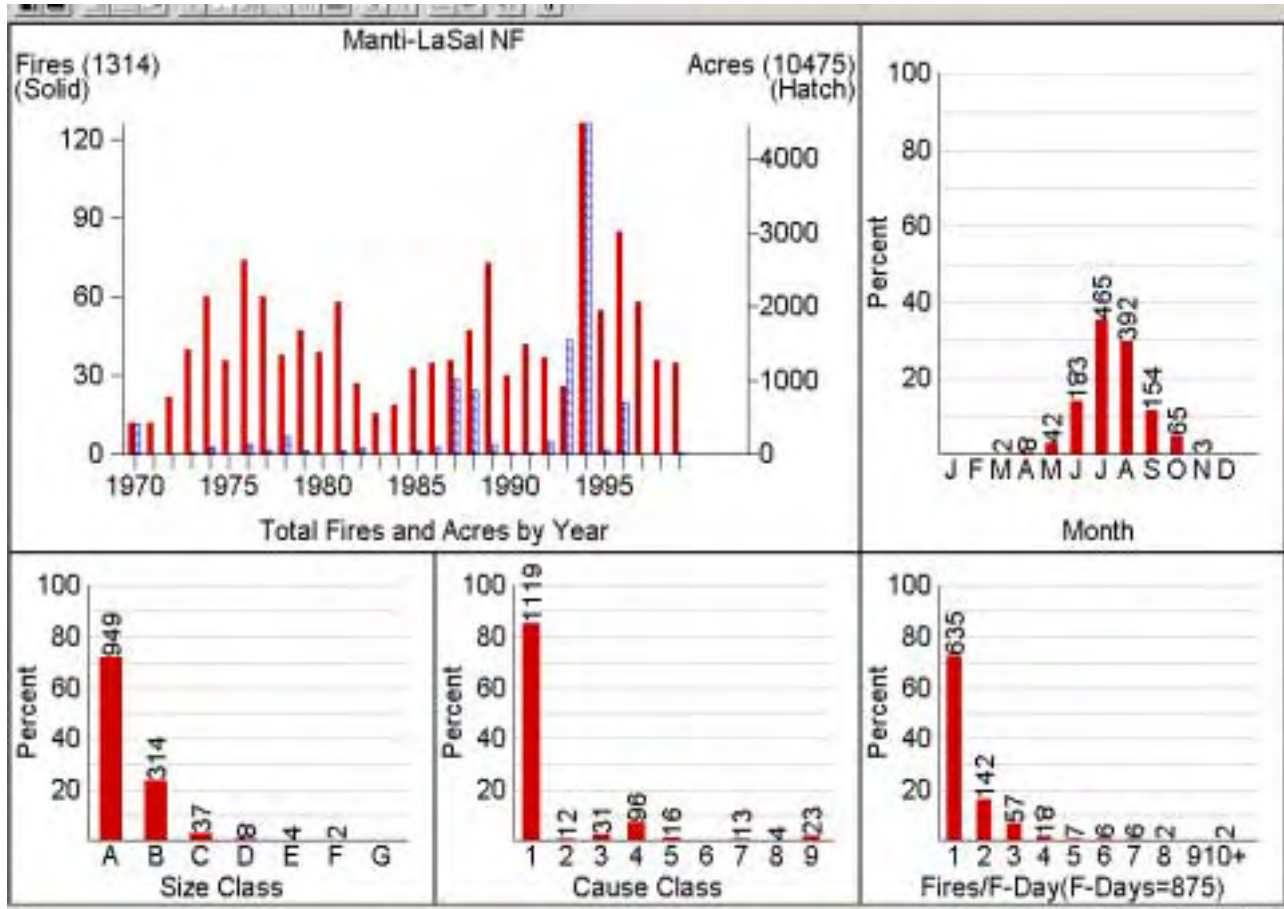
**Discussion** – The number of fires and acres burned varies greatly due to regional weather conditions. Overall the number and acres burned due to human caused fires is approximately 7 % of lightning caused fires. Continue monitoring annually.

**Synopsis** - The number and acres of human caused wildfires to date is not a significant number on the Forest.

**Action** - Continue monitoring and reporting annually. Update NFMAS every 5 years.

**Responsibility** - Fire Staff and Fire Management Officer

For number of fires and acres burned from 1992 till 2000 see the PCHA report displayed below:



Manti-La Sal National Forest  
1987-2000 Monitoring and Evaluation Report

PCHA99 10-03-2001 MANTI-LASAL NF YEARS: 1970 - 2000

FIRES  
===== BY STATISTICAL CAUSE  
ACRES ( ,000)

Year	Litng	Equip	Smokg	Cmpfr	DebBr	RRoad	Arson	Child	Misc	Total
====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1970	31	0	0	1	1	0	1	1	0	35
	0	0	0	0	0	0	0	0	0	0
1971	42	1	2	2	0	0	1	1	0	49
	0	0	0	0	0	0	0	0	0	0
1972	38	1	0	8	0	0	0	1	0	48
	0	0	0	0	0	0	0	0	0	0
1973	33	0	2	5	0	0	0	0	0	40
	0	0	0	0	0	0	0	0	0	0
1974	48	0	3	8	1	0	0	0	0	60
	0	0	0	0	0	0	0	0	0	0
1975	26	0	0	8	0	0	0	0	2	36
	0	0	0	0	0	0	0	0	0	0
1976	65	0	0	4	2	0	0	0	3	74
	0	0	0	0	0	0	0	0	0	0
1977	51	1	0	7	1	0	0	0	0	60
	0	0	0	0	0	0	0	0	0	0
1978	26	1	1	9	0	0	0	0	1	38
	0	0	0	0	0	0	0	0	0	0
1979	26	1	5	7	1	0	6	0	1	47
	0	0	0	0	0	0	0	0	0	0
1980	28	1	4	3	2	0	0	0	1	39
	0	0	0	0	0	0	0	0	0	0
1981	53	2	2	0	0	0	0	1	0	58
	0	0	0	0	0	0	0	0	0	0
1982	19	0	1	6	0	0	1	0	0	27
	0	0	0	0	0	0	0	0	0	0
1983	12	0	0	4	0	0	0	0	0	16
	0	0	0	0	0	0	0	0	0	0
1984	18	1	0	0	0	0	0	0	0	19
	0	0	0	0	0	0	0	0	0	0
1985	30	0	0	0	0	0	2	1	0	33
	0	0	0	0	0	0	0	0	0	0
1986	31	0	0	2	0	0	0	1	1	35
	0	0	0	0	0	0	0	0	0	0
1987	26	1	3	5	1	0	0	0	0	36
	0	0	0	0	0	0	0	0	0	1
1988	42	0	2	2	0	0	0	0	1	47
	0	0	0	0	0	0	0	0	1	1
1989	69	0	0	0	1	0	0	0	3	73
	0	0	0	0	0	0	0	0	0	0
1990	29	0	0	0	0	0	0	0	1	30
	0	0	0	0	0	0	0	0	0	0
1991	35	1	3	2	0	0	0	0	1	42
	0	0	0	0	0	0	0	0	0	0
1992	34	0	1	0	1	0	0	0	1	37
	0	0	0	0	0	0	0	0	0	0
1993	22	1	0	2	1	0	0	0	0	26
	0	0	0	0	1	0	0	0	0	2
1994	119	0	2	3	0	0	0	0	0	124
	0	0	4	0	0	0	0	0	0	4
1995	50	0	0	2	0	0	0	1	2	55
	0	0	0	0	0	0	0	0	0	0
1996	78	0	0	3	2	0	0	0	2	85
	1	0	0	0	0	0	0	0	0	1
1997	52	0	0	2	1	0	2	0	1	58
	0	0	0	0	0	0	0	0	0	0
1998	32	0	1	2	0	0	0	0	1	36
	0	0	0	0	0	0	0	0	0	0
1999	2 human caused fires under 1 acre									
2000	9 human caused fires under 1 acre									
TOTALS:	1165	12	32	97	15	0	13	7	22	1363
	2	0	4	1	2	0	0	0	1	11

## (Fire) Fuel Treatment Program (BD) 1987-2000

The purpose of the monitoring is to verify that at least 90% of the activity fuels created during the year on the forest, has had some type of treatment.

**Methods** - Complete On site inspections of 25% of the timber sales on the forest to determine accomplishment. Due to the variance of weather conditions and approvals for burning the percentage of sites inspected required adjustment based on the level of BD Treatments.

**Results** – Currently BD treatment information is available for the years 1996 through 2000. In four of the five years noted above at least 80% of the target acres were treated.

Year	BD Target	Acres Treated
1996	245	63
1997	345	341
1998	390	316
1999	902	602
2000	1,320	1,004

**Discussion** – Continued monitoring would take place on timber sale operations to determine BD needs in accordance with the sale area plan. Backlog acres will be identified and treated during time periods when weather and smoke conditions are favorable and qualified personnel are available.

**Synopsis** - No problem was observed with timber sales monitored in the five-year period.

**Action** - Continue monitoring large timber sales on the forest. Treat remaining slash on past and current sale units as they are released and favorable conditions are realized.

**Responsibility** - Fire Staff, Timber Staff, and District Rangers.

## (Fire) Fuel Treatment Program, Hazardous Fuels Reduction 1987-2000

The purpose of the monitoring is to verify the year-to-year acreage accomplishment of Hazardous Fuels Reduction of natural fuels on the Manti-La Sal National Forest.

**Methods** - Actual accomplishment is based on completed acreage treatments of individual projects.

**Results** – Currently local data exists for the years 1994 thru 2000.

Manti-La Sal Hazard Reduction Prescribed Fire (does not include BD treatment acres)	
YEAR	ACRES
1994	95
1995	1,300
1996	1,300
1997	0
1998	3,680
1999	1,350
2000	300

**Discussion** - Completing projects varies yearly and depends on weather conditions and the severity of the fire season nationally. In 2000 during the fall months, no prescribed fire was permitted due to high fire fighting resource needs in the western states. The Forest is strengthening the Fuels Program and the completion of additional projects is expected in future years.

**Synopsis** – Funding changes, weather conditions and severity of the fire season will effect accomplishments in hazard reduction of natural fuels.

**Action** - Continue monitoring accomplishment of projects on an annual basis.

**Responsibility** - Fire Staff and District Rangers.

### **(Forest Pest Management) Depredation By Insects And Disease.**

The purpose of this monitoring is to maintain a surveillance of forest insect and disease activity levels.

**Methods** - Annual aerial detection flights are made over the Forest by personnel of the Region's Forest Health Protection office. In addition to the aerial flights, information is obtained from field visits, silvicultural exams, timber cruising, timber marking, and other day-to-day management activities.

**Results** - The mountain pine beetle population continues to persist on the Monticello Ranger District and has reached epidemic levels in the Buckeye and Paradox Creek areas of the Moab Ranger District. The mountain pine beetles have expanded on the Moab District since the Willow Basin fire in 1994. Populations have also increased on adjacent private lands.

The mountain pine beetle increased in the Kigalia/Twin Springs (Monticello RD) area until the thinning/salvage harvest in the mid to late 90's. Sanitation treatments applied during these timber sales appear to have effectively reduced bark beetle populations in these areas. Since then the population, although still active has moderated to slightly above endemic levels. It is estimated from the aerial detection flights that approximately 14,000 acres have had mountain pine beetle activity since the last report in 1991.

Spruce beetle populations have continued to expand on both the Manti and the La Sal divisions. Suppression activities are being applied in the Monticello and Blanding Watersheds. The La Sal pass population has fluctuated but is still active.

The spruce beetle population on the Manti Division has moved from the 12-mile drainage northward. The farthest pockets are in the Rolfson-Lake Canyon drainages.

Overall, the spruce beetle has impacted over 80,000 acres on the Manti-La Sal since the 1991 report. In the heavily affected stands as much as 90 percent of the Engelmann spruce over 10 inches in diameter have been killed (Anhold, John and A. Steve Munson. 1998. Beetle-Induced Spruce Mortality)

**Discussion** - The conditions of the ponderosa pine stands on the Monticello and Moab Ranger Districts make them highly vulnerable to the mountain pine beetle. Some of the variables that contribute to this includes overcrowding of the stands, age of the trees, size of the trees, presence of the beetle populations, and

additional stress that may be put on the trees because of weather conditions. Most of the Engelmann spruce that is experiencing beetle attack is over mature and very susceptible.

**Synopsis** - Mountain pine beetle and spruce bark beetle continue to be greatest problem and are presently causing heavy losses on the La Sal and Manti Divisions.

**Action** - Continue the annual aerial detection flights.

**Responsibility** – Regional Forest Health Protection Staff, Forest and District Silviculturists.

### **(Forest Pest Management) Effectiveness Of Dwarf Mistletoe Suppression Projects To Protect Regeneration.**

The purpose of this monitoring is to evaluate the effectiveness of various dwarf mistletoe projects.

**Methods** - Field reviews are used to determine the effectiveness of the project.

**Results** - The full results of the first project will be field checked next field season (see discussion).

**Discussion** - The Dry Wash Mistletoe project located on the Monticello Ranger District was completed in 1988. The decision implemented states: "it is my decision to adopt Alternative C for treatment of the described land in the Dry Wash Mistletoe area. The District Ranger is directed to modify Alternative C to include the use of seed trees. This action will serve to best control the spread of dwarf mistletoe on the Ponderosa pine by eliminating all infected trees over time. Also it provides for slash disposal thereby reducing the risk of fire and insect problems. Further it provides for larger, healthy trees in the future for Abert squirrel habitat while at the same time meeting the visual quality objective for the area" (Reed C. Christensen, Forest Supervisor, 11/12/85).

The selected alternative and silviculture prescription called for stand treatment in stages. The first stage was to remove infected overstory trees, except for seed trees that were left to provide site and seedling protection, wildlife habitat, and to reduce effects on visual quality. Open areas were then planted.

The second stage called for removal of infected seed trees and infected understory trees within 10 years, before planted seedlings were infected. Additional treatments similar to stage 1 were also projected. Additional planting was projected following this treatment. The next stage would be a repeat of stage 2 within 10 years. This sequence was planned to continue through three sanitation and regeneration sequences until the stand was regenerated and relatively clean of dwarf mistletoe infection.

The past monitoring report indicated that a review of the treatment would occur the summer following publication of the report. We have been unable to find any documentation of that review, and assume it was not completed or lost during the one to two year period when silviculture and timber staff positions were vacant on the District. After determining a need to monitor treatment effectiveness, the District Silviculturist visited the stand for a walk-through of the area on 9/19/01.

Review of the area indicated that there are still extensive pockets of infestation within the stand. In areas where efforts were more intensive to remove infected trees, infection levels are relatively low, but increasing. In

those areas where infected, larger trees were left infection appears to have spread extensively in both the overstory and understory. The stand is predominately uneven-aged in structure with few actual openings around infected trees to limit spread of the disease. We are at the limit of the time frame that called for re-treatment of the stand at this time. We recommend that the area be examined intensively during the next field season to determine the extent and general location of infection areas. From that point recommendations will be made regarding the next step in managing these stands.

The Hop Creek Timber Sale was completed in 1993. A shelterwood seed cut harvest was implemented and the initial prescribed burning was completed to reduce slash. Planting treatments have not been completed, initially, due to unavailability of seed and then due to lack of funding to implement burning necessary to reduce competition from gambel oak. This area is also scheduled for survey during the next field season to determine infection levels, identify natural regeneration that has occurred since harvest, determine needs, and identify whether the existing prescription should continue to be implemented.

**Synopsis** - Results of the two projects undertaken to date have not been finalized.

**Action** - Field evaluate the Dry Wash and Hop Creek projects during the next field season. Continue field observations of both the Dry Wash and Hop Creek projects until a determination as to their effectiveness can be made.

**Responsibility** – Regional Forest Health Protection Staff. Forest and District Silviculturists.

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## LANDS

### Land Purchase And Acquisition. Land Exchange

The purpose of this monitoring is to verify if land purchase, acquisition, and exchange is taking place as planned.

**Methods** - Land Adjustment Plan and Management Attainment Report

**Results** - Schedules were not developed in the Forest Plan for these activities. In the last 15 years there has been one land exchange, one donation, and we have purchased one administrative site.

**Discussion** - We have three land exchanges in progress, The State exchange, the Petty exchange and, the Ephraim City Exchange. No land acquisitions are in progress. Several Small Tracts Act adjustment opportunities have been identified with little progress to date due to funding limitations.

**Synopsis** - Land exchanges are considered on an "as they come" basis; those considered to be in the public interest will be pursued. No acquisitions are planned at this time. Adjustments under the Small Tracts Act are typically made to resolve occupancy trespass.

**Action** - Develop a Land Adjustment Plan for the Forest.

**Responsibility** - Branch Chief, Lands

### Rights-Of-Way Acquisition

The purpose of this monitoring is to verify that we are within +/-50 percent of the planning period target.

**Methods** - Rights-of-Way Acquisition Schedule accomplishment.

**Results** - Of the 39 rights-of-way identified in the Forest Plan six have been accomplished.

**Discussion** - This program has fallen behind due to lack of funding of the lands program area. Additionally, the associated private party must be willing to grant the subject R-O-W.. There are presently six rights-of-way in various stages of negotiation.

**Synopsis** - Six of thirty-nine needed rights-of-way have been obtained. At the present rate, the program will continue to lag behind the schedule.

**Action** - Prepare a rights-of-way Acquisition Plan for the Forest. Amend Forest Plan or provide resources to accomplish the work.

**Responsibility** - Branch Chief, Lands

## Occupancy Trespass

The purpose of this monitoring is to verify resolution of occupancy trespass. No target is identified in the Forest Plan.

**Methods** - Onsite inspection and landline location; Management Attainment Report

**Results** - There are a few records of occupancy trespass cases on file. Some have been resolved and several are pending.

**Discussion** - Few records are being kept except in the above mentioned files. There are known cases of trespass but no action (other than a letter to the offending party) is being taken in most cases to resolve them. A backlog of unresolved cases has accrued due to limited funding in the lands program areas.

**Synopsis** - It is apparent more work needs to be done, and few records are available to verify the extent of the problem.

**Action** - Develop a list of suspected and known occupancy trespass situations. Annually update the list and resolve cases.

**Responsibility** - Branch Chief, Lands

## Landline Location

The purpose of this monitoring is to verify that +/-10 percent of the planning period target is being accomplished.

**Methods** - Survey; Management Attainment Report

**Results** - Approximately 135 miles of landline location has been accomplished through FY 2000.

**Discussion** - The financing for this activity has not been at the full Forest Plan level. We have completed about 84% of the 10-year projection within a 15 year period

**Synopsis** - Total miles of landline location is not within +/-10 percent of amount identified in the Forest Plan due to funding levels below those anticipated in the Forest Plan. Planned accomplishment levels need to be adjusted to reflect present funding levels.

**Action** - Reduce planned accomplishment to 6 miles per year with emphasis on areas with known/suspected occupancy trespass

**Responsibility** - Branch Chief, Lands

## **Special Use Permits Including: Applications, Amendments, Transfers, And Administration.**

The purpose of this monitoring is to verify the activity is within 25% of Regional Acceptable Work Standard and Forest Direction.

**Methods** - Land Use Reports

**Results** - It is estimated that inspections of Special Use Permits do not meet the above standard, and that the uses meet requirements specified in the permit.

**Discussion** - Special use amendments and transfers are typically handled currently; new applications are backlogged due to funding limitations. Voluntary cost reimbursement has been implemented to provide resources necessary to process requests on a limited basis. The Districts has not been able to respond immediately to many requests annually.

**Synopsis** - Forest priority of funding is directed toward permit administration first then to processing new occupancy requests. This has resulted in the present backlog of permit applications. The Agency proposed mandatory cost reimbursement policy will provide some relief when implemented.

**Action** – Develop a list of backlogged applications; annually update the list and request funding accordingly.

**Responsibility** - Branch Chief, Lands

## **Effect Of Management Practices On Adjacent Or Intermingled Non-National Forest On Forest Plan Goals And Objectives**

The purpose of this monitoring is to identify significant problems in Forest Plan implementation as a result of non-Forest land management activity.

**Methods** - Annual Interagency meetings, meetings with State and County governments, grazing associations. Monitoring activities occurring on Forest.

**Results** - No major problems have been identified through contacts as listed above.

**Discussion** - It appears little documentation is being done to record problems that come up. A record should be kept to identify problems until they are resolved.

**Synopsis** - Increased coordination and cooperation is needed to avoid effects.

**Action** - Annually request line officers to report any known situations. Continue to monitor.

**Responsibility** - Branch Chief, Lands

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## FACILITIES

### Road and Bridge Construction and Reconstruction.

The purpose of this monitoring is to verify that road construction and reconstruction is completed in accordance to approved project plans and the plans reflect the resource and road management objectives. Also, to verify that construction, reconstruction and surfacing are progressing in accordance with the 10-year activity schedule.

**Methods** - Projects will be reviewed by the Forest Engineer, Contracting Officer, and Line Officer responsible for approval of the project plans. The road accomplishments will be reviewed annually and required changes reflected in out-year budgets.

**Results** - Road Construction:

Year	Budget			Const./Reconst./Surfacing	
	Plan	Actual	Percent	Plan	Actual
87	430	350	81%	27.7	9.2
88	477	315	66%	30.8	5.1
89	488	53	11%	20.3	3.7
90	512	378	74%	8.2	8.2
91	544	346	64%	8.7	4.9
92	566	344	61%	10.3	6.9
93	593	343	58%	10.4	2.7
94	619	226	37%	9.9	6.6
95	644	238	37%	10.3	6.83
96	670	182	27%	10	8.25
97	697	469	67%	10	31.33
98	725	196	27%	10	11.6
99	754	212	28%	10	4.9
00	784	242	31%	10	13.5
01	815	362	44%	10	8.0

As of FY2001 reporting, there are 185 miles of Operational Maintenance Level 3 roads, and 560 miles of Objective Maintenance Level 3 roads; indicating that 375 miles do not meet their road management objective. Construction and reconstruction activity accomplished 132 miles of improvement, or 24% for the period. Mineral activities have allowed an additional 71 miles of road to be upgraded for 36% overall.

While the Forest Plan outlined 153.5 miles of road to be improved, and improvements to date total approximately 132 miles, the improved segments do not necessarily match the plan. Improvements that are project driven may or may not match planned improvements as outlined in the Forest Plan. Additionally, gravel placed in previous years has a design life, and some segments of gravel have worn out, and funds are expended in surface replacement on such roads.

The low number of projects per year has allowed on-site inspection of all projects against project plans.

**Discussion** - A backlog of 375 miles of road require improvement at a cost of approximately \$14,593,040 to meet the transportation facilities Forest Plan objectives. Roads are being planned and constructed to resource and road management objectives. The continuous wearing of existing road surfacing, and mandates like The Clean Water Act add to the amount of road segments needing improvement.

**Synopsis** - The Forest Plan objective of providing improved access to developed and point recreation sites is not being fully met. The Forest Plan objective of reducing operating, maintenance and resource costs is not being fully met.

**Action** - Identify the benefits of improved access to the Forest Management Team and Regional Staffs. Allocate additional funds to improving access in balance with other resource program needs.

**Responsibility** - Engineering Staff and District Rangers

## Road Maintenance

The purpose of this monitoring is to verify predicted conditions of the transportation facilities. Monitoring will be a review of road logs, road condition surveys, maintenance accomplishments reports, surface replacement reports, sign replacement reports.

**Methods** - The transportation engineer and construction and maintenance foreperson will review the logs, survey and accomplishment reports annually.

**Results** - Recurring Road Maintenance:

Previous reporting:

Year	Budget (M \$)			Level 1-2 Maintenance (miles)			Level 3-5 Maintenance (miles)		
	Plan	Actual	Percent	Plan	Actual	Percent	Plan	Actual	Percent
88	500	225	45%	1000	180	18%	274	334	122%
89	522	233	45%	1005	41	5%	274	231	85%
90	544	340	62%	1959	1392	71%	299	134	45%
91	566	431	76%	2687	1240	46%	331	164	50%

2001 Reporting:

Year	Budget (M \$)			Level 2 Maintenance (miles)*			Level 3 Maintenance (miles)*		
	Plan	Actual	Percent	Plan	Actual	Percent	Plan	Actual	Percent
92	587	354	60%	338	No Data		217	No Data	
93	609	333	55%	411	1114	271%	227	240	106%
94	631	484	77%	517	1085	210%	227	208	92%
95	653	551	84%	623	951	153%	227	193	85%
96	697	647	93%	**	670	**	**	193	**
97	744	557	75%	**	1075	**	**	193	**
98	794	475	60%	**	939	**	**	193	**
99	848	408	48%	**	945	**	**	193	**
00	905	583	64%	324	524	162%	454	193	43%
01	966	632	65%	324	287	89%	454	238	52%

\*All work was completed on maintenance level 2 and 3 roads.

\*\* For 1996-1999, no projected numbers are provided by the Plan.

\$682,070 is needed to bring maintenance standards on level 2 roads up to forest plan levels.  
\$5,246,693 is needed to bring maintenance standards on level 3 roads up to forest plan levels.

**Discussion** – In 1989, in preparation for the Travel Plan revision, the number of road miles in maintenance levels 1-2, and levels 3-5 increased to include user-developed roads. These additions were added to the inventory for tracking purposes, some became legitimate access for Forest needs, others were listed for planned decommissioning because the access was not needed for management of Forest resources.

67% of Forest roads are at a maintenance level below the objective level for safety, road investment protection, and/or adjacent resource protection. The current level of funding has not allowed for custodial maintenance or surface replacement and sign maintenance to keep up with annual needs.

**Synopsis** - The number of transportation facilities not providing acceptable traffic service will continue to increase. The number of roads open to use without restriction will continue to decrease. Potential for unsafe conditions and roadway and resource damage will increase.

**Action** - Identify road maintenance needs through condition surveys. Prioritize high-use maintenance level 3 roads first, then high-use maintenance level 2 roads to receive funding in the road maintenance program. Issue road restrictions to minimize roadway or resource damage. Continue monitoring and reporting of deferred maintenance.

**Responsibility** - Engineering Staff and District Rangers

## Road Closures

The purpose of this monitoring is to insure orders are current and restrictions are necessary for safety, protection of the roadway, or protection of the adjacent resources.

**Methods** - Review all closure orders every 3 years to insure they are current.

**Results** – Between 1990 and 2001, thirteen new road closure orders were issued, twenty road closures were rescinded (29 since 1988). Continued review of road closure orders is under way in conjunction with the travel management plan.

**Discussion** - With the issuance of closure orders by district to cover the travel management plan and the review of the existing permanent and recurring orders we will be in compliance with the implementation of the Forest Plan.

**Synopsis** - The Forest Plan objective of keeping road closure orders current is being achieved.

**Action** - Continue monitoring closures and update as needed.

**Responsibility** - Forest Law Enforcement Staff.

## Road Obliteration

Obliteration of unneeded and unplanned roads can reduce resource damage, improve land productivity and simplify management.

**Methods** - Review of the Transportation Activity Schedule and annual accomplishment.

**Results** - Road Obliteration, System Roads

Year	Completed Total		
1986	0.95 miles		
1987	2.25 miles		
1988	4.70 miles		
1989	9.60 miles		
1990	14.35 miles		
1991	127.90 miles		
1992	No data		
1993	0		
	Unclassified	Classified	Total
1994	26 miles	6 miles	32 miles
1995	2.6 miles	0.3 miles	2.9 miles
1996	3 miles	1 mile	4 miles
1997	0 miles	2 miles	2 miles
1998	5 miles	4 miles	9 miles
1999	0 miles	16.8 miles	16.8 miles
2000	20.7 miles	5.1 miles	25.8 miles
2001	2.4 miles	6.5 miles	8.9 miles

**Discussion** - The Forest Plan identified 1264 miles of system roads (inventoried) and 1500+ miles of non-system (un-inventories) roads. The plan identified 35 miles of system road for obliteration and 35 miles of non-system road for obliteration. Another 20 miles of system roads were identified for further evaluation in order to determine if obliteration was to occur.

With the completion of the travel management plan the non-inventoried roads were evaluated for addition to the system or obliteration. Those roads recommended for retention have been inventoried and road management objectives assigned. Those roads recommended for obliteration have been inventoried and a record will be kept until the roads have been reclaimed with vegetation established.

Between 1998 and 2001, road condition surveys were conducted on part of the Forest, and district personnel interviewed to establish use on those roads. Recommendations were made for obliteration on some segments of both Forest system roads and user developed roads. Recommendations were made for adding some user developed roads to the Forest System, pending Roads Analysis and subsequent decision.



**Synopsis** - Additional funding in 1991 allowed significantly more road obliteration to occur than was identified in the Forest Plan. This allowed more rapid progress towards achieving the desired future condition in road management.

**Action** - Continue monitoring.

**Responsibility** - Forest Engineer

## Buildings

**Introduction** – The Forest Service’s objective is to ensure effective management of facilities after occupancy commences, to provide for the most cost-effective, safe, and functionally efficient use of space within available resources, and to ensure that buildings, related facilities, equipment, and subsystems function as originally designed or subsequently modified.

It is the responsibility of the facility manager to operate and maintain the facility including periodic inspections and evaluations until the need for the facility ceases. The facility manager should:

1. Understand the objectives of the facility and services the facility is to provide
2. Observe facility user practices and needs, and facility performance, condition, operating requirements, and costs. Recognize changes from the design assumptions for intended use of the facility.
3. Identify maintenance and repair requirements, health and safety deficiencies, facility security needs, and operational and user-service improvement opportunities.
4. Implement improvements to provide access for persons with disabilities, gender-related facilities, and efficient space and energy usage in facilities operations.
5. Organize and use operations, maintenance, and repair practices and procedures to document and report findings, to plan and implement corrective actions, and to efficiently manage these activities and their costs.
6. Recommend operation, maintenance, and repair budget needs.
7. Implement corrective actions including preventive maintenance, repair, and renovation of the facilities and their components or their replacement or retirement if the former actions are not cost-effective.
8. Sustain historic and other specific values of the facility as required by agency agreements and policy.

Responsibilities of the facility manager are to:

1. Keep the facilities safe, sanitary, neat, attractive, and in good working order both inside and outside
2. Insofar as practicable preserve the original condition of Forest Service-owned buildings and related facilities.
3. Minimize interruption of service and support benefits provided by the building and providing necessary backup systems as practicable.
4. Prevent major unplanned repairs, reconditioning, or replacement costs by developing and implementing a preventative maintenance program.
5. Develop an operations and maintenance plan
6. Determine long-range management objectives and procedures for each facility

7. Do not abandon Government-owned buildings on Government-owned land. Any building not needed must be removed or destroyed.

**Methods** - Building inspections are conducted annually by the District Facilities Manager, documented on the Forest Form 7300-1, Maintenance Condition Survey Checklist, and submitted to the Supervisor's Office by September 1. The Facilities Engineer should participate in at least a third of these annual inspections.

Items identified on the checklists are entered into the Infrastructure (INFRA) database and classified according to Safety, Sanitation, Recurrent Maintenance, Code, Preventive Maintenance, Energy Saving, Betterment issues or needs. Information on the database is updated annually.

Reports from the database are used to identify items needing work, as well as, a record of what has been done on the buildings. These reports are used to plan and budget the following fiscal year's maintenance program.

**Results** - Annual inspections and use of the INFRA database have been instrumental in planning the next year's maintenance program.

**Discussion** - Based on the funding available, the Forest has been active in maintaining its facilities. Maintenance/repairs have concentrated on addressing health, safety concerns as well as protection of the facilities. However, problems have occurred in which funding directed for specific maintenance/repairs items(s) are redirected towards other items, not necessarily considered a health and safety issue.

The districts have performed annual inspections, and all items identified during these inspection have been entered into the database and scheduled for repair.

**Synopsis** - The Forest has been active in correcting health and safety items identified during annual building inspections.

**Action** - Continue annual inspections of buildings, with emphasis on Health and Safety items, and detection of structural deficiencies.

**Responsibility** - District Rangers and Forest Engineer.

## Dam Administration

**Introduction** - Minimum acceptable criteria for design, operation, maintenance, and monitoring of dams are based on the administrative size and hazard classifications. All factors that might influence the potential hazard classification must be evaluated during the design and design review of the dam. The hazard rating should be consistent with the potential for loss of human life and damage to property that could be caused by a failure of the dam.

For administrative purposes, dams are classified as follows:

Class A Projects – Dams that are 100 feet or higher or impound 50,000 acre-feet or more water.

Class B Projects – Dams that are 40 feet but less than 100 feet high, or impound 1,000 but less than 50,000 acre-feet of water.

Class C Projects – Dams that are 25 feet but less than 40 feet high, or impound 50 but less than 1,000 acre-feet of water.

Class D Projects – Dams that are less than 25 feet high and impound less than 50 acre-feet of water.

Dams are classified according to hazard potential based on the loss of human life or property damage that could occur if the structure failed. Dams are classified as follows:

Low Hazard – Dams built in undeveloped areas where failure would result in minor environmental or economic loss, damage would be limited to undeveloped or agricultural lands, and significant improvements are not planned in the foreseeable future. Loss of human life would be unlikely.

Moderate Hazard - Dams built in areas where failure would result in serious environmental damage or appreciable economic loss with damage to improvement, such as commercial and industrial structures, public utilities and transportation systems. No urban development and no more than a small number of habitable structures are involved. Loss of human life would be unlikely.

High Hazard - Dams built in areas where failure would likely result in loss of human life or excessive economic loss. Generally this would involve urban or community development with more than a small number of habitable structures.

**Methods** - Dams are visually inspected by qualified individuals at a frequency based on its size, hazard rating, and condition. Presently, the frequencies are 1, 2 or 5 years. The Forest is responsible for scheduling inspections of dams on the 5 year interval. The state schedules and inspects dams on the 1 and 2 year interval. On all inspections, administered or permitted, Forest Service personnel should be present. The inspections are to be documented and sent annually to the Regional Office. Inspections are done by a qualified engineer.

The purpose of this monitoring is to inspect dams administered or permitted by the Forest. These inspections concentrate on detecting/monitoring any unsafe conditions, which if not monitored may result in extensive damage or loss of life.

Results of the inspections should be used to:

1. Efficiently and effectively achieve resource management objectives.
2. Protect the investment in facilities.
3. Present the FS in a defensible legal position.

Common recurring problems noted during inspections are,

1. Burrowing rodents on the embankment.
2. Log debris on the downstream face of the dam, which can be homes to rodents and insects.
3. Log debris collecting at the outlet spillways.
4. Long rooted vegetation growing on the dam embankment.

**Results** - There are 50 dams identified and inventoried on the Forest classified as follows: 7 High Hazard, 23 Moderate, and 20 Low. The Forest owns 17 dams. (See attached spreadsheet)

**Discussion** – Regular dam inspections provide a systematic and documented means for determining the conditions of the dams by addressing safety issues. Annual maintenance programs should be initiated to deal with and monitor recurring problems (rodent, vegetation, and debris control)

**Synopsis** - Dam inspections are performed on a frequency based on their hazard classification and administrative class. These inspections are performed on dams owned and permitted by the Forest. Safety considerations are the main concerns during inspections of the dams.

**Action** – Dams should continue to be inspected based on their required frequencies. Due to the safety issues involved with dams, the Forest should continue to take a more active role in performing these inspections and on schedule.

**Responsibility** – Qualified District and Engineering Personnel

DAM NAME	OWNER	INFRA #	YEAR BUILT	HAZARD CLASS	INSPECT INTERVAL (YEAR)	AREA SURFACE ACRE	ADMIN CLASS
1 GRASSEY LAKE	FS	0016	1975	M	2	11	C
2 LOWER GOOSEBERRY	FS	0018	1937	H	1	57	C
3 LAKE OOWAH	FS	0020	1965	M	2	5.4	C
4 YEARNS	FS	0106	1924	L	5	9.9	C
5 ACADEMY MILL	FS	0111	1950	M	2	5	C
6 PETES HOLE	FS	0113	1975	L	5	12	C
7 SOUP BOWL	FS	0114	1975	L	5	2.2	D
8 NEW CANYON	FS	0117	1913	L	5	4.6(111)	D
9 BLUE LAKE	FS	0118	1937	L	5	4	D
10 BENCHES POND	FS	0119	1971	M	2	3	D
11 BOULGER	FS	0120		M	2	6	D
12 MEDICINE LAKE	FS	0122		L	5	2	D
13 POTTERS POND 1	FS	0124	1975	M	2	8	D
14 POTTERS POND 2	FS	0125	1975	M	2	8	C
15 LAKE HILL	FS	0133		L	5	3.7	C
16 WARNER LAKE	FS	0134		L	5	1.7	D
17 UPPER SIX MILE	FS	0135		L	5	3.4	
18 BUCKEYE	PERMITEE	0021	1951	H	1	65	B
19 CLEVELAND	PERMITEE	0015	1977	H	1	105	B
20 COOLEY CREEK 1	PERMITEE	0103	1936	L	5		D-BR
21 COOLEY CREEK 2	PERMITEE	0104	1936	L	5		D-BR
22 DEEP LAKE	PERMITEE	0003	1931	M	5	4.4	C-BR
23 DRY HOLE	PERMITEE	0110	1930	L	5	BREACHED	D-BR
24 DRY WASH	PERMITEE	0023	1962	M	2		C

25 DUCK FORK	PERMITEE	0009	1978	M	2	46.9	C
26 EMERY	PERMITEE	0004	1981	M	2	12.8	D
27 FERRON RES	PERMITEE	0010	1916	M	2	57.1	B
28 HENNINGSON RES	PERMITEE	0005	1947	M	2		C
29 HUNTINGTON	PERMITEE	0012		H	1	185	A
30 JULIUS FLAT	PERMITEE	0002	1951	M	2	32.4	C
31 LOGGER LAKE	PERMITEE	0101	1934	L	5	3.5	C
32 MARY LAKE	PERMITEE	0131		L	5	5.5	C
33 MILLERS FLAT	PERMITEE	0013		M	2	160	
34 MONTICELLO LAKE	PERMITEE	0022	1954	M	2	3.9	C
35 NEW FIELD	PERMITEE	0105	1930	L	5	BREACHED	D-BR
36 PATTON	PERMITEE	0107	1930	L	5	3.5	C-BR
37 RACETRACK	PERMITEE	1394		L	5	2	D-BR
38 ROLFSON	PERMITEE	0014	1929	H	1	50	C
39 SHINGLEMILL	PERMITEE	0102	1931	L	5	BREACHED	D-BR
40 SMITHS	PERMITEE	0019	1907	M	2	21	C
41 SPINNER	PERMITEE	0006	1978	M	2		C
42 SPRING LAKES (FOY)	PERMITEE	0123	1966	L	5	2	D
43 TOWN RES	PERMITEE	0008	1931	M	2	6.4	C
44 TWIN LAKE RES	PERMITEE	0001	1930	M	2	9.1	C-BR
45 WILLOW LAKE	PERMITEE	0115	1978	M	2	24	C
46 WRIGLEY SPRINGS	PERMITEE	0011	1956	M	2	8.2	C
47 CAMP JACKSON				M	2		
48 ELECTRIC LAKE				H	1		
49 FAIRVIEW				H	1		
50 LDS CAMP				M	2		

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