

Emphasize use of corridors when granting appropriate rights-of-way.

3400 FOREST PEST MANAGEMENT

Provide pest management only as necessary to provide for public health and safety and protect adjacent property.

5100 FIRE MANAGEMENT

- * Wildfire detection and suppression will be commensurate with fire intensity, potential net resource value change, and potential threat to health, safety, and adjacent property.

5300 LAW ENFORCEMENT

Law enforcement will be limited to that necessary to protect human health and safety and to control illegal motorized use causing soil and water damage.

5400 LAND OWNERSHIP

Management of these lands does not require any land acquisition to change National Forest ownership patterns.

7300 BUILDINGS AND STRUCTURES

- * Provide buildings and structures only as needed to protect public health and safety.

7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES

WATER SUPPLY

- * Drinking water sources will not be developed.

7700 TRANSPORTATION SYSTEMS

GENERAL

It is anticipated that existing roads will provide nearly all of the access necessary for minimum level protection and management activities.

Any additional roads, if needed for activities like salvage logging, will probably be temporary roads.

MANAGEMENT AREA 9.2

PURPOSE

This area will emphasize:

Protection and maintenance of environmental values.

Protection of the health and safety of the public.

These are areas that have potentially significant natural characteristics that have been nominated by recognized authorities (professors, informed amateurs, resource specialists). Management is directed at protecting these lands until the areas can be studied for designation as Research Natural Areas (M.A. 8.1), Special Areas (M.A. 8.2), or other management areas.

The primary benefits are scientific values derived from protected examples of unique ecosystems. Other benefits may include hiking, hunting, and nature study. Mineral exploration and extraction may occur with special restrictions.

The areas to be considered are:

Candidate Research Natural Areas

Buffalo Beats
Kaiser Hollow

Candidate Special Areas 1/

Cambria Creek Wetland
Caulley Creek
Deadhorse Run
Dismal Creek
Eels Run
Felter Ridge
Fly Gorge
Glem Ebon Site
Lick Branch
Little Storms Creek
Minnow Hollow
Paines Crossing
Rockcamp Run West
Rocky Fork Gorge
Sardis Wetland
Thompson Cemetery Woods
Waterfall Cove
Witten Run
Youngs Branch

1/ Upon review by Research Natural Areas Review Committee, Burr Oak and Utah Ridge were determined not to meet standards for special area designation.

PRESCRIPTION FOR MANAGEMENT AREA 9.2

1900 LAND AND RESOURCE MANAGEMENT PLANNING

No composition objectives can be set. Areas will undergo natural succession.

- * Permit timber salvage only for fire hazard reduction and prevention of significant resource loss.
- * Make no investments in vegetation management, unless needed to protect adjoining lands from pests or fire or to protect the resources and existing investments.

2100 ENVIRONMENTAL MANAGEMENT

PESTICIDE USE

Pesticides for vegetation control will not be used.

ENERGY

Wood will not be available for energy.

2200 RANGE MANAGEMENT

Grazing will not be permitted.

2300 RECREATION MANAGEMENT

RECREATION OPPORTUNITIES

Recreation Opportunity Spectrum (ROS) classes objective is Roded Natural (RN). Recreation activities that may occur are hiking, horse riding, hunting, nature study, and gathering forest products.

TRAILS

Existing trails will be maintained at the level necessary to protect the public and resource values.

VEHICLE USE

Vehicle use is only allowed on roads open to public travel.

VISUAL QUALITY

A Visual Quality Objective of preservation or retention will be met in designated study areas. No investments will be made to mitigate the visual impacts of natural-caused changes.

2400 TIMBER MANAGEMENT

Silvicultural systems will not be used. No vegetative management will occur except for salvage.

Fuelwood will not be available.

2500 WATER AND SOIL RESOURCE MANAGEMENT

- * Control measures to mitigate erosion will be commensurate with the soil characteristics, expected use, and management objectives of the area.

2600 WILDLIFE HABITAT MANAGEMENT

Fish or wildlife management may occur only to protect endangered, threatened and sensitive species. See Forest-wide Standards and Guidelines

2700 SPECIAL USES MANAGEMENT

Special uses will be decided on a case-by-case basis.

2800 MINERALS AND GEOLOGY

MINERAL EXPLORATION AND DEVELOPMENT

On land with USA-owned minerals, no surface disturbance will be permitted by the Forest Service.

Use of common variety minerals will not be allowed.

3400 FOREST PEST MANAGEMENT

INTEGRATED PEST MANAGEMENT

Normally, endemic forest pests will not be controlled, unless necessary to provide for public health and safety and protect adjacent property. However, integrated pest management techniques may be used if necessary to protect area values from catastrophic outbreaks, particularly exotic pests (gypsy moth).

5100 FIRE MANAGEMENT

- * Wildfire detection and suppression will be commensurate with the resource value to be protected. Detection and suppression will be planned based on an analysis of probable fire locations, expected fire intensities, potential net resource value, change and potential threat to health, safety, and adjacent properties.

There will be no prescribed burning in these areas.

5300 LAW ENFORCEMENT

Provide law enforcement at a level needed to protect the incidental forest user and recognized area values.

5400 LAND OWNERSHIP

Provide a land base large enough to protect the identified environmental values.

No National Forest System lands in this management area will be exchanged or disposed of.

7100 ENGINEERING OPERATIONS

LANDLINE LOCATION

Landlines may need to be identified in trespass situations. Existing landlines will be maintained to standard.

7300 BUILDINGS AND STRUCTURES

No buildings or structures will be constructed.

7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES

WATER SUPPLY

Drinking water sources will not be developed.

7700 TRANSPORTATION SYSTEM

GENERAL

Until the significance of the potential special or unique features can be evaluated and the land placed in Management Area 8.1, 8.2, or some other management area, the Forest Service will construct no additional access to a 9.2 Management Area.

Existing roads under Forest Service jurisdiction will be closed to all traffic within 9.2 Management Areas if either the motorized vehicles or the walk-in traffic they carry pose a significant threat to the potential special or unique features in the area. The Forest Service will provide for existing rights, such as to oil wells and private property.

If new roads need to be constructed by others within 9.2 management areas to access outstanding minerals or other interests, the Forest Service will require or urge, depending upon the level of control the Forest has, that "non-forest" users construct, maintain, and manage the roads in a manner that will not adversely affect the special or unique features for which the 9.2 management area was established.

TABLE 4-14

MANAGEMENT AREA 2.1

National Forest Acres 5,254
 Forest Land Not Suited for Timber Production (NF Lands) 263
 Suitable Acres for Timber Production (NF Lands) 4,806

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Even Aged System		
Hardwoods Clearcut & Shelterwood	M Acres	.025
	MMBf	.274
Conifers Clearcut & Shelterwood	M Acres	-
	MMBf	-
Uneven Aged System		
Hardwoods Selection Harvest	M Acres	.116
	MMBf	.476
Conifer Selection Harvest	M Acres	.007
	MMBf	.1
	TOTAL	
	M Acres	.148
	MMBf	.850
Commercial Thinning		
Total	M Acres	-
	MMBf	-
Site Preparation		
Artificial Reforestation	M Acres	.078
Artificial Reforestation	M Acres	-
Timber Stand Improvement		
Release and Weeding	M Acres	.025
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	1.4
Permanent closed to traffic	Miles	3.6
Temporary ^{1/}	Miles	1.5
System Roads Construction		
Permanent open to traffic	Miles	.4
Permanent closed to traffic	Miles	1.2
Temporary ^{1/}	Miles	.5
System Roads Maintenance		
Permanent open to traffic	Miles	1.8
Permanent closed to traffic	Miles	4.8

^{1/} Estimated temporary roads in use at the same time

TABLE 4-14 (Con't.)

MANAGEMENT AREA 2.1

National Forest Acres 5,254
 Forest Land Not Suited for Timber Production (NF Lands) 263
 Suitable Acres for Timber Production (NF Lands) 4,806

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	4
Maintenance	Sites	6
Trails Construction		
Hiking	Miles	35
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	35
Horse	Miles	-
Cultural Resources		
Survey	M-Acres	1.050
Evaluation	Sites	2
Nomination	Sites	1
Protection	Sites	1
Maintenance	Sites	1
Interpretation	Sites	1
Wildlife Openings		
Construction	M Acres	.032
Maintenance	M Acres	.103

TABLE 4-15

MANAGEMENT AREA 2.2

National Forest Acres 9,270
 Forest Land Not Suited for Timber Production (NF Lands) 526
 Suitable Acres for Timber Production (NF Lands) 8,417

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Uneven-aged System		
Hardwoods Selection Harvest	M Acres	.638
	MMBf	3.01
Conifer Selection Harvest	M Acres	.171
	MMBf	.950
TOTAL	M Acres	.709
	MMBf	3.96
Commercial Thinning		
Total	M Acres	-
	MMBf	-
Site Preparation	M Acres	.326
Artificial Reforestation	M Acres	-
Timber Stand Improvement		
Release and Weeding	M Acres	-
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	2.5
Permanent closed to traffic	Miles	6.4
Temporary <u>1/</u>	Miles	2.7
System Roads Construction		
Permanent open to traffic	Miles	0.8
Permanent closed to traffic	Miles	2.1
Temporary <u>1/</u>	Miles	.9
System Roads Maintenance		
Permanent open to traffic	Miles	4.4
Permanent closed to traffic	Miles	8.5

1/ Estimated temporary roads in use at the same time

TABLE 4-15 (Con't.)

MANAGEMENT AREA 2.2

National Forest Acres 9,270
 Forest Land Not Suited for Timber Production (NF Lands) 526
 Suitable Acres for Timber Production (NF Lands) 8,417

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	1
Maintenance	Sites	4
Trails Construction		
Hiking	Miles	5
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	10.75
Horse	Miles	-
Cultural Resources		
Survey	M-Acres	19.25
Evaluation	Sites	4
Nomination	Sites	1
Protection	Sites	1
Maintenance	Sites	-
Interpretation	Sites	-
Wildlife Openings		
Construction	M Acres	.056
Maintenance	M Acres	.182

TABLE 4-16

MANAGEMENT AREA 2.3

National Forest Acres 15,876
 Forest Land Not Suited for Timber Production (NF Lands) 2,074
 Suitable Acres for Timber Production (NF Lands) 13,242

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Uneven-aged System		
Hardwoods Selection Harvest	M Acres	1.892
	MMBf	8.99
Conifer Selection Harvest	M Acres	.036
	MMBf	.550
TOTAL	M Acres	1.928
	MMBf	9.54
Commercial Thinning		
Total	M Acres	-
	MMBf	-
Site Preparation	M Acres	.793
Artificial Reforestation	M Acres	-
Timber Stand Improvement		
Release and Weeding	M Acres	-
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	6.4
Permanent closed to traffic	Miles	8.9
Temporary ^{1/}	Miles	4.7
System Roads Construction		
Permanent open to traffic	Miles	2.1
Permanent closed to traffic	Miles	3.0
Temporary ^{1/}	Miles	1.6
System Roads Maintenance		
Permanent open to traffic	Miles	18.8
Permanent closed to traffic	Miles	6.3

^{1/} Estimated temporary roads in use at the same time

TABLE 4-16 (Con't.)

MANAGEMENT AREA 2.3

National Forest Acres 15,876
 Forest Land Not Suited for Timber Production (NF Lands) 2,074
 Suitable Acres for Timber Production (NF Lands) 13,242

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	1
Maintenance	Sites	1
Trails Construction		
Hiking	Miles	-
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	-
Horse	Miles	-
Off-Road Vehicles		
Possible ORV Trail Const.	Miles	68
Possible ORV Trail Maint.	Miles	-
Cultural Resources		
Survey	M-Acres	3.150
Evaluation	Sites	6
Nomination	Sites	2
Protection	Sites	2
Maintenance	Sites	1
Interpretation	Sites	1
Wildlife Openings		
Construction	M Acres	.097
Maintenance	M Acres	.311

TABLE 4-17

MANAGEMENT AREA 3.1

National Forest Acres 31,831
 Forest Land Not Suited for Timber Production (NF Lands) 2,622
 Suitable Acres for Timber Production (NF Lands) 28,086

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Even-aged System		
Hardwoods Clearcut and Shelterwood	M Acres	1.847
Conifers Clearcut and Shelterwood	MMBf	20.03
TOTAL	M Acres	.120
	MMBf	1.69
	M Acres	1.967
	MMBf	21.72
Commercial Thinning		
Total	M Acres	.080
	MMBf	.660
Site Preparation	M Acres	1.967
Artificial Reforestation	M Acres	.068
Timber Stand Improvement		
Release and Weeding	M Acres	.180
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	4.4
Permanent closed to traffic	Miles	6.3
Temporary ^{1/}	Miles	1.9
System Roads Construction		
Permanent open to traffic	Miles	1.5
Permanent closed to traffic	Miles	2.1
Temporary ^{1/}	Miles	.6
System Roads Maintenance		
Permanent open to traffic	Miles	11.3
Permanent closed to traffic	Miles	5.7
Trails Construction		
Hiking	Miles	-
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	-
Horse	Miles	-
Wildlife Openings		
Construction	M Acres	.068
Maintenance	M Acres	.633

^{1/} Estimated temporary roads in use at the same time

TABLE 4-17 (Con't.)

MANAGEMENT AREA 3.1

National Forest Acres 31,831
 Forest Land Not Suited for Timber Production (NF Lands) 2,622
 Suitable Acres for Timber Production (NF Lands) 28,086

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	-
Maintenance	Sites	-
Trails Construction		
Hiking	Miles	-
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	-
Horse	Miles	-
Cultural Resources		
Survey	M-Acres	6.650
Evaluation	Sites	13
Nomination	Sites	4
Protection	Sites	4
Maintenance	Sites	1
Interpretation	Sites	1
Wildlife Openings		
Construction	M Acres	.066
Maintenance	M Acres	.624

TABLE 4-18

MANAGEMENT AREA 3.2

National Forest Acres 20,206
 Forest Land Not Suited for Timber Production (NF Lands) 6,131
 Suitable Acres for Timber Production (NF Lands) 13,362

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Even-aged System		
Hardwoods Clearcut and Shelterwood	M Acres	.711
	MMBf	8.140
Conifers Clearcut and Shelterwood	M Acres	-
	MMBf	-
TOTAL	M Acres	.711
	MMBf	8.14
Commercial Thinning		
Total	M Acres	.130
	MMBf	.700
Site Preparation		
Artificial Reforestation	M Acres	.711
Timber Stand Improvement		
Release and Weeding	M Acres	.110
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	2.2
Permanent closed to traffic	Miles	3.2
Temporary <u>1/</u>	Miles	.9
System Roads Construction		
Permanent open to roads	Miles	.7
Permanent closed to traffice	Miles	1.1
Temporary <u>1/</u>	Miles	.3
System Roads Maintenance		
Permanent open to traffic	Miles	9.8
Permanent closed to traffic	Miles	5.2

1/ Estimated temporary roads in use at the same time

TABLE 4-18 (Con't.)

MANAGEMENT AREA 3.2

National Forest Acres 20,206
 Forest Land Not Suited for Timber Production (NF Lands) 6,131
 Suitable Acres for Timber Production (NF Lands) 13,362

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	5
Maintenance	Sites	6
Trails Construction		
Hiking	Miles	-
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	-
Horse	Miles	-
Off-Road Vehicles		
Possible ORV Trail Const.	Miles	182
Possible ORV Trail Maint.	Miles	-
Cultural Resources		
Survey	M-Acres	4.200
Evaluation	Sites	8
Nomination	Sites	2
Protection	Sites	2
Maintenance	Sites	-
Interpretation	Sites	-
Wildlife Openings		
Construction	M Acres	.042
Maintenance	M Acres	.396

TABLE 4-19

MANAGEMENT AREA 3.3

National Forest Acres 57,736
 Forest Land Not Suited for Timber Production (NF Lands) 7,145
 Suitable Acres for Timber Production (NF Lands) 48,553

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Even-aged System		
Hardwoods Clearcut and Shelterwood	M Acres	1.699
Conifers Clearcut and Shelterwood	MMBf	18.240
Conifers Clearcut and Shelterwood	M Acres	.120
Conifers Clearcut and Shelterwood	MMBf	1.790
TOTAL	M Acres	1.819
	MMBf	20.03
Commercial Thinning		
Total	M Acres	.366
	MMBf	3.050
Site Preparation	M Acres	1.819
Artificial Reforestation	M Acres	1.394
Timber Stand Improvement		
Release and Weeding	M Acres	.305
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	4.1
Permanent closed to traffic	Miles	11.5
Temporary <u>1/</u>	Miles	3.4
System Roads Construction		
Permanent open to traffic	Miles	1.4
Permanent closed to traffic	Miles	3.8
Temporary <u>1/</u>	Miles	1.1
System Roads Maintenance		
Permanent open to traffic	Miles	15.1
Permanent closed to traffic	Miles	16.5

1/ Estimated temporary roads in use at the same time

TABLE 4-19 (Con't.)

MANAGEMENT AREA 3.3

National Forest Acres 57,736
 Forest Land Not Suited for Timber Production (NF Lands) 7,145
 Suitable Acres for Timber Production (NF Lands) 48,553

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	1
Maintenance	Sites	2
Trails Construction		
Hiking	Miles	15
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	15
Horse	Miles	21
Cultural Resources		
Survey	M-Acres	11.900
Evaluation	Sites	24
Nomination	Sites	6
Protection	Sites	6
Maintenance	Sites	3
Interpretation	Sites	3
Wildlife Openings		
Construction	M Acres	.349
Maintenance	M Acres	1.133

TABLE 4-20

MANAGEMENT AREA 6.1

National Forest Acres 10,382
 Forest Land Not Suited for Timber Production (NF Lands) 375
 Suitable Acres for Timber Production (NF Lands) 9,641

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Regulated Harvest		
Even-aged System		
Hardwoods Clearcut and Shelterwood	M Acres	.483
Conifers Clearcut and Shelterwood	MMBf	5.510
Conifers Clearcut and Shelterwood	M Acres	.070
Conifers Clearcut and Shelterwood	MMBf	1.230
TOTAL	M Acres	.553
	MMBf	6.740
Commercial Thinning		
Total	M Acres	.012
	MMBf	.100
Site Preparation	M Acres	.553
Artificial Reforestation	M Acres	-
Timber Stand Improvement		
Release and Weeding	M Acres	.060
Precommercial Thinning	M Acres	-
Pruning	M Acres	-
System Roads Reconstruction		
Permanent open to traffic	Miles	.4
Permanent closed to traffic	Miles	3.2
Temporary <u>1/</u>	Miles	0.9
System Roads Construction		
Permanent open to traffic	Miles	.1
Permanent closed to traffic	Miles	1.1
Temporary <u>1/</u>	Miles	.3
System Roads Maintenance		
Permanent open to traffic	Miles	4.7
Permanent closed to traffic	Miles	4.5

1/ Estimated temporary roads in use at the same time

TABLE 4-20 (Con't.)

MANAGEMENT AREA 6.1

National Forest Acres 10,382
 Forest Land Not Suited for Timber Production (NF Lands) 375
 Suitable Acres for Timber Production (NF Lands) 9,641

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Recreation Site		
Construction	Sites	-
Maintenance	Sites	1
Trails Construction		
Hiking	Miles	-
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	16.5
Horse	Miles	18
Cultural Resources		
Survey	M-Acres	2.800
Evaluation	Sites	6
Nomination	Sites	1
Protection	Sites	1
Maintenance	Sites	1
Interpretation	Sites	1
Wildlife Openings		
Construction	M Acres	.063
Maintenance	M Acres	.204

TABLE 4-21

MANAGEMENT AREA 6.2

National Forest Acres 17,217 ||
 Forest Land Not Suited for Timber Production (NF Lands) 16,610
 Suitable Acres for Timber Production (NF Lands) 0

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
System Roads Reconstruction		
Permanent open to traffic	Miles	1.1
System Roads Construction		
Permanent open to traffic	Miles	0.4
System Roads Maintenance		
Permanent open to traffic	Miles	1.5
Permanent closed to traffic	Miles	1.4
Recreation Site		
Construction	Sites	-
Maintenance	Sites	1
Trails Construction		
Hiking	Miles	5
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	17.5
Horse	Miles	9
Cultural Resources		
Survey	M Acres	2.275
Evaluation	Sites	5
Nomination	Sites	1
Protection	Sites	1
Maintenance	Sites	1
Interpretation	Sites	1

TABLE 4-22

MANAGEMENT AREA 7.1

National Forest Acres 1,223
 Forest Land Not Suited for Timber Production (NF Lands) 1,080
 Suitable Acres for Timber Production (NF Lands) 0

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
System Roads Maintenance		
Permanent open to traffic	Miles	6.7
Permanent closed to traffic	Miles	-
Recreation Site		
Construction	Sites	-
Maintenance	Sites	8
Trail Construction		
Hiking	Miles	-
Horse	Miles	-
Trails Maintenance		
Hiking	Miles	17.25
Horse	Miles	6.0
Cultural Resouces		
Survey	M Acres	-
Evaluation	Sites	-
Nomination	Sites	1
Protection	Sites	1
Maintenance	Sites	1
Interpretation	Sites	1
Wildlife Openings		
Construction	M Acres	-
Maintenance	M Acres	-

TABLE 4-23

MANAGEMENT AREA 8.1

National Forest Acres 78
 Forest Land Not Suited for Timber Production (NF Lands) 78
 Suitable Acres for Timber Production (NF Lands) 0

Cultural Resources			
Survey	M Acres		-
Evaluation	Sites		-
Nomination	Sites		-
Protection	Sites		-
Maintenance	Sites		-
Interpretation	Sites		-

TABLE 4-24

MANAGEMENT AREA 8.2

National Forest Acres 0
 Forest Land Not Suited for Timber Production (NF Lands) 0
 Suitable Acres for Timber Production (NF Lands) 0

Cultural Resources			
Survey	M Acres		-
Evaluation	Sites		-
Nomination	Sites		-
Protection	Sites		-
Maintenance	Sites		-
Interpretation	Sites		-

TABLE 4-25

MANAGEMENT AREA 9.1

National Forest Acres 2,184
 Forest Land Not Suited for Timber Production (NF Lands) 2,107
 Suitable Acres for Timber Production (NF Lands) 0

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Land Exchange	M Acres	2,184
Cultural Resouces		
Survey	M Acres	-
Evaluation	Sites	-
Nomination	Sites	-
Protection	Sites	-
Maintenance	Sites	-
Interpretation	Sites	-

TABLE 4-26

MANAGEMENT AREA 9.2

National Forest Acres 5,530
 Forest Land Not Suited for Timber Production (NF Lands) 5,335
 Suitable Acres for Timber Production (NF Lands) 0

SCHEDULED MANAGEMENT PRACTICES
 (Totals for the Decade)

Management Practice	Unit of Measure	1986-1995
Study and Evaluate	M Acres	5,530
Cultural Resouces		
Survey	M Acres	.700
Evaluation	Sites	1
Nomination	Sites	1
Protection	Sites	1
Maintenance	Sites	1
Interpretation	Sites	1

TABLE 4-27

TOTAL FOR ALL MANAGEMENT AREAS

Gross Acres 823,147
 National Forest Acres 176,787 Percent ownership 21%
 Forest Land Not Suited for Timber Production (NF Lands) 44,346
 Suitable Acres for Timber Production (NF Lands) 126,107

SCHEDULED MANAGEMENT PRACTICES
(Totals for each Decade)

Management Practice	Unit of Measure	Proposed 1986-1996	Probable 1996-2005
Regulated Harvest			
Uneven-aged System			
Hardwoods Selection Harvest	M Acres	2.646	2.657
	MMBF	12.476	12.480
Conifer Selection Harvest	M Acres	.114	.184
	MMBF	1.60	2.593
Even-aged System			
Hardwoods Clearcut and Shelterwood	M Acres	4.765	7.462
	MMBF	52.194	83.818
Conifer Clearcut and Shelterwood	M Acres	.310	.835
	MMBF	4.71	12.626
TOTAL		M Acres	7.835
		MMBF	70.98
Commercial Thinning			
Total		M Acres	.588
		MMBF	4.510
Site Preparation		M Acres	6.247
Artificial Reforestation		M Acres	2.000
Timber Stand Improvement			
Release and Weeding		M Acres	.680
Precommercial Thinning		M Acres	-
Pruning		M Acres	-
System Roads Reconstruction			
Permanent open to traffic		Miles	22.5
Permanent closed to traffic		Miles	43.2
Temporary ^{1/}		Miles	16.0
System Roads Construction			
Permanent open to traffic		Miles	7.5
Permanent closed to traffic		Miles	14.4
Temporary ^{1/}		Miles	5.3
System Roads Maintenance			
Permanent open to traffic		Miles	74.1
Permanent closed to traffic		Miles	52.9

^{1/} Estimated temporary roads in use at the same time

TABLE 4-27 (Con't.)

TOTAL FOR ALL MANAGEMENT AREAS

Gross Acres 823,147
 National Forest Acres 176,787 Percent ownership 21%
 Forest Land Not Suited for Timber Production (NF Lands) 44,346
 Suitable Acres for Timber Production (NF Lands) 126,107

 SCHEDULED MANAGEMENT PRACTICES
 (Totals for each Decade)

Management Practice	Unit of Measure	Proposed	Probable
		1986-1996	1996-2005
Recreation Site			
Construction	Sites	12	4
Maintenance	Sites	31	35
Trails Construction			
Hiking	Miles	60	12
Horse	Miles	-	23
Trails Maintenance			
Hiking	Miles	128	140
Horse	Miles	54	77
Off-Road Vehicles			
ORV Area	Acres	36.9	36.9
Possible ORV Trail Const.	Miles	250	50
Possible ORV Trail Maint.	Miles	-	250
Cultural Resources			
Survey	M Acres	52.325	52.325
Evaluation	Sites	70	70
Nomination	Sites	20	20
Protection	Sites	20	40
Maintenance	Sites	10	20
Interpretation	Sites	10	20
Wildlife Openings			
Construction	M Acres	.705	.705
Maintenance	M Acres	2.953	3.658
Land Exchange			
	M Acres	2.182	-
Study and Evaluate			
	M Acres	5.530	-

Proposed and Probable Practices
 Management Area Total



CHAPTER 5

Implementation, Monitoring, and Evaluation

CHAPTER 5

IMPLEMENTATION, MONITORING AND EVALUATION

INTRODUCTION

The direction in the chapter includes:

- Implementation
- Monitoring and Evaluation Program
- Amendments and Revisions

Collectively, these sections explain how management direction will be implemented, how Forest Plan implementation will be monitored and evaluated and how the Forest Plan will be kept current as the result of changing conditions or other findings.

IMPLEMENTATION

Implementation is the on-the-ground application of management practices and standards/guidelines to move toward the management prescription desired future condition. This is achieved through an integrated resource management (IRM) approach, assuring interdisciplinary teamwork and public involvement throughout the process. The major steps of the IRM approach are:

- Selecting land areas that best provide opportunities for accomplishing the Forest Plan management direction.
- Analyzing the situation and identifying multi-resource projects that assure an integrated approach to achieving the desired future condition.
- Prioritizing, scheduling and budgeting the multi-resource projects that best meet the Forest Plan management direction.
- Designing the projects to accommodate the integrated needs for all resources and values.
- Completing the multi-resource projects as designed.
- Protecting and managing the resources and providing public health and safety.

A detailed description of the Integrated Resource Management approach is included in the-USDA Forest Service Eastern Region publication, "Working Together For Multiple Use - IRM".

Implementation Schedule

An implementation schedule for all resource projects and activities will be developed and maintained. (See Appendix A for a partial listing). The implementation schedule is a formulation of site specific projects and activities which will carry out the Forest Plan direction. The projects are

coordinated management practices developed in an interdisciplinary manner. The schedule will include all proposed projects including names, locations, and dates of execution. The Forest Supervisor is responsible for maintaining and revising the implementation schedule, as appropriate. At least annually, the public will be notified of changes to the implementation schedule.

Budget Proposals

Annual program budget proposals will be developed to identify and plan the needed expenditures. The final approved budget as appropriated by Congress will determine the annual program of work which will be carried out.

The Forest Supervisor may adjust the implementation schedule to reflect differences between the annual proposed budget and appropriated funds. Such schedule changes are considered nonsignificant amendments to the Plan unless they significantly alter the Forest Plan goals and objectives.

Environmental Analysis

The decision documented in the Record of Decision, and the direction included in this Forest Plan, narrow the scope of future environmental analyses. The Plan direction and the Final Environmental Impact Statement information will be used through "tiering". Tiering means that reference will be made to the Forest Plan, the Final EIS and the planning records. This is done to avoid repeating information.

An environmental analysis will be completed for each project during Step 2 of the IRM approach. The analysis will focus on site specific issues, alternatives, and environmental consequences unique to the projects and activities.

The analysis may be documented in an environmental assessment or an environmental impact statement, depending on the significance of effects which may be caused by the project. Many projects may be categorically excluded from documentation if the environmental effects of their consequences are found to be insignificant.

The public will be involved in the future decisions that implement the Forest Plan direction. People who have in writing indicated interest in management activities will be notified of the decisions.

Compliance with the Forest Plan

After approval of the Plan, and as soon as practical, the Forest Supervisor will ensure that all existing projects, outstanding and future permits, contracts, cooperative agreements, and other instruments for occupancy and use of affected lands, subject to valid existing rights, are consistent with the Plan.

MONITORING AND EVALUATION PROGRAM

Introduction

The purpose of monitoring and evaluation is to determine progress in meeting Forest Plan direction, and to determine the adequacy of the Plan in meeting National Forest resource management objectives. Monitoring and evaluation are separate, sequential activities that provide information to determine if Forest programs are meeting Plan direction. This direction includes management goals, objectives, management prescriptions, and standards and guidelines. It is through this process that the quality of implementation is assessed and any needed changes in Forest Plan direction are determined.

Monitoring

Monitoring is done to observe or record the results of actions. This consists of collecting information from selected sources, on a sample basis. Information is used to determine:

- If Forest Plan goals and objectives are being achieved
- If management prescriptions are applied as directed
- If the results of applying prescriptions address the management problems, issues, concerns, and opportunities
- If significant effects are occurring as predicted, and
- If costs of implementing the Plan are as predicted

The role of management prescriptions is key in monitoring. All the results of natural resource management occur through the prescriptions as they are applied.

There are two considerations that determine monitoring requirements. They are: (1) monitoring needs required by the National Forest Management Act, and (2) additional considerations found to be significant and linked to the resolution of specific public issues, management concerns, resource development opportunities, and the corresponding environmental effects.

Table 5-1 displays the monitoring requirements for the Wayne National Forest.

Monitoring will be done on a sample basis. The frequency, precision, and reliability are based on the relative importance and identified needs. A full spectrum of data-collection techniques will be used including:

- Site specific observations by specialists
- Field assistance trips
- General field observations

- Management Attainment Reporting System,
- Formal management reviews on a scheduled basis, and
- Discussions with other agencies and general public users

The specific monitoring program will be included as part of the Forest Annual Program of Work which includes details on the schedule of monitoring actions, specific location, costs, and responsibilities.

Evaluation

Evaluation determines how well actual results are meeting Forest Plan direction, and how well the Forest Plan is meeting National Forest resource management objectives. Information obtained through monitoring is analyzed with respect to Plan implementation.

Results from the various monitoring techniques provide input for the evaluation task. Figure 5-1 shows the organizational responsibilities in monitoring and evaluating the Forest Plan. It also displays recommendations that may occur, based on findings during the monitoring and evaluation process.

A review and evaluation of monitoring results will be conducted by the Forest Supervisor on an annual basis. The review and evaluation will focus on the monitoring requirements on Table 5-1, using input from the various monitoring techniques as described earlier. Based on this evaluation, the Forest Interdisciplinary Team will make recommendations to the Forest Supervisor on proposed amendments, revisions or changes in management direction to the Forest Plan. The Forest Supervisor's decisions resulting from monitoring, review, and analysis will be documented in an annual Evaluation Report and maintained for future use in amending or revising the Plan.

During revision of the Forest Plan, normally from 10 to 15 years after the Plan is approved, an overall evaluation of the Annual Evaluation Reports will be used as one measure to analyze the management situation and identify a need for change. This analysis will be submitted to the Regional Forester for review prior to revision of the Plan. The same procedure will be used for significant amendments to the Plan that may require the filing of an Environmental Impact Statement.

Management Review System

The management review system (FSM 1410) is an important part of the monitoring and evaluation process. Management reviews are performed periodically by the Forest Supervisor and Regional Forester, focusing on information found during monitoring and evaluation.

Normally every five years, a General Management Review will be conducted by the Regional Forester. This review will evaluate the results of the Forest's implementation, monitoring, and evaluation efforts and will make recommendations on needed improvements.

Table 5-1

WAYNE NATIONAL FOREST
MONITORING AND EVALUATION

NFMA Required	Purpose of Monitoring	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Expected Precision	Expected Reliability
Ref. to Regs. 219.12(k)(1)	: Compare accom- : plishments with : outputs.	: Various	: Various as : shown in : MARS	: Annual	: Moderate	: Moderate
Ref. to Regs. 219.12(k)(2)	: Determining : the effects : of applying : Forest Plan : prescriptions, : practices, and : standards and : guidelines. (See : Regs. 219.29)	: Plan : Standards : and : Guidelines, : Prescriptions : and Practices	: Varied	: Annual	: Moderate	: Moderate
Ref. to Regs. 219.12(k)(3)	: Verification : of unit costs : used in Plan. : Build data : for Plan : revision.	: Unit Costs	: Dollars	: Annual	: High	: High

5-5

Table 5-1 (Cont.)

WAYNE NATIONAL FOREST
MONITORING AND EVALUATION

NFMA Required	Purpose of Monitoring	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Expected Precision	Expected Reliability
Ref. to Reg. 219.12(k)(5)						
Lands are adequately restocked as specified in the Forest Plan.	Assure lands adequately stocked within 5 years.	Regeneration	Acres	Third year after reforestation	Very High	Very High
Lands identified as not suited for timber production are examined at least every 10 years, and if suited, are returned to timber production.	Determine availability of lands unsuitable	Unsuitable lands	Acres	Not longer than every 10 years	Moderate	Moderate
Destructive insects/disease do not increase to potentially damaging levels.	Determine extent and severity of insect and disease occurrence.	Insect and disease	Varies	Varies	Moderate	High
Ref. to Regs. 219.12(k)						
Evaluate how well management prescriptions, practices, standards and guidelines have been applied on the ground.	Determine if Forest Plan prescriptions, practices, standards and guidelines are correctly being applied and adhered to.	Various	Various	Annual	High	High

Table 5-1 (Cont.)

WAYNE NATIONAL FOREST
MONITORING AND EVALUATION

NEMA Required	Purpose of Monitoring	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Expected Precision	Expected Reliability
Ref. to Regs. 219.12(k)(5) (Cont.)	: Determine if : standards and : guidelines are : achieving the : desired results	: Timber : Wildlife : Visual Quality : Recreation	: Acres	: Not longer : than every : 5 years	: Moderate	: Moderate
Ref. to Regs. 219.7(f)	: Identify emer- : ging issues, : concerns, and : opportunities : (including : problems of : agency coordi- : nation)	: NF Policies	: Varies	: Annual	: Moderate	: Moderate
Ref. to Regs. 219.28	: Determine : research : implementation : progress and : opportunities : Revise needs : and priorities : of research.	: Research : needs iden- : tified : in Plan	: Varies	: Varies	: Moderate	: Moderate

Table 5-1 (Cont.)

WAYNE NATIONAL FOREST
MONITORING AND EVALUATION

NFMA Required	Purpose of Monitoring	Activity Effect Practice Output	Unit of Measure ^{1/}	Frequency of Measure ^{2/}	Expected Precision	Expected Reliability
Ref. to Regs. 219.19			Monitoring Type			
Population trends of the management indicator species will be monitored and relationships to habitat changes determined in cooperation with State fish and wildlife agencies.	Determine how much suitable habitat is available	Eastern Bluebird; Bluegill; Redbelly Dace; Blackside Darter; Rainbow Darter; Western Chorus Frog; Wood Frog; Redfin Shiner; Field Sparrow; White-eyed Vireo; Pine Warbler; Pileated Woodpecker; Cerulean Warbler; Common Yellowthroat	(a) (c)	Annual 5 years	High	High
	Determine changes in populations resulting from management	Ruffed Grouse; Wood Duck; Virginia Rail	(a) (b) (c)	Annual 5 Years 5 Years	High	High

^{1/} Amount of habitat available (acres) and population trends.

(a) Population trend expected from changes in availability of suitable habitat. Sampling involves about 10 percent of Forest per year through integrated resources surveys, (including VMIS data base).

(b) Population trends based upon State or USF&WS harvest, hunter or trapper data. Nonstatistical observations may be useful.

(c) Population trends based upon field sampling of animals or their sign by USFS, State, USF&WS, and others.

^{2/} Through standards and guidelines monitoring required by 219.12(k)(2).

Table 5-1 (Cont.)

WAYNE NATIONAL FOREST
MONITORING AND EVALUATION

NFMA Required	Purpose of Monitoring	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Expected Precision	Expected Reliability
Land Adjustment	Progress toward land consoli- dation that meets objectives by exchange, purchase, or donation	Land Ownership	Changes in total acres and percent by counties	5 years	High	High
Vegetative Management	Verify research conclusions which use various silvicultural systems to achieve multiple use objectives	Regeneration	Various	Annual	Moderate	High
	Determine public reaction to vegetative management	Visual Quality Objectives	Individual comments, Acres	Annual	Moderate	Moderate
	Determine if significant soil damage or loss occurs as a result of vegetative management.	Soil compaction (bulk density) and soil movement	Various	Annual	Moderate	Moderate

Table 5-1 (Cont.)

WAYNE NATIONAL FOREST
MONITORING AND EVALUATION

Management Problem and/or Specific ICO	Purpose of Monitoring	Activity Effect Practice Output	Unit of Measure	Frequency of Measure ^{2/}	Expected Precision	Expected Reliability
	Determine effects of vegetative management on water quality	Water Quality sampling	Various	Various	Moderate	Moderate
Off-Road Vehicle Use	Determine ORV effects on other recreation uses, 2.3 and 3.2 management areas	Forest Recreation Visitors	Recreation Visitor Days (RVD)	Spring, summer and fall samplings	Moderate	Moderate
ORV use in Management Areas 2.3 and 3.2	Determine if ORV use significantly effects silt volume in streams or drainages in 2.3 and 3.2 management areas	Water Quality	Suspended Sediment (Mg/L)	As Needed	High	Moderate
	Determine if ORV use significantly effects hunted and nonhunted populations. (Compare similar 2.2 and 2.3, and 3.1 and 3.2 areas	Pileated Woodpecker	Monitoring Type ^{1/}	(a) Annual (c) 5 years		

1/ Amount of habitat available (acres) and population trends.
 (a) Population trend expected from changes in availability of suitable habitat. Sampling involves about 10 percent of Forest per year through integrated resources surveys, (including TMIS and WMIS data base).
 (b) Population trends based upon State or USF&WS harvest, hunter or trapper data. Nonstatistical observations may be useful.
 (c) Population trends based upon field sampling of animals or their sign by USFS, State, USF&WS, and others.
 2/ Through standards and guidelines monitoring required by 219.12(k)(2).

5-11

FIGURE 5-1

PERSONNEL RESPONSIBLE FOR MONITORING/EVALUATION/UPDATING OF FOREST PLAN

MONITORING	EVALUATION	RECOMMENDATIONS	DECISION
Forest Staff Assistance Trips Management Reviews Routine Observations Site Specific Observations by Specialists Management Attainment Reporting System Discussion with Other Agencies and Public Users	Forest Staff Review/Evaluation to Forest on an Annual Basis General Management Review Based on Identified Problems Generally on a 5-year Basis Regional Management Reviews as Needed Overall Evaluation of Annual Reports by Forest Supervisor, Normally 10-15 yrs. after implementation	Forest ID Team Annual/Review Evaluation Recommendation to Forest Supervisor Regional Management Reviews Recommendation to RF Regional General Management Review Recommendation to Regional Forester Forest Supervisor Recommendation for Plan Revision every 10-15 yrs. or as needed for a significant amendment	Forest Supervisor's Decision on Amendments to Plan, Documented in Annual Evaluation Report Forest Supervisor's Decisions on a need to recommend significant amendment or revision Regional Forester Decision on the need for amendment or revision

5-12

AMENDMENTS AND REVISIONS

The Forest Plan will be kept valid and current through the use of amendments and revisions. The guidance for making these changes is 36 CFR 219.10(e)(f) and (g) and Forest Service Manual Section 1922.

PLAN AMENDMENTS

The need to amend the Forest Plan may come from several sources, such as recommendations of the Interdisciplinary Team based on monitoring and evaluation, changes in implementation schedules based on actual funding received, or changes in conditions.

The Forest Supervisor will determine whether proposed changes in the Forest Plan are "significant" or "nonsignificant." This determination will be based on an analysis of the goals, objectives, standards, guidelines, and other content of the Forest Plan. The determination of "significant" or "nonsignificant" will be documented. Appropriate public notification will be made prior to implementing the changes. The determination of the significance or nonsignificance of an amendment is an integral part of the decisionmaking process. As such it is appealable under the National Forest System appeal procedures as described in 36 CFR 211.18, not as preliminary planning process decisions, but as an important element of the final decision.

If the change resulting from the proposed amendment is determined to be significant, the Forest Supervisor will follow the same procedure as that required for development and approval of a Forest Plan. These changes will require approval by the Regional Forester.

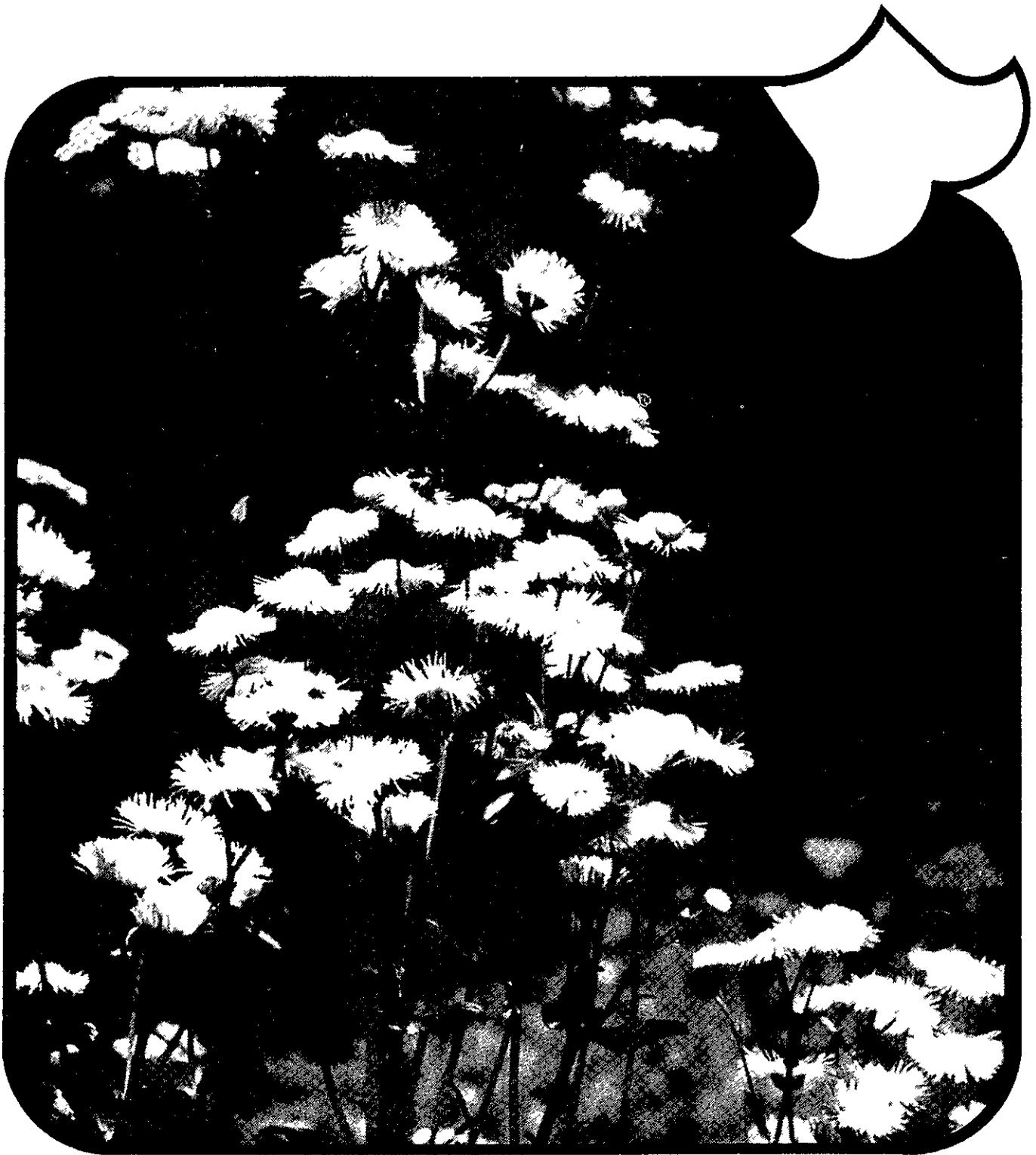
If the proposed change is determined to be nonsignificant, the Forest Supervisor may implement the amendment following appropriate public notification and completion of NEPA procedures.

An annual summary of Forest Plan amendments will be prepared and incorporated into the Plan as additions, and will be made available to interested parties. This is to ensure that the Plan will remain current. A summary of Forest Plan amendments will be submitted to the Regional Forester with the year-end attainment report information, which is due about October 20 each year.

PLAN REVISIONS

The National Forest Management Act requires revision of the Forest Plan at least every 15 years. However, the 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 Forest Supervisor will review the physical conditions and demands on the land, based on results of monitoring and evaluation. Any recommendations for Plan revision will be forwarded to the Regional Forester for approval. If a Plan revision is warranted, the Chief will approve the revision schedule.



CHAPTER 6

Index

CHAPTER 6

INDEX

Air Quality.....	4-14, 4
Abandoned Underground Mines.....	3-15
Age-class Distributions.....	4-11, 4 4-88, 4-1 4-131
Allowable Sale Quantity.....	4-6, 4-9
Amendments.....	5-13
Animal Communities.....	3-12, 4-
Annual Evaluation Report.....	5-4
Annual Summary.....	5-13
Appeal Rights.....	ii
Atmospheric Pollutants.....	3-14
Base Sale Schedule.....	4-9
Benefits.....	A-10 to
Budget Proposals.....	4-5, 5-2
Buildings and Structures.....	4-29, 4- 4-148, 4-
Candidate Research Natural Areas.....	4-158 to
Candidate Special Areas.....	4-158 to
Cliffs.....	4-47
Composition Objectives.....	4-65, 4- 4-101, 4-
Cultural Resources.....	4-2, 4-1- 4-143, 4- 4-156, G-
Demand.....	2-2, 2-3
Den and Nest Boxes.....	4-41 to
Designated Intermittent Streams.....	4-30, 4-
Developed Recreation.....	2-2, 2-3 4-1, 4-5, 4-89, 4-1 4-142
Dispersed Recreation.....	2-1, 2-3 4-1, 4-5, 4-77, 4-8 4-125, 4-
Endangered, Threatened and Sensitive Species.....	4-2, 4-1 B-19 to B
Engineering.....	4-56, 4-
Environmental Analysis.....	4-14, 5-
Environmental Impact Statement.....	i
Evaluation.....	5-4
Even-aged Management.....	3-4, 4-1 C-5
Fire Management.....	4-4, 4-5 4-148, 4
Fish and Fish Habitat.....	4-2, 4-4 4-79, 4-9 4-126, 4-

Forest Conditions.....	4-12, 4-63, 4-74, 4-82, 4-86 to 4-87, 4-97, 4-99, 4-110, 4-114, 4-124, 4-129 to 4-130, 4-140, 4-146, 4-150, 4-154
Forest Description.....	1-2
Forest Location.....	1-2
Forest Management Goals.....	4-1
Forest Management Objectives.....	4-4
Forest Plan Organization.....	1-1
Forest Plan Implementation.....	i
Forest Recreation.....	3-2
Forest-Wide Standards and Guidelines..	4-13 to 4-62
Genetically Improved Stock.....	4-24
Gypsy Moth.....	3-14
Health and Pollution.....	4-57, 4-71, 4-80, 4-94, 4-107, 4-122, 4-127, 4-137, 4-145, 4-149, 4-152, 4-157, 4-160
Human and Community Development.....	4-4, 4-13
Implementation.....	5-1 to 5-2
Information Services.....	4-2, 4-13, 4-65, 4-76, 4-88, 4-102, 4-116, 4-125, 4-131, 4-142
Integrated Pest Management.....	4-3, 4-53, 4-160
Interpretive Services.....	4-19, 4-67, 4-78, 4-90, 4-103, 4-118, 4-126, 4-133, 4-143, 4-147, 4-151, 4-156
Integrated Resource Management (IRM)..	5-1, 5-2
Issues Concerns and Opportunities ...	3-1
Lakes.....	4-3, 4-5, 4-42 to 4-43, 4-71, 4-79, 4-93, 4-107, 4-121
Lands Ownership.....	3-1, 3-2, 4-3, 4-5, 4-56, 4-71, 4-80, 4-94, 4-107, 4-122, 4-127, 4-137, 4-145, 4-148, 4-152, 4-157, 4-160, A-13 to A-17
Land Suitability Summary.....	4-6, 4-7 to 4-8
Law Enforcement.....	4-54 to 4-55, 4-148, 4-152, 4-157, 4-160,
Long-Term Sustained Yield.....	4-6, 4-9
Management Area Maps.....	Map Packet
Management Area 2.1.....	4-20, 4-63 to 4-73, 4-162 to 4-163, C-5 to C-6
Management Area 2.2.....	4-20, 4-74 to 4-81, 4-164 to 4-165, C-6
Management Area 2.3.....	4-20, 4-82 to 4-85, 4-166 to 4-167, C-6
Management Area 3.1.....	4-20, 4-86 to 4-96, 4-168 to 4-169, C-6 to C-7
Management Area 3.2.....	4-20, 4-97 to 4-98, 4-170 to 4-171, C-6 to C-7
Management Area 3.3.....	4-20, 4-99 to 4-109, 4-172 to 4-173, C-7
Management Area 3.4.....	4-20, 4-110 to 4-113, C-7
Management Area 6.1.....	4-20, 4-114 to 4-123, 4-174 to 4-175, C-7

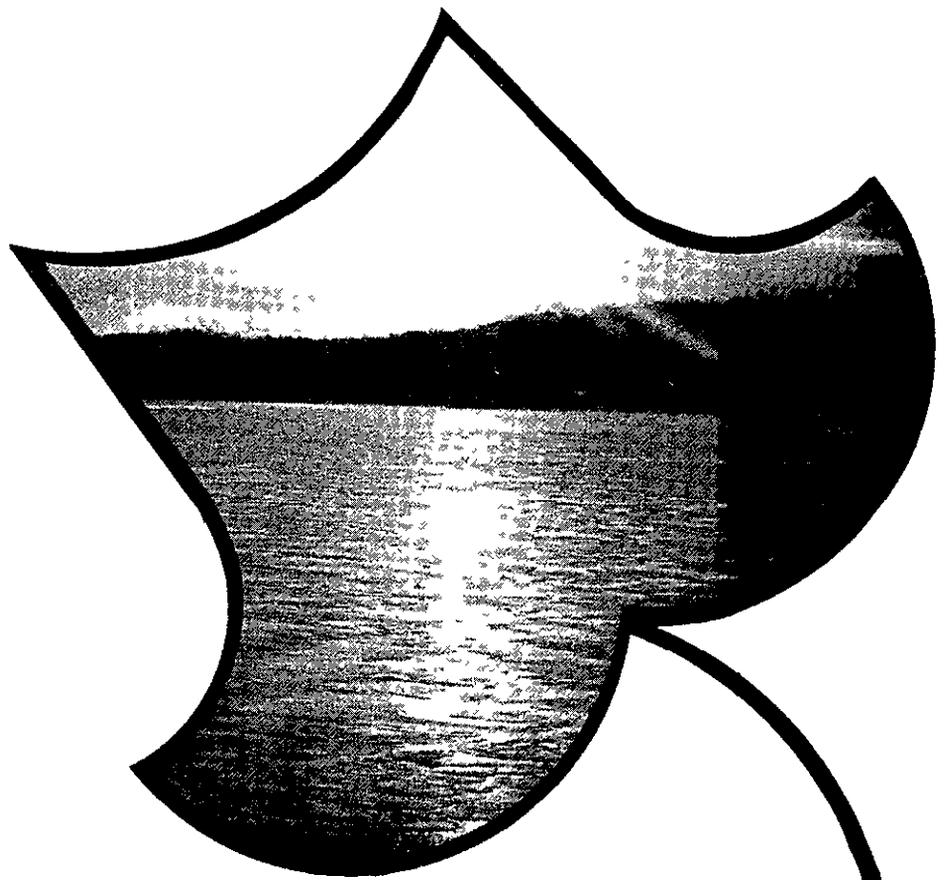
Management Area 6.2.....	4-124 to 4-128, 4-176
Management Area 6.3.....	4-20, 4-129 to 4-139, C-7
Management Area 7.1.....	4-140 to 4-145, 4-179, C-7
Management Area 8.1.....	4-19, 4-146 to 4-149, 4-178
Management Area 8.2.....	4-19, 4-150 to 4-153, 4-178
Management Area 9.1.....	4-154 to 4-157, 4-179
Management Area 9.2.....	4-19, 4-158 to 4-161, 4-179
Management Direction.....	4-1
Management Indicator Species.....	4-2, Appendix B
Management Problems.....	3-1
Management Situation.....	2-1
Marsh.....	4-5, 4-40 to 4-41, 4-71, 4-79, 4-93, 4-107, 4-121,
Maps.....	Map Packet
Minerals and Geology.....	3-7, 3-8, 4-3, 4-51 to 4-53, 4-144, 4-148, 4-152, 4-160
Monitoring.....	5-3 to 5-4
Monitoring and Evaluation.....	5-4 to 5-12
National Recreation Trails.....	4-16
NEPA Process.....	i, 4-14
NFMA (National Forest Management Act). i	
Oak-Hickory Regeneration.....	3-9, E-1, E-2
Off-Road Vehicles.....	3-3, 3-6, 4-5, 4-16 to 4-18
Oil and Gas.....	3-13, 4-3
Openings--See Permanent Wildlife	
Openings; Temporary Openings	
Other Intermittent Streams.....	4-36
Outputs.....	2-3, 4-5
Permanent Wildlife Openings.....	4-5, 4-25, 4-39 to 4-40, 4-71, 4-79, 4-93, 4-107, 4-121
Pesticides.....	4-14, 4-147, 4-155, 4-159
Plant Communities.....	3-12, 4-2
Preface.....	i
Preharvest Treatments.....	4-23
Prescribed Burning.....	4-54
Proposed and Probable Practices.....	4-162 to 4-181
Range.....	4-5, 4-15, 4-65, 4-76, 4-89, 4-102, 4-117, 4-125, 4-132, 4-142, 4-151, 4-155, 4-159
Reclamation of Mined Areas.....	4-38
Recreation.....	3-2, 3-3, 4-1, 4-5, 4-16, 4-66 to 4-67, 4-76 to 4-78, 4-83, 4-89, 4-98, 4-102, 4-111, 4-117, 4-125, 4-132, 4-142, 4-147, 4-151, 4-155, 4-159

Recreation Opportunity Spectrum (ROS)	4-16, 4-66, 4-76, 4-83, 4-89, 4-98, 4-102, 4-111, 4-117, 4-125, 4-132, 4-142, 4-147, 4-151, 4-155, 4-159
Reforestation	3-11, 4-5, 4-10, 4-24 to 4-25, 4-26 to 4-27, 4-69, 4-92, 4-105, 4-120, 4-135
Regional Guide	i
Research Natural Areas	4-19, 4-146 to 4-149, 4-158 to 4-161
Research Needs	3-9 to 3-16
Revisions	5-13
Riparian Area Management	4-2, 4-3, 4-28, 4-29 to 4-38
Roads	3-6, 3-7, 4-2, 4-5, 4-16, 4-22, 4-57 to 4-62, 4-72 to 4-73, 4-80 to 4-81, 4-83 to 4-85, 4-94 to 4-96, 4-107 to 4-109, 4-111 to 4-113, 4-122 to 4-123, 4-127 to 4-128, 4-137 to 4-139, 4-145, 4-149
RPA (Resources Planning Act)	i
Salvage	4-10
Site Productivity	3-12
Soils	3-5, 4-3, 4-26, 4-27, 4-28, 4-29, 4-71, 4-126, 4-143, 4-148, 4-152, 4-156, 4-159, Appendix F
Special Areas	3-8, 3-9, 4-19, 4-150 to 4-153, 4-158 to 4-161
Special Uses	4-51, 4-71, 4-79, 4-94, 4-107, 4-122, 4-126, 4-137, 4-144, 4-148, 4-152, 4-156, 4-170
Standards and Guidelines	4-13 to 4-161
Stocking Level	4-24, 4-106, 4-121, 4-136, E-1, E-2
Stocking Standards	4-20
Stream Crossings	4-36
Suitable Forest Land	4-6, 4-7
Supply	2-1, 2-3
Temporary Openings	4-20
Thinning	3-10, 4-10, 4-69, 4-92 to 4-93, 4-105 to 4-106, 4-120 to 4-121, 4-135 to 4-136
Tiering	5-2
Timber Management	2-3, 4-3, 4-5, 4-6, 4-20, 4-67 to 4-70, 4-78 to 4-79, 4-90 to 4-93, 4-103 to 4-106, 4-118 to 4-121, 4-126, 4-134 to 4-136, 4-143, 4-148, 4-152, 4-156, F-19 to F-31

Timber Productivity Classification...	4-11
Timber Resource Summaries.....	4-6 to 4-12
Timber Harvest Methods.....	4-20 to 4-24, 4-68 to 4-69, 4-78 to 4-79, 4-91 to 4-92, 4-104 to 4-105, 4-119 to 4-120, 4-134 to 4-135, F-1 to F-18
Timber Stand Improvement.....	3-11, 4-10, 4-28, 4-69, 4-79, 4-92, 4-105, 4-120
Trails.....	4-16, 4-67, 4-77, 4-89 to 4-90, 4-103, 4-118, 4-125 to 4-126, 4-133, 4-151, 4-159
Transportation System.....	4-4, 4-57 to 4-62, 4-72 to 4-73, 4-80 to 4-81, 4-83 to 4-85, 4-94 to 4-96, 4-107 to 4-110, 4-111 to 4-112, 4-122 to 4-123, 4-127 to 4-128, 4-137 to 4-139, 4-145, 4-149, 4-152, 4-157, 4-161
Uneven-aged Management.....	3-11, 4-10, C-1 to C-3
Unsuitable Forest Land.....	4-7, 4-8
Utilization Standards.....	4-20, 4-22, 4-23
Vegetative Diversity.....	4-1
Vegetative Management.....	3-3 to 3-5, 4-6, 4-13, 4-65, 4-76, 4-88, 4-101, 4-116, 4-125, 4-131, 4-147, 4-151, 4-155, 4-159, C-1 to C-8
Vegetative Treatment Schedule.....	4-9, A-1 to A-12
Vehicle Use.....	4-18, 4-67, 4-78, 4-90, 4-103, 4-118, 4-126, 4-133, 4-143, 4-147, 4-151, 4-155, 4-159
Viable Wildlife Populations.....	3-12
Visual Quality.....	4-2, 4-19, 4-22, 4-24, 4-67, 4-78, 4-90, 4-103, 4-118, 4-126, 4-133, 4-143, 4-147, 4-151, 4-159
Water.....	3-5, 4-3, 4-28, 4-71, 4-126, 4-143, 4-148, 4-152, 4-156, 4-159
Waterholes.....	4-41, 4-71, 4-79, 4-93, 4-107, 4-121
Wells and Cisterns.....	4-36
White Pine.....	3-10
Wildlife.....	3-5, 3-12, 4-2, 4-5, 4-21, 4-38 to 4-42, 4-71, 4-79, 4-93, 4-106 to 4-107, 4-121, 4-126, 4-136, 4-144, 4-148, 4-152, 4-156, 4-160, Appendix B



APPENDICES



APPENDIX A

Implementation Schedules

APPENDIX A

The intent of this appendix is to describe implementation. The land adjustment strategy discussion begins on page A-13. The vegetative treatment schedule discussion begins on page A-1.

Vegetative Treatment Schedule

This schedule replaces the Five-Year Timber Sale Plan previously maintained by the Wayne National Forest. Where investments have been made and dates are relatively firm, the projects have been carried forward.

Further into the future, the dates are less precise and more subject to change - due to volume overrun or underrun in other sales, funding changes, or scheduling difficulty. Adjustments from the specific sales to be offered in a given year may be made by the Forest without further public involvement. Public notice will be made of planned sales in advance for the following fiscal year.

Each year, the Forest Supervisor will update the Vegetative Treatment Schedule with the addition of the sales to occur in the future years.

This schedule includes all sales in the Forest's normal program. Additional salvage sales, some small sales and firewood removals under the authority of the District Rangers are not included.

Table A-3 on page A-10 provides a general indication of the priced and nonpriced benefits of each proposed sale. This table illustrates the multiple benefits that are anticipated as a result of the vegetative treatments. It is tied directly to the benefits and objectives stated in the Forest Plan. In addition, it should be noted that each proposed sale will be implemented to achieve the long term desired condition and other requirements that are specified for each management area. All of the sales will provide benefits in terms of local employment and income in the area surrounding Athens, Marietta, and Ironton, Ohio.

It should also be noted that the table does not indicate all of the likely environmental effects of the proposed vegetation treatments. Readers should also review Chapter 4 of the Forest Plan DEIS for a complete discussion and presentation of the cumulative effects of these activities along with the others called for in the Forest Plan.

TABLE A-1

THREE-YEAR VEGETATIVE TREATMENT PROGRAM
 ACCOMPLISHED BY TIMBER SALES 1/

Wayne National Forest
 Effective Period 1988 - 1990

Sale Name	Fiscal Year	Ranger <u>2/</u> District	Mgmt. Area	Area Acres	Estimated Volume (MMBF)	Probable Harvest Method	Road <u>3/</u> Reconst. Miles	Road <u>3/</u> Const. Miles
Uneven Sale	1988	A	2.3	23-S.T. 109 G.S.	.35	Selection	-	-
Howard	1988	I	2.3	24	.36	Clearcut	.2	.1
Howard Ridge	1988	I	2.3	60	.30	Selection	-	-
Dry Ridge	1988	I	3.1	55	.57	Clearcut	.2	.1
Low Gap	1988	I	3.1	102	.75	Clearcut	.4	.2
West Side	1988	I	3.1	130	.85	Clearcut	.8	.3
Hollow Creek	1988	I	3.1	43	.50	Clearcut	.3	.1
Clearfork	1988	I	3.1	18	.15	Clearcut	-	-
Maysville	1988	A	3.2	90	.80	Clearcut	.8	.3

1/ This schedule meets all the requirements specified in 36 CFR 219.16 as well as the requirements set forth in FSM 2410.

This vegetative treatment schedule is based on current conditions and information available at the time the Forest Plan was developed. If conditions change or new information becomes available, the program may be modified during the implementation of the Forest Plan. The degree of the modification will determine whether or not the Forest Plan will need to be amended.

Sale locations and volumes are approximate. Specific locations of sales may be obtained from the Forest Supervisor's Office.

2/ A = Athens; I = Ironton.

3/ Does not include "pre-roads" which are multiple-use roads built before sale contracts are developed. Many pre-roads are used to access timber sales.

TABLE A-1 (con't)

THREE-YEAR VEGETATIVE TREATMENT PROGRAM
ACCOMPLISHED BY TIMBER SALES ^{1/}Wayne National Forest
Effective Period 1988 - 1990

Sale Name	Fiscal Year	Ranger ^{2/} District	Mgmt. Area	Area Acres	Estimated Volume (MMBF)	Probable Harvest Method	Road Reconst. Miles	Road Const. Miles
White Pine Thinning #4	1988	A	2.3	30	.30	Thin	-	-
Bean Ridge	1988	A	3.3 2.1	60 5	.55 .05	Clearcut Clearcut	.8 -	.3 -
Two County	1988	A	3.3	55	.60	Clearcut	1.6	.6
White Pine Thinning #5	1988	A	3.3	30	.20	Thin	-	-
Cedar Hollow	1988	I	6.1	<u>107</u>	<u>1.00</u>	Clearcut	<u>1.1</u>	<u>.3</u>
			Subtotal	941	7.33		6.2	2.3
Wolcott Hollow	1989	I	2.3	190	.95	Selection	-	-
Boggs	1989	I	2.3	190	.95	Selection	-	-

^{1/} This schedule meets all the requirements specified in 36 CFR 219.16 as well as the requirements set forth in FSM 2414.

This vegetative treatment schedule is based on current conditions and information available at the time the Forest Plan was developed. If conditions change or new information becomes available, the program may be modified during the implementation of the Forest Plan. The degree of the modification will determine whether or not the Forest Plan will need to be amended.

Sale locations and volumes are approximate. Specific locations of sales may be obtained from the Forest Supervisor's Office.

^{2/} A = Athens; I = Ironton.

TABLE A-1 (con't)

THREE-YEAR VEGETATIVE TREATMENT PROGRAM
 ACCOMPLISHED BY TIMBER SALES 1/

Wayne National Forest
 Effective Period 1988 - 1990

Sale Name	Fiscal Year	Ranger <u>2/</u> District	Mgmt. Area	Area Acres	Estimated Volume (MMBF)	Probable Harvest Method	Road Reconst. Miles	Road Const. Miles
Cecil Hollow	1989	I	3.1	60	.60	Clearcut	.2	-
Smokey Row	1989	I	3.1	60	.60	Clearcut	.2	-
Flag Springs	1989	I	3.1	28	.30	Clearcut	.2	.1
Orbiston	1989	A	3.2	65	.65	Clearcut	-	-
Coe Road	1989	A	3.2	80 35	1.10 .05	Clearcut & Selection	1.2 -	.4 -
Felter Road	1989	A	3.3	60	.50	Clearcut	-	-
Virginia Pine #5	1989	A	3.3	40	.40	Clearcut	-	-

1/ This schedule meets all the requirements specified in 36 CFR 219.16 as well as the requirements set forth in FSM 2414.

This vegetative treatment schedule is based on current conditions and information available at the time the Forest Plan was developed. If conditions change or new information becomes available, the program may be modified during the implementation of the Forest Plan. The degree of the modification will determine whether or not the Forest Plan will need to be amended.

Sale locations and volumes are approximate. Specific locations of sales may be obtained from the Forest Supervisor's Office.

2/ A = Athens; I = Ironton.

TABLE A-1 (con't)

THREE-YEAR VEGETATIVE TREATMENT PROGRAM
ACCOMPLISHED BY TIMBER SALES ^{1/}

Wayne National Forest
Effective Period 1988 - 1990

Sale Name	Fiscal Year	Ranger ^{2/} District	Mgmt. Area	Area Acres	Estimated Volume (MMBF)	Probable Harvest Method	Road Reconst. Miles	Road Const. Miles
White Pine Thinning #6	1989	A	3.3	30	.20	Thin	-	-
Johns Creek	1989	I	3.3	69	.60	Clearcut	.4	.2
Sand Hill Pine	1989	I	6.1	<u>39</u>	<u>.45</u>	Clearcut	<u>.4</u>	<u>.2</u>
			Subtotal	946	7.35		2.6	.9
A-5 Sheets Sale	1990	A	2.2	220 G.S. 36 S.T.	.40	Selection	.3	.1
Symmes Creek	1990	I	2.2	160	.80	Selection	.3	.1
Pine Creek	1990	I	2.3	160	.80	Selection	-	-
C-196	1990	A	3.1	36	.30	Clearcut	.7	.2
White Pine Thinning #7	1990	A	3.2	60	.80	Thin	-	.3

^{1/} This schedule meets all the requirements specified in 36 CFR 219.16 as well as the requirements set forth in FSM 2414.

This vegetative treatment schedule is based on current conditions and information available at the time the Forest Plan was developed. If conditions change or new information becomes available, the program may be modified during the implementation of the Forest Plan. The degree of the modification will determine whether or not the Forest Plan will need to be amended.

Sale locations and volumes are approximate. Specific locations of sales may be obtained from the Forest Supervisor's Office.

^{2/} A = Athens; I = Ironton.

TABLE A-1 (con't)

THREE-YEAR VEGETATIVE TREATMENT PROGRAM
 ACCOMPLISHED BY TIMBER SALES ^{1/}

Wayne National Forest
 Effective Period 1988 - 1990

Sale Name	Fiscal Year	Ranger ^{2/} District	Mgmt. Area	Area Acres	Estimated Volume (MMBF)	Probable Harvest Method	Road Reconst. Miles	Road Const. Miles
Grouse Sale	1990	A	3.2	110	1.00	Clearcut	-	-
Dent Ridge	1990	A	3.3	54	.40	Clearcut	.6	.2
Gum Stump	1990	I	3.3	132	1.30	Clearcut	1.5	.5
Middle	1990	I	3.3	51	.55	Clearcut	.5	-
Little Texas	1990	I	3.3	<u>100</u>	<u>1.00</u>	Clearcut	<u>-</u>	<u>-</u>
				Subtotal 1,119	7.35		3.9	1.4

^{1/} This schedule meets all the requirements specified in 36 CFR 219.16 as well as the requirements set forth in FSM 2414.

This vegetative treatment schedule is based on current conditions and information available at the time the Forest Plan was developed. If conditions change or new information becomes available, the program may be modified during the implementation of the Forest Plan. The degree of the modification will determine whether or not the Forest Plan will need to be amended.

Sale locations and volumes are approximate. Specific locations of sales may be obtained from the Forest Supervisor's Office.

^{2/} A = Athens; I = Ironton.

TABLE A-2

ANNUAL VEGETATIVE MANAGEMENT IMPLEMENTATION SUMMARY
BY MANAGEMENT AREA FOR DECADE 1 (1986-1995)

Fiscal Year	Mat. Area	Volume (MMBF)	Acres by Method			Miles of Road Construction & Reconstruction
			Clearcut & Shelterwood	Thin	Selection	
1986	2.2	.46	46	0	0	.5
	2.3	.12	14	0	0	0
	3.1	5.56	452	0	0	.6
	3.2	.70	0	40	0	0
	3.3	2.51	534	0	0	1.0
	6.1	1.39	237	0	0	2.7
	Total		10.74	1,283	40	0
1987	2.2	.40	0	0	266	0
	2.3	2.85	226	0	0	0
	3.1	1.48	144	0	0	2.3
	3.2	.32	84	0	0	1.6
	3.3	2.83	347	30	0	4.4
	6.1	1.15	127	0	0	1.2
	Total		9.03	928	30	266
1988	2.1	.05	5	0	0	0
	2.3	1.01	24	0	192	0.3
	3.1	2.82	348	0	0	2.4
	3.2	1.10	90	30	0	1.1
	3.3	1.35	115	30	0	3.3
	6.1	1.00	107	0	0	1.4
	Total		7.33	689	60	192
1989	2.1	0	0	0	0	0
	2.2	0	0	0	0	0
	2.3	1.90	0	0	380	0
	3.1	1.50	148	0	0	0.7
	3.2	1.80	145	0	35	1.6
	3.3	1.70	169	30	0	0.6
	6.1	.45	39	0	0	0.6
Total		7.35	501	30	415	3.5
1990	2.1	0	0	0	0	0
	2.2	1.20	0	0	416	0.8
	2.3	.80	0	0	160	0
	3.1	.30	36	0	0	0.9
	3.2	1.80	110	60	0	0.3
	3.3	3.25	337	0	0	3.3
	6.1	0	0	0	0	0
Total		7.35	483	60	576	5.3

TABLE A-2 (con't)

ANNUAL VEGETATIVE MANAGEMENT IMPLEMENTATION SUMMARY
BY MANAGEMENT AREA FOR DECADE 1 (1986-1995)

Fiscal Year	Mat. Area	Volume (MMBF)	Acres by Method			Miles of Road Construction & Reconstruction
			Clearcut & Shelterwood	Thin	Selection	
1991	2.1	.17	4	0	25	1.3
	2.2	.38	0	0	68	2.1
	2.3	.57	0	0	116	4.3
	3.1	2.10	182	16	0	1.5
	3.2	.62	54	0	0	0.5
	3.3	2.29	166	55	0	1.7
	6.1	.65	46	12	0	0.0
	Total		6.83	452	83	209
1992	2.1	.17	4	0	33	1.3
	2.2	.38	0	0	68	2.1
	2.3	.57	0	0	116	4.0
	3.1	2.15	182	16	0	1.5
	3.2	.62	54	0	0	0.5
	3.3	2.29	166	55	0	1.7
	6.1	.55	46	0	0	0.0
	Total		6.73	452	71	209
1993	2.1	.17	4	0	33	1.3
	2.2	.38	0	0	68	2.1
	2.3	.57	0	0	116	4.0
	3.1	2.15	182	16	0	1.5
	3.2	.62	54	0	0	0.5
	3.3	2.29	166	55	0	1.7
	6.1	.55	46	0	0	0.0
	Total		6.73	452	71	209
1994	2.1	.17	4	0	33	1.3
	2.2	.38	0	0	68	2.1
	2.3	.57	0	0	116	4.0
	3.1	2.15	182	16	0	1.5
	3.2	.62	54	0	0	0.5
	3.3	2.29	166	55	0	1.7
	6.1	.55	46	0	0	0.0
	Total		6.73	452	71	209

TABLE A-2 (con't)

ANNUAL VEGETATIVE MANAGEMENT IMPLEMENTATION SUMMARY
BY MANAGEMENT AREA FOR DECADE 1 (1986-1995)

Fiscal Year	Mat. Area	Volume (MMBF)	Acres by Method			Miles of Road Construction & Reconstruction
			Clearcut & Shelterwood	Thin	Selection	
1995	2.1	.17	4	0	33	1.3
	2.2	.38	0	0	68	2.1
	2.3	.57	0	0	116	4.0
	3.1	2.15	182	16	0	1.5
	3.2	.62	54	0	0	0.5
	3.3	2.29	166	55	0	1.7
	6.1	.55	46	0	0	0.0
	Total	6.73	452	71	209	11.1
Total - Decade 1 (All MA's)		75.5	6,144	587	2,494 ^{1/}	87.0 ^{2/}

^{1/} Total acres treated of uneven-aged and even-aged do not match Table 4-27, page 4-180, of the Forest Plan because existing constraints and prepared sales within the 2.2 and 2.3 management areas were prepared using standards and guidelines of the previous timber plan.

^{2/} Does not include "pre-roads" which are multiple use roads.

TABLE A-3

PRIMARY BENEFITS PRODUCED BY VEGETATIVE TREATMENTS 1/

Sale Name	Benefits								
	Dispersed Recreation			Visual Quality Improvement	Increased Habitat Diversity	Maintained Habitat Diversity	Firewood	Stand Improvement	Development of New Markets
	Parking	Motor Access	Non-Motor Access						
Uneven Sale	X	X	X		X				
Howard	X			X		X	X		
Howard Ridge	X				X				
Dry Ridge	X	X	X			X	X		
Low Gap	X	X	X		X		X		
West Side	X	X				X	X	X	
Hollow Creek	X		X			X			
Clear Fork						X			
Maysville	X	X	X		X				
White Pine Thinning #4			X	X				X	
Bean Ridge			X		X		X		
White Pine Thinning #5			X	X		X		X	
Two County	X	X	X			X	X		
Cedar Hollow	X		X		X				

A-10

TABLE A-3

PRIMARY BENEFITS PRODUCED BY VEGETATIVE TREATMENTS 1/

Sale Name	Benefits								
	Dispersed Recreation			Visual Quality Improvement	Increased Habitat Diversity	Maintained Habitat Diversity	Firewood	Stand Improvement	Development of New Markets
	Parking	Motor Access	Non-Motor Access						
Wolcott Hollow					X		X		
Boggs					X				
Cecil Hollow	X					X	X		
Smokey Row	X					X	X		
Flag Springs	X					X	X		
Orbiston	X		X	X		X	X		
Coe Road	X	X	X			X	X		
A-11 Felter Road	X		X		X		X		
Virginia Pine #5	X		X	X	X		X		
White Pine Thinning #6	X		X	X		X		X	
Johns Creek	X		X			X	X		
Sand Hill Pine			X		X			X	
Sheets Sale	X		X	X	X		X	X	X
Symmes Creek	X		X	X	X				
Pine Creek					X				
C-96			X		X		X		
White Pine Thinning #7	X		X	X		X		X	

PRIMARY BENEFITS PRODUCED BY VEGETATIVE TREATMENTS 1/

Sale Name	Benefits								
	Dispersed Recreation			Visual Quality Improvement	Increased Habitat Diversity	Maintained Habitat Diversity	Firewood	Stand Improvement	Development of New Markets
	Parking	Motor Access	Non-Motor Access						
Grouse Sale	X	X	X		X		X		
Dent Ridge	X		X		X		X		
Gum Stump	X		X			X	X		
Middle	X		X			X	X		
Little Texas		X	X	X	X		X		

1/ This table illustrates the multiple benefits that are anticipated as a result of the proposed vegetative treatments. It is tied directly to the benefits and objectives stated in the Forest Plan.

It should also be noted that this table does not address all of the priced benefits and environmental effects. Chapters 4 of the Forest Plan and Draft EIS contain additional information on the output objectives by Management Area and anticipated environmental effects, respectively.

The following definitions were used in preparing this table:

Parking -- Provide needed off-road parking for people who participate in such activities as hunting, fishing and dispersed camping where current parking is not adequate.

Motor Access -- Provide new access (where none existed before) that will remain open to the public for motorized vehicle use at least part of the year.

Non-Motor Access -- Provide new non-motorized access to an area using roads/trails closed to all motor vehicles. This type of access was not available prior to the sale.

Visual Quality Improvement -- Sale areas around or near highly sensitive travelways and trails where visual quality or diversity may be improved through vista cutting, small opening development or special marking instructions.

Increased Habitat Diversity -- Sale area where habitat diversity (i.e., age classes, species composition, permanent openings, shrub openings, conifer inclusions, brood habitat) is increased above the existing diversity.

Maintained Habitat Diversity -- Sale areas where existing habitat diversity is maintained.

Firewood -- Sale areas that would provide opportunities for gathering firewood.

Stand Improvement -- Sale areas which climate or insects have damaged the stand.

Development of New Markets -- Sale areas which would provide specific products for the development of new markets.

APPENDIX A

LAND ADJUSTMENT STRATEGY

The intent of this part of Appendix A is to prioritize purchase activities by management areas.

HIGHEST PRIORITY AREAS

The highest priority for Land Acquisition is based on availability and a willing buyer/willing seller basis are:

Management Area 2.1

Provide ownership patterns which protect National Forest system resources and promote cost-effective land management. If assessment indicated mineral development other than oil and gas is not acceptable, subordinate or acquire subsurface rights.

Management Areas 6.1, 6.2, and 6.3

Provide ownership patterns which protect National Forest system resources and promote cost-effective land management. Generally, provide land in 2,500-acre blocks or larger.

Subordinate or acquire subsurface rights as necessary to protect the areas.

Management Area 8.1 and 8.2

Provide a landbase which meets the resource management purposes of the law or order designating the area.

Subordinate or acquire subsurface rights as necessary to protect the areas.

Management Area 9.2

Provide a land base large enough to protect the identified environmental values.

Subordinate or acquire subsurface rights as necessary to protect the areas.

HIGH PRIORITY AREAS

The high priority areas for land acquisition are the following:

Management areas 2.3, 3.3 and 3.4

Provide ownership patterns which protect National Forest system resources and promote cost-effective land management. Generally, provide land in 1,000-acre blocks or larger.

MEDIUM PRIORITY AREAS

The remaining Management Areas 2.2, 3.1, and 3.2 fall in the medium purchase priority. The objective in these areas is to provide ownership patterns which protect National Forest system resources and promote cost-effective land management. Generally, provide land in 1,000-acre blocks or larger.

Management Area 7.1 is entirely National Forest and requires no land adjustment.

No purchase will be planned in 9.1 Management Areas.

Criteria for Lands Available For Exchange

Lands to be exchanged by the Forest will be considered on a case-by-case basis. These should generally meet at least seven of the criteria listed below:

1. Accomplishes objectives of Federal law or regulation.
2. Meets demand for National Forest System resources, including recognized Special Interest Areas
3. Results in more efficient land ownership patterns.
4. Results in lower resource management costs.
5. Minimum investment management of tract (not strip mine reclamation)
6. Chance to get rid of problem (i.e. trespass, uses, pipeline)
7. Land is best suited to other than National Forest use.
8. Mostly less than 160 acres in size and more than one mile from other lands under National Forest System Management.
9. Does not reduce access to National Forest Lands.
10. Can straighten and shorten land lines even if part of a larger tract larger than size designation of Management Area:
 - 3.1, 3.2, 2.1, 2.2, 3.2, 3.3, 1000 acres
 - 6.1, 6.2, 6.3, 2500 acres
 - 8.1 & 9.2 adequate
 - 9.1 none
11. Little likelihood of acquiring adjacent land.
12. Isolated tracts of 160 acres or less will normally be exchanged in their entirety.
13. Lands are not on Marietta unit unless needed for Economic development.

TABLE A-4
ACQUISITION GOALS BY MANAGEMENT UNIT

ATHENS UNIT SIZE BY MANAGEMENT AREA

MGT. AREA	TOTAL LAND AREA AC.	FEDERAL OWNERSHIP AC.	FEDERAL OWNERSHIP %	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 AC.	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 %
2.1	2560.0	450.0	17.6	640.0	25.0
2.2	23700.0	1280.0	5.4	9480.0	40.0
2.3	7070.0	1960.0	27.7	6009.5	85.0
3.1so	16440.0	3500.0	21.3	13152.0	80.0
3.1no	12420.0	3680.0	29.6	5589.0	45.0
3.2	40060.0	17280.0	43.1	26039.0	65.0
3.3so	44910.0	8320.0	18.5	17964.0	40.0
3.3no	62470.0	13160.0	21.1	24988.0	40.0
6.2so	3000.0	800.0	26.7	2400.0	80.0
6.2no	5200.0	3200.0	61.5	4160.0	80.0
9.1	77680.0	1784.0	2.3	1864.3	2.4
9.2	1910.0	1165.0	61.0	1432.5	75.0
Total - 9.1	219740.0	54795.0	24.9	111854.0	50.9
TOTAL	297420.0	56579.0	19.0	113718.3	38.2

MARIETTA UNIT SIZE BY MANAGEMENT AREA

MGT. AREA	TOTAL LAND AREA AC.	FEDERAL OWNERSHIP AC.	FEDERAL OWNERSHIP %	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 AC.	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 %
2.1	16713.0	4040.0	24.2	6350.9	38.0
2.2no	5520.0	1840.0	33.3	2760.0	50.0
2.2so	8181.0	2240.0	27.4	4090.5	50.0
3.1	99920.0	8867.0	8.9	31974.4	32.0
3.3	59369.0	14480.0	24.4	20779.2	35.0
6.1	11242.0	3800.0	33.8	6183.1	55.0
6.2	13350.0	8200.0	61.4	10012.5	75.0
8.1	76.0	76.0	100.0	76.0	100.0
9.2	2500.0	1580.0	63.2	1875.0	75.0
TOTAL	216871.0	45123.0	20.8	84101.6	38.8

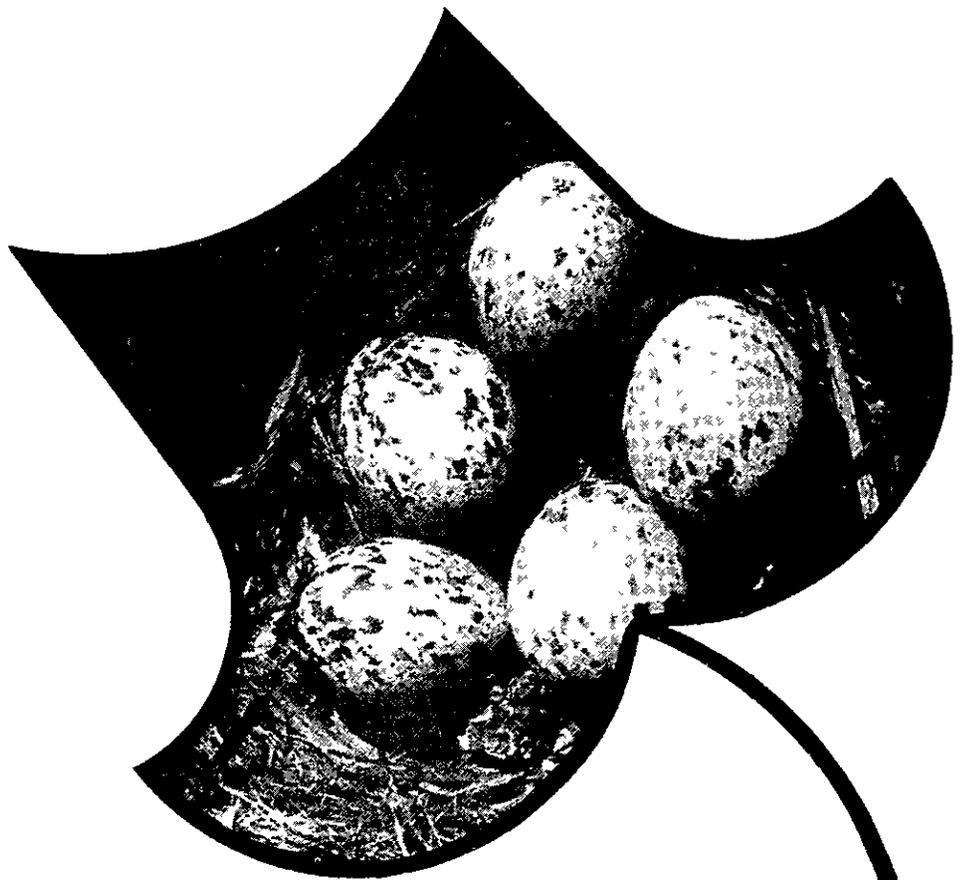
TABLE A-4 (Con't)

IRONTON UNIT SIZE BY MANAGEMENT AREA

MGT. AREA	TOTAL LAND AREA AC.	FEDERAL OWNERSHIP AC.	FEDERAL OWNERSHIP %	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 AC.	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 %
2.1	8358.0	300.0	3.6	2089.5	25.0
2.2	8218.0	3300.0	40.2	6574.4	80.0
2.3	27443.0	14050.0	51.2	19210.1	70.0
3.1so	9344.0	1400.0	15.0	3737.6	40.0
3.1n&w	63571.0	15930.0	25.1	25428.4	40.0
3.1e	19801.0	720.0	3.6	3960.2	20.0
3.2	10880.0	5300.0	48.7	8704.0	80.0
3.3	44288.0	20500.0	46.3	33216.0	75.0
6.1	20454.0	6500.0	31.8	12272.4	60.0
6.2	4710.0	3225.0	68.5	3768.0	80.0
7.1	1863.0	1863.0	100.0	1863.0	100.0
9.1	95213.0	400.0	0.4	380.9	0.4
9.2	3713.0	2785.0	75.0	2970.4	80.0
Total-9.1	222643.0	75873.0	34.1	123794.0	55.6
TOTAL	317856.0	76273.0	24.0	124174.9	39.1

TOTAL WAYNE NATIONAL FOREST SIZE BY MANAGEMENT AREA

MGT. AREA	TOTAL LAND AREA AC.	FEDERAL OWNERSHIP AC.	FEDERAL OWNERSHIP %	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 AC.	MAXIMUM POSSIBLE FEDERAL OWNERSHIP BY 2035 %
2.1	27631.0	4790.0	17.3	9080.4	32.9
2.2	45619.0	8660.0	19.0	22904.9	50.2
2.3	34513.0	16010.0	46.4	25219.6	73.1
3.1	221496.0	34097.0	15.4	83841.6	37.9
3.2	50940.0	22580.0	44.3	34743.0	68.2
3.3	211037.0	56460.0	26.8	96947.1	45.9
6.1	31696.0	10300.0	32.5	18455.5	58.2
6.2	26260.0	15425.0	58.7	20340.5	77.5
7.1	1863.0	1863.0	100.0	1863.0	100.0
8.1	76.0	76.0	100.0	76.0	100.0
9.1	172893.0	2184.0	1.3	2245.2	1.3
9.2	8123.0	5530.0	68.1	6277.9	77.3
Total-9.1	659254.0	175791.0	26.7	319749.6	48.5
TOTAL	832147.0	177975.0	21.4	321994.8	38.7



APPENDIX B

Management Indicator Species

APPENDIX B

MANAGEMENT INDICATOR SPECIES SELECTION

INTRODUCTION

National Forest Management Act (NFMA) regulations require that fish and wildlife habitats be managed to maintain viable populations of all existing native vertebrate species in the planning area and to maintain and improve habitats of management indicator species (36 CFR 219.19 - September 17, 1979 and revised 1982). NFMA regulations also require identification of management indicator species (MIS) and documentation of the selection process used to determine these species.

An indicator species is a plant or animal species that occurs in a certain location or situation at a given population and indicates a particular environmental condition. Changes in indicator species populations are believed to indicate effects of management activities on a number of other species or on water quality.

This appendix documents the rationale used in the MIS selection process for the Wayne National Forest.

There is no precedent of a management indicator species process being used on as wide a scale as a National Forest. With this in mind, it will be necessary to conduct research and ongoing evaluations to determine the adequacy of the species selected and to make any necessary refinements. This monitoring is to be done in cooperation with State fish and wildlife agencies, to the extent practical. As part of the monitoring process, changes in the populations of species, in addition to indicator species, should be studied and compared with changes in indicator species populations to evaluate overall effects of management activities. As a result, more precision correlating management activities and wildlife responses can be expected in subsequent evaluations and planning documents.

The tables and discussion contained in this section depict the analysis process used to determine: 1) species suitable for consideration as MIS (Table B-1); 2) species selected as MIS (Table B-2); 3) how the selected MIS represent all of the vertebrate forms of wildlife on the Wayne (Table B-3) and species that require special habitats (Table B-4); and, 4) population trend objectives of MIS (Table B-5).

THE MIS SELECTION PROCESS

Federal regulations (36 CFR 219.19(a)) provide that the following species be considered and, if appropriate, selected in the MIS selection process:

- Species on State or Federal endangered and threatened lists for the planning area.
- Species with special habitat needs that may be influenced significantly by planned management programs.

- Species commonly hunted, fished, or trapped.
- Species of special interest.
- Species believed to indicate effects of management activities on other species of major biological communities or on water quality.

Wayne National Forest MIS were originally developed in 1983-1985 by a volunteer, advisory group of nine universities, Ohio Department of Natural Resources and U.S. Fish and Wildlife Service biologists, zoologists, and specialists and one Forest Service biologist who participated as group coordinator/member. The group recognized that the concept of MIS is imperfect in terms of defining all vertebrate niches and predicting specific responses to management activities. However, they also acknowledged that there was a need for some system of sampling short of monitoring all vertebrate species and that the MIS process was mandated by federal regulation. Federal regulations pertaining to MIS and an example of the MIS selection process used in Hoosier National Forest planning provided direction for the task of Wayne National Forest MIS selection.

Working as four separate committees, the group listed and identified the principle habitat components of all mammals, breeding birds, reptiles/amphibians, and fish that occur in the Forest. They then selected one or more potential indicator species of each vertebrate group for each habitat component, considering given evaluation criteria. Habitat components identified for each vertebrate group were then consolidated into the habitat components listed in Table B-1, pages B-3 to B-5. Potential indicator species suggested for each vertebrate group were also grouped by the broad habitat components, as listed in Table B-1.

Using the criteria displayed in Table B-1, representative species were then selected for the major cover types and listed as Forest indicator species in Table B-2, paged B-7 to B-8. No attempt was made to develop a weighted or complicated ranking system; species with the more positive evaluation characteristics were selected. Reasons for decisions of non-selection of potential indicator species are included in Table B-2. Habitat components of Table B-2 are defined as follows:

- Conifers--30-100% of canopy composed of pines.
- Mature Hardwoods--2+ trees/ha greater than 20" dbh (40+ years).
- Closed-canopies, Mature/Overmature Hardwoods--40+ years with 50+ trees/ha greater than 12" dbh and canopy closure less than 85 percent.
- Early Hardwoods--Forests between late succession (see below) and mature hardwoods (10-40 years).
- Late Succession--50+% canopy closure, 80+% of trees less than 3" dbh.

Middle Succession--Fields between late and early stages.
 Early Succession--Grass of weedy fields with less than 10% woody cover. Includes hay fields but not row crops.
 Park-like--90+% coverage of short grass; 10-40% coverage by trees.

All other habitats are self explanatory.

Published information concerning some of the vertebrate species and their habitats was very limited for Ohio. In such cases, the group relied on literature relating to other regions, local observations, and professional judgements.

TABLE B-1
 POTENTIAL MANAGEMENT INDICATOR SPECIES AND THEIR ATTRIBUTES
 BY EVALUATION CRITERIA

Habitat Components Potential indicator Species	Capability To Monitor	Sensitivity To Management	Distribution	1/ Resident Status	Hunted Trapped Fished	Federal or State T&E
<u>CONIFERS</u>						
Pine Warbler	High	High	Broad	S.R.		
Sharp-shinned Hawk	Low	High	Broad	Resident		X
<u>MATURE HARDWOODS</u>						
Pileated Woodpecker	High	High	Broad	Resident		
Barred Owl	Low	Medium	Broad	Resident		
Wild Turkey	High	Medium	Broad	Resident	X	
Eastern Woodrat	High	High	Limited	Resident		X
Cerulean Warbler	High	High	Broad	S.R.		
Gray Squirrel	High	High	Broad	Resident	X	
Southern Flying Squirrel	Low	High	Broad	Resident		
<u>EARLY HARDWOODS</u>						
Ruffed Grouse	High	High	Broad	Resident	X	
Wood Thrush	High	High	Broad	S.R.		
Red-eyed Vireo	High	High	Broad	S.R.		
American Redstart	High	High	Broad	S.R.		
White-tailed Deer	High	Low	Broad	Resident	X	
Gray Fox	High	Medium	Broad	Resident	X	
<u>LATE SUCCESSION</u>						
White-eyed Vireo	High	High	Broad	S.R.		
American Woodcock	High	Medium	Broad	S.R.	X	
Brown Thrasher	High	High	Broad	S.R.		
Yellow-breasted Chat	High	High	Broad	S.R.		

1/ Residence status

R--resident
 SR--summer resident

WR--winter resident
 M--migrant

TABLE B-1 (continued)
 POTENTIAL MANAGEMENT INDICATOR SPECIES AND THEIR ATTRIBUTES
 BY EVALUATION CRITERIA

Habitat Components Potential indicator Species	Capability To Monitor	Sensitivity To Management	Distribution	<u>1/</u> Resident Status	Hunted Trapped Fished	Federal or State T&E
<u>MIDDLE SUCCESSION</u>						
Common Yellowthroat	High	High	Broad	S.R.		
Northern Mockingbird	Medium	High	Broad	Resident		
Blue-winged Warbler	High	High	Broad	S.R.		
Northern Cardinal	High	High	Broad	Resident		
<u>EARLY SUCCESSION</u>						
Field Sparrow	High	High	Broad	Resident		
Eastern Meadowlark	High	High	Broad	S.R.		
Savannah Sparrow	Medium	High	Broad	S.R.		
Least Shrew	Medium	Medium	Broad	Resident		
Eastern Cottontail	High	High	Broad	Resident	X	
<u>PARK LIKE</u>						
Eastern Bluebird	High	High	Broad	Resident		
Red-headed Woodpecker	High	High	Broad	Resident		
American Kestrel	High	High	Broad	Resident		
<u>BEAVER PONDS/OXBOWS</u>						
Wood Duck	High	High	Broad	S.R.		X
Belted Kingfisher	High	Medium	Broad	Resident		
Beaver	High	High	Broad	Resident		X
Red-spotted Newt	Medium	High	Broad	Resident		
<u>MARSH</u>						
Virginia Rail	High	High	Broad	S.R.		
Spotted Sandpiper	Medium	Medium	Broad	S.R.		
Muskrat	High	High	Broad	Resident		X
<u>FISHLESS PONDS IN FIELDS</u>						
Western Chorus Frog	High	High	Broad	Resident		
Smallmouth Salamander	High	High	Broad	Resident		
<u>VERNAL PONDS IN HARDWOODS</u>						
Wood Frog	High	High	Broad	Resident		
Four-toed Salamander	High	High	Broad	Resident		
<u>ARTIFICIAL IMPOUNDMENT</u>						
Channel Catfish	High	High	Broad	Resident		X
Blackside Topminnow	High	High	Limited	Resident		
Bluegill	High	High	Broad	Resident		X
Snapping Turtle	Medium	Medium	Broad	Resident		

1/ Residence status

R--resident
 SR--summer resident

WR--winter resident
 M--migrant

TABLE B-1 (continued)
 POTENTIAL MANAGEMENT INDICATOR SPECIES AND THEIR ATTRIBUTES
 BY EVALUATION CRITERIA

Habitat Components Potential indicator Species	Capability To Monitor	Sensitivity To Management	Distribution	<u>1/</u> Resident Status	Hunted Trapped Fished	Federal or State T&E
<u>SMALL STREAM/ INTERMITTENT STREAM</u>						
Redbelly Dace	High	High	Broad	Resident		
Rosyside Dace	High	High	Limited	Resident		X
Green Sunfish	High	High	Broad	Resident	X	
Orangethroat Darter	High	High	Limited	Resident		
<u>MEDIUM STREAM WITH SAND/GRAVEL POOLS</u>						
Redfin Shiner	High	High	Broad	Resident		
Rosefin Shiner	High	High	Limited	Resident		
Eastern Sand Darter	High	High	Limited	Resident		X
<u>MEDIUM STREAM WITH SILT POOLS</u>						
Blackside Darter	High	High	Broad	Resident		
Bluntnose Minnow	High	High	Broad	Resident		
Tadpole Madtom	High	High	Limited	Resident		
<u>MEDIUM STREAM WITH RIFFLES</u>						
Rainbow Darter	High	High	Broad	Resident		
Mottled Sculpin	High	High	Limited	Resident		
Greenside Darter	High	High	Broad	Resident		
<u>LARGE STREAM WITH POOL</u>						
Golden Redhorse	High	High	Broad	Resident		
Silver Chub	High	High	Limited	Resident		X
Largemouth Bass	High	High	Broad	Resident	X	
Dusky Darter	High	High	Limited	Resident		
<u>LARGE STREAMS WITH SAND POOLS</u>						
Sand Shiner	High	High	Broad	Resident		
Silver Chub	High	High	Limited	Resident		X
Largemouth Bass	High	High	Broad	Resident	X	
Black Crappie	High	High	Broad	Resident	X	
Eastern Sand Darter	High	High	Limited			X
<u>LARGE STREAM WITH RIFFLES</u>						
Banded Darter	High	High	Broad	Resident		
Smallmouth Bass	High	High	Broad	Resident	X	
Slenderhead Darter	High	High	Limited	Resident		X

1/ Residence status

R--resident
 SR--summer resident

WR--winter resident
 M--migrant

As a result of public comment received by the Forest concerning the Draft Forest Plan, Table B-2, was revised slightly in 1987, to include the Cerulean Warbler as a MIS for an additional habitat component, "Close-canopied, Mature/Overmature, Hardwood Forest." This addition was in response to suggestions made by some commenters that extensive, unfragmented, older hardwood forest be added as a habitat type to be monitored and that one or more interior forest wildlife species, such as the Cerulean Warbler, be added as a MIS for the type.

TABLE B-2
MANAGEMENT INDICATOR SPECIES AND REASONS FOR OMITTING OTHER
POTENTIAL INDICATOR SPECIES

HABITAT COMPONENTS MANAGEMENT INDICATOR SPECIES	OMITTED	REASON FOR OMISSION OR REPRESENTED BY:
<u>CONIFERS</u>		
Pine Warbler	Sharp-shinned Hawk	Limited Monitoring Capability
<u>MATURE HARDWOODS</u>		
Pileated Woodpecker	Barred Owl Wild Turkey Cerulean Warbler Eastern Woodrat Gray Squirrel Southern Flying Squirrel	Pileated Woodpecker Moderate Sensitivity to Management Pileated Woodpecker Limited Distribution Pileated Woodpecker Limited Monitoring Capabilities
<u>CLOSE-CANOPIED, M/O HARDWOODS</u>		
Cerulean Warbler	Acadian Flycatcher	Cerulean Warbler
<u>EARLY HARDWOODS</u>		
Ruffed Grouse	Wood Thrush Red-eyed Vireo American Redstart White Tailed Deer Gray Fox	Ruffed Grouse, Pileated Woodpecker Ruffed Grouse, Pileated Woodpecker Ruffed Grouse Low Sensitivity to Management Moderate Sensitivity to Management
<u>LATE SUCCESSION</u>		
White-eyed Vireo	American Woodcock Brown Thrasher Yellow-breasted Chat	White-eyed Vireo, Common Yellowthroat White-eyed Vireo, Common Yellowthroat White-eyed Vireo, Common Yellowthroat
<u>MIDDLE SUCCESSION</u>		
Common Yellowthroat	Northern Mockingbird Blue-winged Warbler Northern Cardinal	White-eyed Vireo, Common Yellowthroat Common Yellowthroat, White-eyed Vireo Common Yellowthroat, White-eyed Vireo
<u>EARLY SUCCESSION</u>		
Field Sparrow	Eastern Meadowlark Savannah Sparrow Least Shrew Eastern Cottontail	Field Sparrow, Eastern Bluebird Field Sparrow Moderate Monitoring Capabilities Field Sparrow, Common Yellowthroat
<u>PARK LIKE</u>		
Eastern Bluebird	Red-headed Woodpecker American Kestrel	Eastern Bluebird Eastern Bluebird
<u>BEAVER PONDS/OXBOWS</u>		
Wood Duck	Belted Kingfisher Beaver Red-spotted Newt	Wood Duck Wood Duck Moderate Monitoring Capabilities
<u>MARSH</u>		
Virginia Rail	Spotted Sandpiper Muskrat	Virginia Rail Virginia Rail, Wood Duck

TABLE B-2 (continued)
 MANAGEMENT INDICATOR SPECIES AND REASONS FOR OMITTING OTHER
 POTENTIAL INDICATOR SPECIES

HABITAT COMPONENTS MANAGEMENT INDICATOR SPECIES	OMITTED	REASON FOR OMISSION OR REPRESENTED BY:
<u>FISHLESS PONDS IN FIELDS</u>		
Western Chorus Frog	Smallmouth Salamander	Western Chorus Frog, Wood Frog
<u>VERNAL PONDS IN HARDWOODS</u>		
Wood Frog	Four-toed Salamander	Wood Frog, Virginia Rail
<u>ARTIFICIAL IMPOUNDMENT</u>		
Bluegill	Blackside Topminnow Channel Catfish Snapping Turtle	Limited Distribution Bluegill Moderate Sensitivity to Management
<u>SMALL STREAM/INTERMITTENT STREAM</u>		
Redbelly Dace	Rosyside Dace Green Sunfish Orangethroat Darter	Limited Distribution Redbelly Dace Limited Distribution
<u>MEDIUM STREAM WITH SAND/GRAVEL POOLS</u>		
Redfin Shiner	Rosefin Shiner Eastern Sand Darter	Limited Distribution Limited Distribution
<u>MEDIUM STREAM WITH SILT POOLS</u>		
Blackside Darter	Bluntnose Minnow Tadpole Madtom	Blackside Darter, Redfin Shiner Limited Distribution
<u>MEDIUM STREAM WITH RIFFLES</u>		
Rainbow Darter	Mottled Sculpin Greenside Darter	Limited Distribution Rainbow Darter, Banded Darter
<u>LARGE STREAM WITH POOLS</u>		
	Golden Redhorse Silver Chub Largemouth Bass Dusky Darter	The waters of the Hocking and Muskingum Rivers (large streams) and associated water quality are not responsive to management activities on the Wayne National Forest.
<u>LARGE STREAM WITH SAND POOLS</u>		
	Sand Shiner Silver Chub Largemouth Bass Black Crappie Eastern Sand Darter	Same as large streams with pools.
<u>LARGE STREAM WITH RIFFLES</u>		
	Banded Darter Smallmouth Bass Slenderhead Darter	Same as large streams with pools.

FINAL EVALUATION

It is recognized that wildlife populations are not limited to a specific habitat type; therefore, simplified representations of vertebrate ecosystems are imperfect. However, generalized ecotypes provide a basis for estimating how well indicator species represent other indigenous species.

Table B-3 indicates how adequately the 17 indicator species represent all vertebrate life forms within the Wayne National Forest. An "x" indicates that a species is likely to occur in or prefers that habitat component represented by the indicator species. Five mammals, 6 birds, 1 reptile, 2 amphibians, and 51 fishes indigenous to Ohio are not represented by the 17 indicator species. These are tallied in the "special" column which refers to Table B-4.

Within the matrix the designations are as follows:

- X - Principal breeding and foraging habitat
- Y - Foraging habitat only
- A - Ammocoete
- S - Spawning habitat only
- * - State threatened or endangered
- 1 - Homesteads and heavily grazed pastures, reclaimed stripmines.
- 2 - Barns, abandoned buildings, cavities
- 3 - Gravel pits, stripmines
- 4 - Riparian woodlands
- 5 - Restricted range

TABLE B-3
RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
MAMMALS																						
Opossum	X		X	X	X	X	X		X	X												
Eastern Mole					X	X	X	X														
Hairy-tailed Mole	X	X	X	X																		
Short-tailed Shrew	X	X	X	X	X	X	X															
Least Shrew						X	X															
Smokey Shrew	X	X	X	X																		
Masked Shrew	X	X	X	X	X	X	X			X												
Pigmy Shrew	X		X	X																		
Little Brown Myotis							X	X														24
Keen's Myotis	X		X	X																		4
Silver-haired Bat	X		X	X																		4
Eastern Pipistrelle	X		X	X																		4
Big Brown Bat					X	X	X															
Red Bat	X		X	X	X	X	X															4
Hoary Bat	X		X	X	X	X	X															4
Eastern Cottontail					X	X	X															
Eastern Chipmunk	X		X	X	X	X																
Woodchuck	X		X	X	X	X	X															
Gray Squirrel	X		X	X	X	X																
Fox Squirrel	X		X	X	X	X																
Southern Flying Squirrel	X		X	X																		
Beaver	X		X	X	X				X													
Deer Mouse							X															
White-footed Mouse	X		X	X	X	X																
Southern Bog Lemming							X			X												
Prairie Vole							X															
Meadow Vole							X			X												1
Pine Vole	X		X	X	X	X	X															
Muskrat									X	X												
Eastern Harvest Mouse					X	X	X			X												
Norway Rat																						2
House Mouse					X	X	X															2
Raccoon	X		X	X					X	X												

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
MAMMALS																						
Least Weasel					X	X	X															
Long-tailed Weasel	X		X	X	X	X	X		X	X												
Mink									X	X												
Striped Skunk	X		X	X	X	X	X		X													
Red Fox	X		X	X	X	X	X															
Gray Fox	X		X	X	X	X																
Coyote					X	X	X															
Bobcat	X		X	X	X	X																
White-tailed Deer	X		X	X	X	X	X															
BREEDING BIRDS																						
Great Blue Heron									X	X												4
Green Heron									X	X												4
Mallard									X	X												
Wood Duck									X	X												1
Turkey Vulture	X		X																			
Black Vulture	X		X																			
Sharp-shinned Hawk	X	X	X	Y	Y																*	
Coopers Hawk	X	X	X	Y	Y																	
Red-tailed Hawk	X		X			Y	Y	Y														
Red-shouldered Hawk	X		X			X	X		X	X												9
Broad-winged Hawk	X		X	X	Y																	
American Kestrel						Y	Y	X														
Ruffed Grouse	X		X	X	X																	
Common Bobwhite						X	X															
Wild Turkey	X		X	X			X															
Killdeer																						1
Spotted Sandpiper									X	X												
American Woodcock					X	X																
Rock Dove																						2
Mourning Dove		X			X	X		X														2
Yellow-billed Cuckoo	X		X	X	X																	
Black-billed Cuckoo	X		X	X	X																	
Barn Owl							Y															2

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other	
BREEDING BIRDS																							
Common Screech Owl	X		X			Y	Y	X															
Great Horned Owl	X		X			Y	Y	Y															
Barred Owl	X		X			Y	Y																4
Whip-poor-will	X		X	X																			
Common Nighthawk	X		X	X																			
Chimney Swift										X													1,4
Ruby-Throated Hummingbird	X		X	X	X					X													
Belted Kingfisher										X													
Common Flicker				X	X			X															
Pileated Woodpecker	X		X																				
Red-Bellied Woodpecker	X		X	X																			
Red-Headed Woodpecker								X															
Hairy Woodpecker	X		X	X																			
Downy Woodpecker	X		X	X																			
Eastern Kingbird								X	X	X													
Great Crested Flycatcher	X		X																				
Eastern Phoebe	X		X						X	X													
Acadian Flycatcher	X		X																				
Willow Flycatcher					X	X			X	X													
Eastern Pewee	X		X																				
Horned Lark																							1
Bank Swallow									X	X													3
Rough-winged Swallow									X	X													3
Barn Swallow																							2
Cliff Swallow																							2
Purple Martin									X														1,4
Blue Jay	X	X	X	X																			
American Crow	X	X	X	X																			
Carolina Chickadee	X	X	X	X																			
Tufted Titmouse	X	X	X	X																			
White-breasted Nuthatch	X		X	X																			
House Wren	X		X	X																			2
Bewick's Wren																							2
Carolina Wren	X		X	X																			2
Northern Mockingbird					X	X																	
Gray Catbird				X	X	X																	

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
BREEDING BIRDS																						
Brown Thrasher					X	X																
American Robin	X		X					X														
Wood Thrush	X		X	X																		
Eastern Bluebird							X	X														
Blue-gray Gnatcatcher	X		X																			4
Cedar Waxwing	X		X	X				X	X													
Loggerhead Shrike					X	X	X															
European Starling								X														
White-eyed Vireo					X	X																
Yellow-throated Vireo	X		X																			
Red-eyed Vireo	X		X	X																		
Warbling Vireo								X	X	X												4
Black-and-white Warbler	X		X																			
Prothonotary Warbler								X	X	X												4
Worm-eating Warbler	X		X																			
Blue-winged Warbler					X	X																
Yellow Warbler					X	X		X	X													
Cerulean Warbler	X		X																			
Yellow-throated Warbler								X	X													4
Pine Warbler		X																				
Prairie Warbler					X	X																
Ovenbird	X		X																			
Louisiana Waterthrush	X		X						X	X												4
Kentucky Warbler	X		X																			
Common Yellowthroat						X	X															
Yellow-breasted Chat					X	X																
Hooded Warbler	X		X																			
American Redstart				X																		
House Sparrow																						1
Eastern Meadowlark							X	X														
Red-winged Blackbird						X	X		X	X												
Orchard Oriole					X			X														
Northern Oriole								X														
Common Grackle		X		X	X	X																
Brown-headed Cowbird	X	X	X	X	X	X	X	X														
Scarlet Tanager	X		X																			

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other	
<u>BREEDING BIRDS</u>																							
Summer Tanager	X		X																				
Northern Cardinal					X	X																	
Rose-breasted Grosbeak	X		X																				
Blue Grosbeak						X	X																
Indigo Bunting				X	X	X		X															
American Goldfinch					X	X																	
Rufous-sided Towhee				X	X	X																	
Savannah Sparrow								X															
Grasshopper Sparrow								X															
Henslow's Sparrow						X	X																
Vesper Sparrow							X																
Lark Sparrow							X																
Backman's Sparrow					X	X																	
Chipping Sparrow		X							X														1
Field Sparrow						X	X																
Song Sparrow					X	X	X																
<u>REPTILES</u>																							
Snapping Turtle									X				X					X	X				
Stinkpot									X	X		X											
Eastern Box Turtle	X		X	X	X	X	X																
Painted Turtle													X					X	X				
Red-eared Slider													X										
Spiny Softshell																		X	X				
Northern Fence Lizard					X	X																	
Ground Skink	X		X	X																			
Five lined Skink	X		X	X																			
Broadheaded Skink	X		X	X																			
Queen Snake														X	X								
Northern Water Snake									X	X			X		X	X	X	X	X	X	X	X	X
Kirtlands Water Snake							X			X													
Brown Snake	X		X	X	X	X																	

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
<u>REPTILES</u>																						
Redbelly Snake	X		X	X																		
Eastern Earth Snake						X	X															
Eastern Garter Snake							X															
Eastern Ribbon Snake										X												
Eastern Hognose Snake							X															
Midwest Worm Snake	X		X	X	X																	
Northern Ringneck Snake	X		X	X										X								
Rough Green Snake				X	X	X																
Northern Black Racer							X															
Black Rat Snake				X	X	X																
Black Kingsnake								X	X				X		X	X	X	X	X	X	X	X
Eastern Milk Snake				X	X	X																
Copperhead	X		X	X	X																	
Timber Rattlesnake	X		X																			
<u>AMPHIBIANS</u>																						
Hellbender																	X	X	X	X		
Mudpuppy																X		X	X			
Jefferson Salamander												X										
Spotted Salamander												X										
Marbled Salamander												X										
Smallmouth Salamander										X	X	X		X								
Red-spotted Newt									X	X	X	X										
Slimy Salamander	X		X	X																		
Redback Salamander	X		X	X																		
Ravine Salamander	X		X	X																		
Dusky Salamander															X							
Spring Salamander														X								
Mud Salamander														X								
Red Salamander														X								
Green Salamander																						*
Two-lined Salamander														X								

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
<u>AMPHIBIANS</u>																						
Longtail Salamander														X								*
Eastern Spadefoot Toad																						*
American Toad							X	X	X	X		X										
Fowlers Toad							X				X		X									
Western Cricket Frog										X			X									
Spring Peeper									X		X	X										
Gray Tree Frog									X	X		X										
Western Chorus Frog										X	X	X										
Mountain Chorus Frog												X										
Bull Frog								X	X	X	X		X					X	X			
Green Frog								X	X	X	X					X		X	X			
Leopard Frog								X	X	X			X									
Pickereel Frog								X				X		X								
Wood Frog												X										
<u>FISHES</u>																						
Ohio Lamprey														S	A	A	S				*	5
Least Brook Lamprey														S	A	A	S					
Longnose Gar												X						X	X			
Gizzard Shad												X						X	X			
Northern Pike												X						X	X			
Grass Pickerel							X								X	X		X	X			
Chain Pickerel												X										
Ohio Muskellunge												X						X	X			
Carp							X					X				X		X	X			
Goldfish												X						X	X			
Blacknose Dace														X								
Redbelly Dace														X								
Redside Dace														X								5
Rosyside Dace														X							*	5
Bigeye Chub															X							
Creek Chub														X	X	X						
River Chub																				X		

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
FISHES																						
Silverjaw Minnow													X	X	X							
Bluntnose Minnow													X	X	X	X	X	X	X			
Suckermouth Minnow														X	X		X	X	X			
Bullhead Minnow																	X	X				5
Golden Shiner								X				X			X							
Emerald Shiner												X					X	X				
Silver Shiner														X				X				
Rosyface Shiner														X				X				
Redfin Shiner													X	X	X							
Rosefin Shiner													X	X	X							5
Striped Shiner												X	X	X	X		X	X				
River Shiner																	X	X				5
Spotfin Shiner														X	X		X	X				
Sand Shiner														X				X				
Mimic Shiner														X				X				
Steelcolor Shiner																	X	X				5
Stone Roller													X	X		X				X		
Quillback																	S	X	X			
Silver Redhorse												X					S	X	X			
Golden Redhorse												X		X	X	S	X	X				
Black Redhorse														X	X	S	X	X				
Shorthead Redhorse																	X	X				5
White Sucker								X				X	X	X	X	X	X	X	X	X		
Northern Hog Sucker														X		X		X	X			
Spotted Sucker								X							X		X					
Channel Catfish												X				S	X	X				
Flathead Catfish												X					X	X				
Yellow Bullhead												X		X	X		X	X				
Brown Bullhead								X				X		X	X		X	X				
Black Bullhead								X				X		X	X		X	X				
Brindled Madtom														X			X					
Tadpole Madtom								X							X		X					5
Stonecat																X			X			
Trout-perch														X	X		X	X				

TABLE B-3 (continued)
 RELATIONSHIP OF MANAGEMENT INDICATOR SPECIES TO OTHER SPECIES
 INDIGENOUS TO THE WAYNE NATIONAL FOREST

	Cerulean Warbler	Pine Warbler	Pileated Woodpecker	Ruffed Grouse	White-eyed Vireo	Common Yellowthroat	Field Sparrow	Eastern Bluebird	Wood Duck	Virginia Rail	Western Chorus Frog	Wood Frog	Bluegill	Redbelly Dace	Redfin Shiner	Blackside Darter	Rainbow Darter	Golden Redhorse	Sand Shiner	Banded Darter	Special	Other
FISHES																						
Blackstripe Topminnow								X				X			X							5
Brook Silverside														X	X			X	X			
Mottled Sculpin														X			X					5
Smallmouth Bass												X		X	X			X	X	X		
Spotted Bass												X		X	X			X	X			
Largemouth Bass								X				X		X	X			X	X			
Rock Bass												X		X	X			X	X	X		
Green Sunfish								X				X	X	X	X			X	X			
Pumpkinseed								X				X		X	X			X	X			
Warmouth																X						
Orangespotted Sunfish															X	X						
Longear Sunfish													X	X	X			X	X			
Redear Sunfish													X					X	X			
Bluegill								X				X		X	X			X	X			
White Crappie												X		X	X			X	X			
Black Crappie								X				X		X	X			X	X			
Yellow Perch												X						X	X			
Sauger												X						X	X	X		
Logperch																	X				X	
Blackside Darter															X	X		X	X			
Eastern Sand Darter															X				X		*	
Johnny Darter														X	X	X	X	X	X	X		
Greenside Darter																	X				X	
Rainbow Darter														X							X	
Fantail Darter														X							X	
Banded Darter														X							X	
Variegated Darter																	X				X	
Dusky Darter																		X	X			5
Orangethroat Darter														X			X					5
Freshwater Drum												X						X	X			

**SPECIES WITH
SPECIALIZED
HABITAT
REQUIREMENTS**

Those species not adequately represented in Table B-3, species which may occur in breeding or resident populations (limited distribution), and Federal or State T&E species, are compiled in Table B-4. Based on available information, habitat parameters were identified, components developed, and management direction identified. Standards and guidelines adequately provide for all species addressed within the standards and guidelines. The Forest, because of a limited number of wetland sites, will provide as much wetland cover as is possible. Those species whose habitat requirements are not satisfied by or conflict with Forest diversity and management objectives, such as the upland plover of extensive grassland and the house sparrow of rural and/or urban areas, may not be provided for on National Forest System land. It is assumed that adequate habitat for these species is provided on private land within the range of these species in Ohio.

TABLE B-4
MANAGEMENT PROVISIONS FOR VERTEBRATE SPECIES WITH SPECIAL HABITATS NOT
ADEQUATELY REPRESENTED BY MANAGEMENT INDICATOR SPECIES

<u>COMPONENT</u>	<u>SPECIES</u>	<u>HABITAT PROVIDED</u>	<u>HOW PROVIDED FOR</u>
Extensive grassland	Killdeer Horned lark	Nesting, feeding, cover	Not provided--not desirable to develop on National Forest land but provided on adjoining private lands.
Rural and residential	Norway rat House mouse Rock dove Chimney swift European starling House sparrow Purple martin	Preferred and/or foraging habitat	Not provided within the forest. Adequate type on adjoining private lands.
Abandoned buildings and barns	Barn owl Barn swallow Cliff swallow Bewick's wren	Nesting Preferred habitat Nesting Nesting, cover	May not be provided for because of potential public safety hazards from these structures.
Endangered and Threatened	Sharp-shinned hawk Green salamander Spadefoot toad Ohio lamprey	Nest & foraging cover Rock outcrops Old fields with temporary water Medium streams with riffles and pools	Under Endangered, Threatened, and Sensitive Species standards and guidelines because of status.

TABLE B-4 (Con't.)
 MANAGEMENT PROVISIONS FOR VERTEBRATE SPECIES WITH SPECIAL HABITATS NOT
 ADEQUATELY REPRESENTED BY MANAGEMENT INDICATOR SPECIES

<u>COMPONENT</u>	<u>SPECIES</u>	<u>HABITAT PROVIDED</u>	<u>HOW PROVIDED FOR</u>
Endangered and Threatened (Con't.)	Rosyside dace	Small streams/intermitent streams	Under Endangered, Threatened, and Sensitive
	Eastern sand darter	Medium/large stream with sand pools	Species standards and guidelines because of status.
	Bald eagle	Not applicable	T&E standards and
	Am. peregrine falcon	(species occur as migrants)	guidelines provide for development & protection of potential habitat.
	King rail		
	Kirtland's warbler		

TABLE B-5
 POPULATION TREND OBJECTIVES OF MANAGEMENT INDICATOR SPECIES

Species	Estimated Population Change in Percent From Present Condition ^{1/}	
	End of Decade 1 ^{2/}	End of Decade 5
Cerulean Warbler	+3/	+3/
Pileated Woodpecker	+20	+53
White-eyed Vireo	-3	+6
Common Yellowthroat	+13	+35
Field Sparrow	-5	+73
Pine Warbler	+33	-55
Ruffed Grouse	-2	+25
Eastern Bluebird	-31	+16
Wood Duck	+1	+5
Virginia Rail	+59	+294
Western Chorus Frog	+24	+118
Wood Frog	+24	+118
Bluegill	+7	+37
Redbelly Dace	-	-
Redfin Shiner	-	-
Blackside Darter	-	-
Rainbow Darter	-	-

^{1/} Based on population indexes in Table 4-36, page 4-61 of the DEIS.

^{2/} Decade 1 is planned; Decade 5 is projected.

^{3/} Overall, populations may increase as area with mature, tall trees forming a dense crown canopy increases. Because effects of uneven-aged management and other management in portions of the Forest are not fully known, percent changes in populations could not be estimated.



APPENDIX C

**Vegetation Management Practices –
Rationale for Choices**

APPENDIX C

VEGETATION MANAGEMENT PRACTICES, RATIONALE FOR CHOICES

INTRODUCTION

The National Forest Management Act of 1976 (Section 6(g)(3), (E)(iv) and (F)(i)) and the resulting Secretary's Regulations (36 CFR 219.15) require that vegetation management practices be chosen which are appropriate to meet the objectives and requirements of the land management plan.

The Eastern Region recognizes 61 different forest types, (FSH 2409.21d-R9, April 1974), of which this Forest has 26 types, (FSH 2409.21d-R9, WH Supp-6, Apr., 1985). The principal references for these types are within Silvicultural Systems for the Major Forest Types in the United States, Agricultural Handbook 445; and Silvics of Forest Trees of the United States, Agriculture Handbook 271. Additional references include manager's guides on individual tree species and collective forest types. The guides describe silvicultural characteristics by type and management practices appropriate for various management objectives. They also provide guidance on other resource considerations, such as soils, water, recreation, wildlife, and insect and disease management.

References are listed at the end of this Appendix.

SILVICULTURAL SYSTEMS AND REGENERATION HARVEST METHODS

The principal objective in harvesting timber is to regenerate a stand to meet a number of resource management objectives. These include desired conditions for visual management, species composition, wildlife habitat, timber quality, and integrated pest management. Achieving the management objective is foremost in selecting the harvest method. Although there are many harvest methods used in managing forest lands, there are only two silvicultural systems available--even-aged and uneven-aged.

Within the even-aged category, there are three silvicultural harvest methods recognized by the Society of American Foresters: clearcutting, shelterwood, and seed tree. The uneven-aged category consists of a selection method. Principal variations are single-tree and group selection.

UNEVEN-AGED SYSTEM

A stand is considered uneven-aged if three or more 20-year age classes are represented within the stand. (Roach, 1974) With an uneven-aged system, a portion of each age class in each stand is harvested on a routine cutting cycle such as 10 or 15 years. Under a system with a 15-year cutting cycle there would be harvesting activity on approximately 7 percent of the forest land base each year.

The uneven-aged system generally results in less volume growth than the even-aged system (Smith and DeBald 1978). This is due primarily to the high proportion of slower growing species and increased competition.

**Single-Tree
Selection Method**

Single-tree selection entails the periodic removal of individual trees. The goal is to maintain a given number of trees per acre in each diameter class. This practice should not be confused with "high grading" where only large trees are cut. In order for the practice to work, some trees must be cut or killed within most, or all, diameter classes.

Harvesting, with repeated entries, is an ongoing process in single-tree selection. Because this method allows only limited light to reach the forest floor, shade-intolerant species are unlikely to regenerate. As the shade-intolerant species, such as oaks and yellow poplar, are removed from the stand they will be replaced by shade tolerant species, such as beech and maple.

Shade tolerance is a term which refers to the ability of a tree to survive and grow in shaded conditions. The primary species in this area which are shade tolerant are beech and maple, relatively low commercial value timber species. Higher value species are typically shade intolerant such as yellow poplar, red and black oak, cherry, and black walnut or intermediately tolerant such as white oak.

Single-tree selection and group selection are often not economically feasible on steep slopes. Areas with slopes of 30 percent or more may be precluded from commercial timber harvest under an uneven-aged system. Such areas have been harvested by the clearcut method in the past by the use of Cable logging systems. These areas may be precluded from harvest until the technology is developed to make selection economically feasible in the test areas.

The single-tree selection method meets the needs of most high-forest, cavity dwelling, closed canopy wildlife species. This method is least beneficial for wildlife species which use openings, edges and low browse.

The visual resource is minimally affected by harvesting with the single-tree selection method. This method provides for retaining a large-tree character in the landscape. To some, the frequent and repeated harvest operations and the extensive road system needed initially may be objectionable.

**Group Selection
Method**

In the group selection method, the management area is treated as a single stand and the volume to be harvested each cutting cycle determines the number of openings to establish.

The objective of this method is to establish desirable regeneration at each harvest cycle, thereby producing an uneven-aged stand. Because the removal of groups will permit more light to reach the forest floor than with single-tree selection, group selection can be used to encourage a higher proportion of shade-intolerant species.

When group cuts are made of a maximum size, often considered to be 2 acres, they resemble small clearcuts. The aesthetic and wildlife benefits of using group selection depend largely upon group size, spacing, and frequency.

Group selection harvest systems develop a vegetative condition with an interconnected canopy and many small openings (1/2 acre to 2 acres) simulating a checkerboard pattern within a forested environment. Wildlife that use mature forests, forest edges and small patches of young forest will be present in areas with group selection timber harvest. Small openings and seedling-sapling sized groups are perpetuated throughout the Forest, providing the earlier stages of plant succession required by some wildlife (i.e. white-eyed vireo, and common yellow throat). The mosaic of seral stages resulting from several entries of group selection includes interconnected groups of larger trees of different canopy heights, providing habitat for species adapted to mature forest.

EVEN-AGED SYSTEM

With even-aged harvest methods--seed-tree, shelterwood and clearcutting--the intent is to maintain a mosaic or different-aged stands of manageable size of equal age (age class). A stand is considered even-aged if the difference in age between the oldest and youngest trees of the managed stand does not exceed 20 percent of the length of rotation. This is 16 years for an 80-year rotation and 24 years for a 120-year rotation, and 32 years for a 160-year rotation. With any of these systems, the size, shape and dispersion of harvest units is done to achieve multiple use management objectives of the area.

The rotation age under an even-aged management system is the number of years between establishment of a stand of timber and when it is considered ready for harvesting and regeneration. If a forested area is being managed on a 120-year rotation, about 8 percent of the area would be regenerated each decade, or less than 1 percent per year. During a rotation there will be no more than two thinnings prior to the next regeneration harvest. Thus, during a 120-year rotation an area may be directly impacted by harvesting equipment once for thinning and once for a regeneration harvest. This is about one-half as often as it would be impacted with an uneven-aged system with six selection harvests at 20-year intervals. thin

Habitats perpetuated through even-aged management activities most closely resemble today's forest of a mixed, predominantly single-aged stand. It has the potential to provide early successional stages in patch sizes large enough to satisfy life requirements of most species of wildlife that require early successional habitats (i.e. bluebirds and field sparrow) and still provide large interconnected stands of larger trees.

Seed-Tree Method

This method involves harvesting all but a few well-distributed trees of the desired species to provide seed for natural regeneration. After adequate regeneration has been established the seed trees are normally harvested. This method is suited mainly to conifers and is not satisfactory for management of the central hardwoods because ash, yellow poplar and other light seeded species produce large seed crops which may remain viable on the forest floor for several years. When exposed to proper growing conditions they respond rapidly.

Shelterwood Method

In the shelterwood method the mature stand is removed in a series of two or three cuts. The early cuts are designed to improve vigor and seed production of the remaining trees while preparing the site for new seedlings. The final harvest is made when a sufficient amount of desirable reproduction has become established and before the regeneration has reached 20 percent of its rotation age. This method provides a partial cover of either large or small trees. When the shelter becomes a hindrance to the growth of the seedlings, rather than a benefit, it is necessary to remove the remainder of the mature stand. (Smith, 1962) In central hardwoods, research has found that this will occur within 10 years (Williams, 1976; Sander and Clark, 1971).

The shelterwood method is most appropriate for tree species or sites where the shelter of a partial overstory is needed for reproduction, or to give tree regeneration of high commercial value an advantage over species of lesser value.

Shelterwood is one technique which researchers believe may regenerate oak on good sites. This has not been consistently demonstrated in practice, however. Shelterwood is often recommended for regenerating hardwood stands. However, the details of the density which should be retained in the shelter and the timing of the shelter removal are still being studied. Shelterwood recommendations commonly contain a statement that details are uncertain and suggest more research (Smith, 1981).

Clearcut Method

With the exception of trees left for wildlife or visual purposes, all merchantable trees on an area are harvested at one time in clearcutting. Unmerchantable trees are also felled to eliminate competition with the regeneration. Regeneration develops from natural seeding and sprouting in this area. This regeneration method favors the establishment and development of shade intolerant species which are generally the more desirable commercial species. Clearcutting is the method that can slow the change from oak-hickory to the more mesic mixed hardwoods that is presently occurring on the Forest because of natural forces.

To obtain desirable natural regeneration in central hardwood stands, clearcutting is the most effective method. Clearcutting normally results in more seedlings and new sprouts than any other harvest method. Where regeneration of oak and hickory is of primary importance, advance reproduction of these species is

essential prior to harvesting the overstory. (Sander and Clark, 1971) Experience has also shown that other factors such as site quality, aspect and slope position affect the composition of natural regeneration. The oaks and hickories compete better on poor, dry sites with south and west exposure.

Clearcutting is especially appropriate for stands where the residual trees would not be worth retaining for a future crop, when stands have had the best trees removed in past harvests, or in areas which have insufficient trees to adequately use growing space.

CHOICE OF HARVEST METHOD

Some forest types can be regenerated by more than one silvicultural system and/or harvest method, but other types can not. Since a management area typically contains several forest types and diversity is desirable within a management area, more than one harvest method may be used in a management area.

CRITERIA FOR CHOICE

The silvicultural system chosen for each management prescription was determined by defining the desired future conditions of the land based on issues, concerns, and opportunities. Management prescriptions 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 6.1 and 6.3 manipulate vegetation on a regulated basis. Management prescriptions 6.2 and 7.1 can also manipulate vegetation but not on a regulated basis.

In addition to purely silvicultural considerations, other factors that affect the choice of silvicultural systems, harvest methods, and rotation ages include:

- Recreation demands
- Wildlife habitat diversity needs
- Demand for timber products
- Condition of existing stands
- Economics
- Presence of riparian areas
- Visual quality objectives

HARVEST METHOD BY MANAGEMENT PRESCRIPTION

Management Prescription 2.1

This prescription protects and enhances visual quality and recreation opportunities along canoeing and fishing streams while providing for high quality hardwoods. A variety of wildlife is present with those using large hardwood trees being emphasized.

A continuous forest canopy is desirable near streams and on steeper slopes. On the remainder of the area visual and vegetative diversity of a noncontinuous forest canopy is desirable. A mix of clearcutting, shelterwood, single-tree and group selection harvest methods is appropriate. Which one will be used will be determined at the project planning level.

Management
Prescriptions
2.2 and 2.3

These prescriptions are to produce a vegetative condition for high quality dispersed recreation opportunities in a natural-appearing, relatively continuous forested landscape. They are also to produce wildlife habitat for a variety of wildlife, but primarily for species associated to large stands of shade-tolerant hardwood species.

UEAM

To maintain these conditions, it is necessary to employ an uneven-aged silvicultural system. Either single-tree selection, group selection, or a combination of both harvest methods is appropriate.

Management
Prescriptions
3.1 and 3.2

These prescriptions are to produce a vegetative condition that maintains wildlife habitat diversity while increasing and enhancing habitat for early successional wildlife species, provides high quality hardwoods on a sustained yield basis, and provides dispersed recreation opportunities in moderate amounts.

To maintain the present diversity of tree and animal species and high quality hardwoods on a sustained yield basis, it is necessary to use an even-aged system. The only methods applicable to the Forest are shelterwood and clearcut.

The Eastern white pine plantations will be regenerated by the shelterwood method and will result in mixed pine-hardwood stands.

Clearcutting is optimum to regenerate the yellow poplar type because it is the only method which provides sufficient light to achieve adequate stocking and growth of yellow poplar.

The clearcut and shelterwood methods are both appropriate for the oak-hickory type. In stands where the desired condition is the forest type and advance regeneration is not present in adequate numbers, shelterwood may be used in an attempt to increase the amount of desired advance regeneration. The use of shelterwood will probably be in conjunction with prescribed fire, understory control of undesired species, underplanting of oaks, or a combination of all these practices. Stands with a poorly stocked overstory or of low vigor are not shelterwood opportunities. These stands will be regenerated by clearcutting to retain oak and hickory as stand components.

Where oak-hickory regeneration is not a problem, clearcutting is optimum because:

- For understocked stands of low vigor, clearcutting, compared to shelterwood harvest, greatly reduces the risk of sparse, low-vigor regeneration. Full sunlight obtains more, and higher-vigor, regeneration.

- In some specific locations where shelterwood or clearcutting is satisfactory, clearcutting is optimum because it creates more abundant food for wildlife or greater visual variety.
- Many stands can be sold commercially as a clearcut which would not sell as a 2-cut shelterwood, because each cut requires extra care to protect residual trees and has a lower volume per acre of harvest. When all the trees can be harvested, the manager has more discretion to harvest the best locations for particular wildlife needs, for diversity, and for aesthetics.
- Motorized access needs are the least. Roads need not be kept open through 2 harvests but rather can be closed after the clearcut until the first thinning or the next regeneration cut. This generally minimizes effects on wildlife, recreation, and soil erosion.
- Costs are lower, and revenues higher, for clearcutting than for shelterwood. Costs are lower because there is only one timber sale for the stand, and revenues are higher because of higher volumes per acre and less care needed to avoid damaging residual trees.
- The risk of losing all or part of the residual stand to wind, logging damage, insects and disease, and losing quality of residual trees to epicormic branching, is avoided.
- The time necessary for regeneration may be shorter and faster early growth of the stand is possible. This may also shorten the time until the stand produces mast crops.

In summary, where oak-hickory reproduction is not a problem, clearcutting is optimum. It offers more flexibility of location to manage timber for other purposes, higher revenues, lower costs, and less risk. In nearly all cases, clearcutting will regenerate as much, or more, oak than uneven-aged management by the group-selection method and more than would be regenerated using an single-tree selection method of management.

**Management
Prescriptions
3.3, 3.4, 6.1
and 6.3**

These prescriptions are similar to 3.1 and 3.2 in their vegetative management objectives except that the wildlife emphasis is on species requiring mature and overmature hardwoods. Therefore, the rationale for selecting the silvicultural system and harvest methods is the same, leading to the conclusion that clearcutting is the optimum method for these prescriptions also.

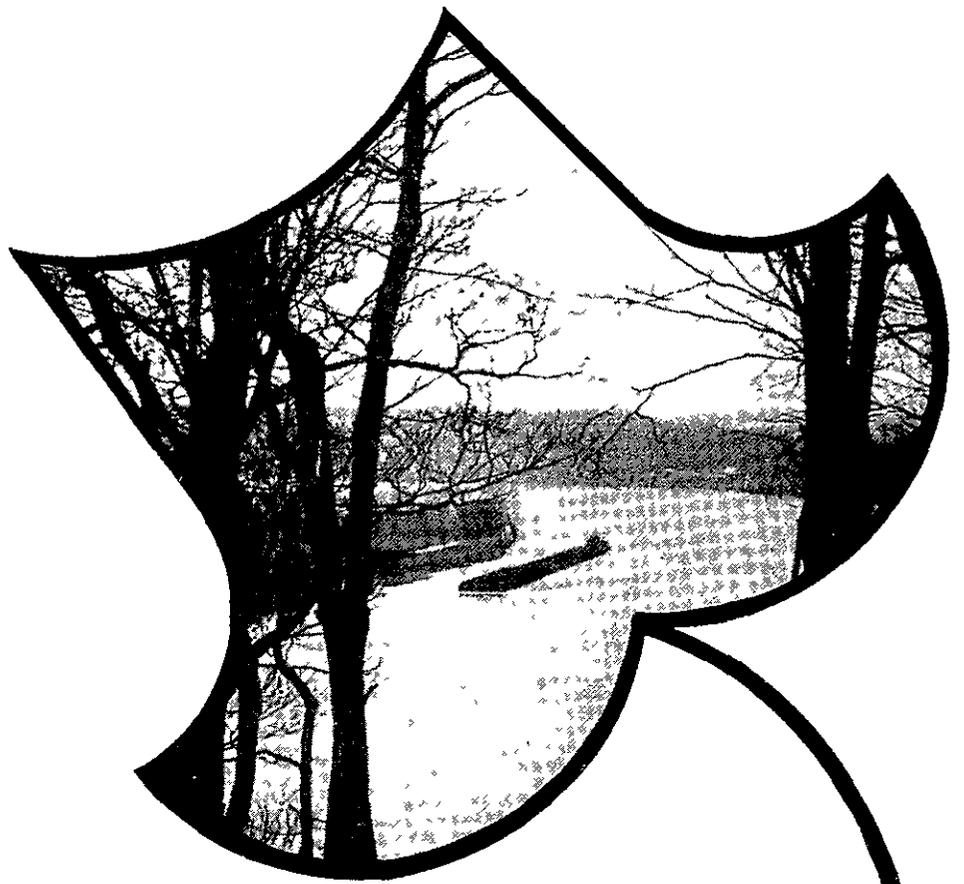
**Management
Prescription 7.1**

This management prescription applies to large developed recreation sites. Vegetative management does not include regulated timber harvest, but does call for maintenance of desirable cover types. Generally the uneven-aged system is appropriate, but at times the even-aged system may be necessary.

Vegetative management plans at the project level will describe the silvicultural system(s) and the harvest method(s) to be used.

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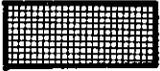
APPENDIX D

Map of Transmission and
Utility Corridor Restrictions

APPENDIX D

ALLOCATIONS OF TRANSMISSION
AND UTILITY CATEGORIES

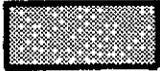
Legend



Category I allows only those utilities which are permitted by the public's best interest, and then with some design standards (Management Areas 2.3, 3.1, 3.2, and 9.1).

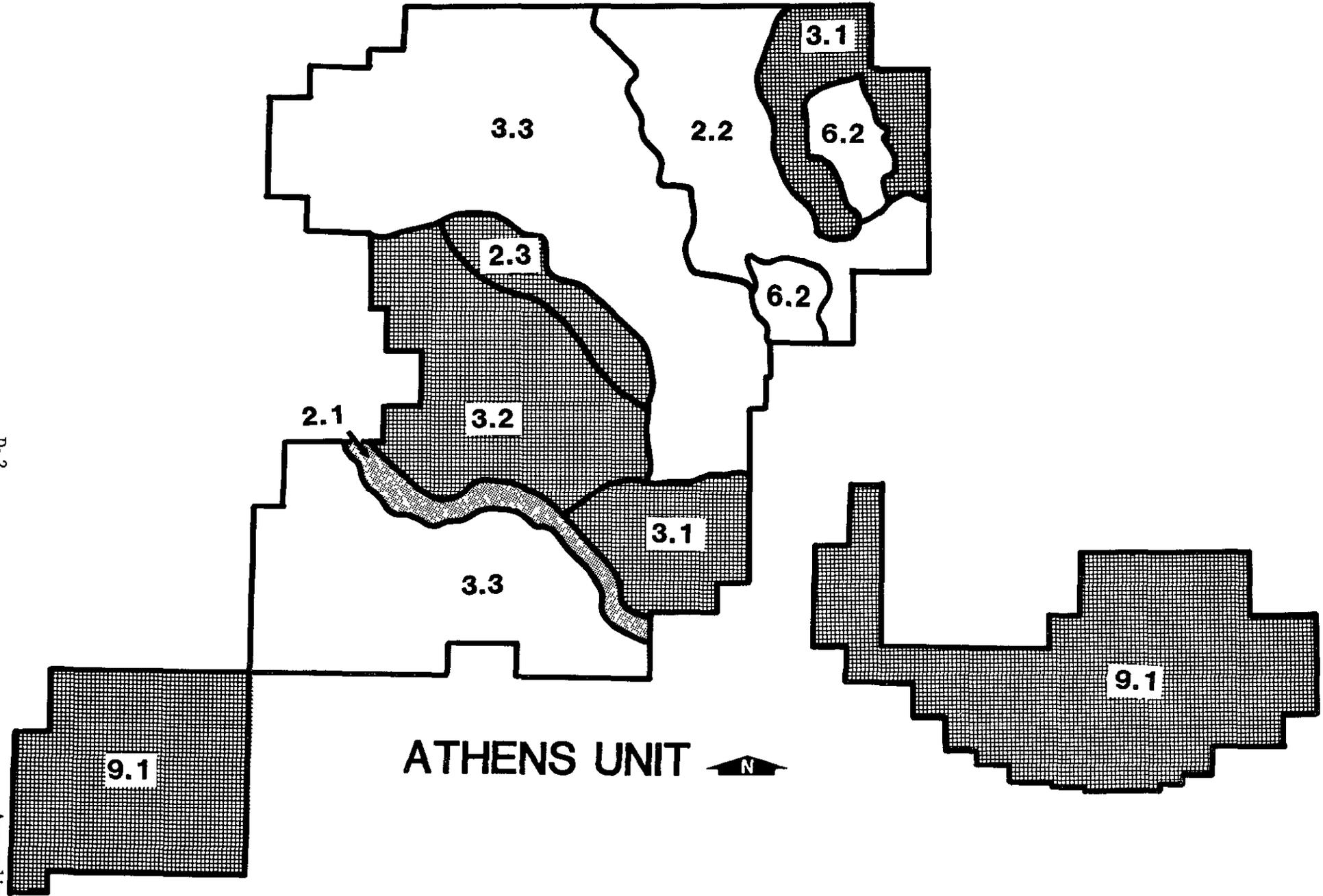


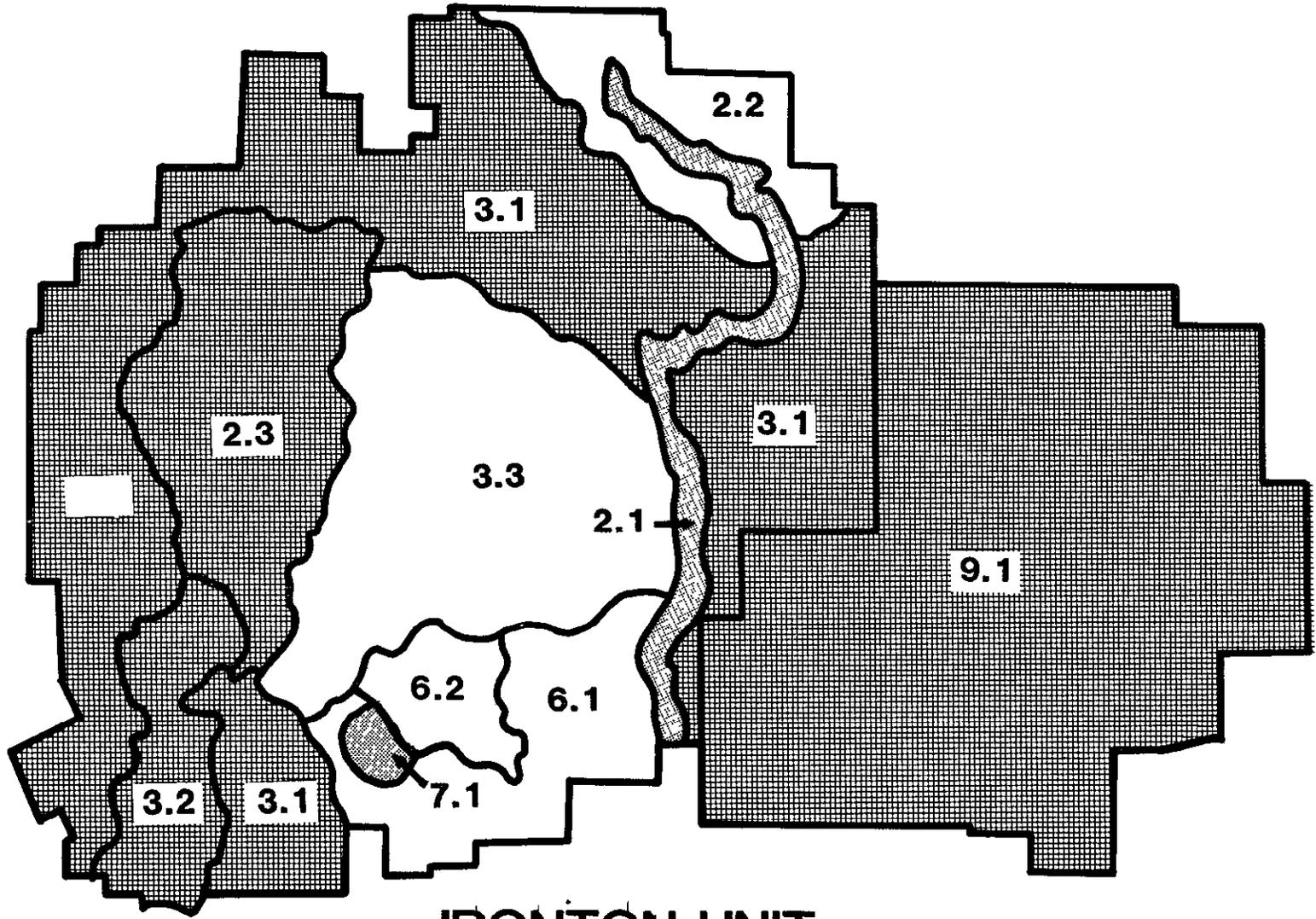
Category II allows only those utilities which are in the public's best interest, and then only with a high degree of design standards (Management Areas 2.2, 3.3, 6.1, and 6.2).



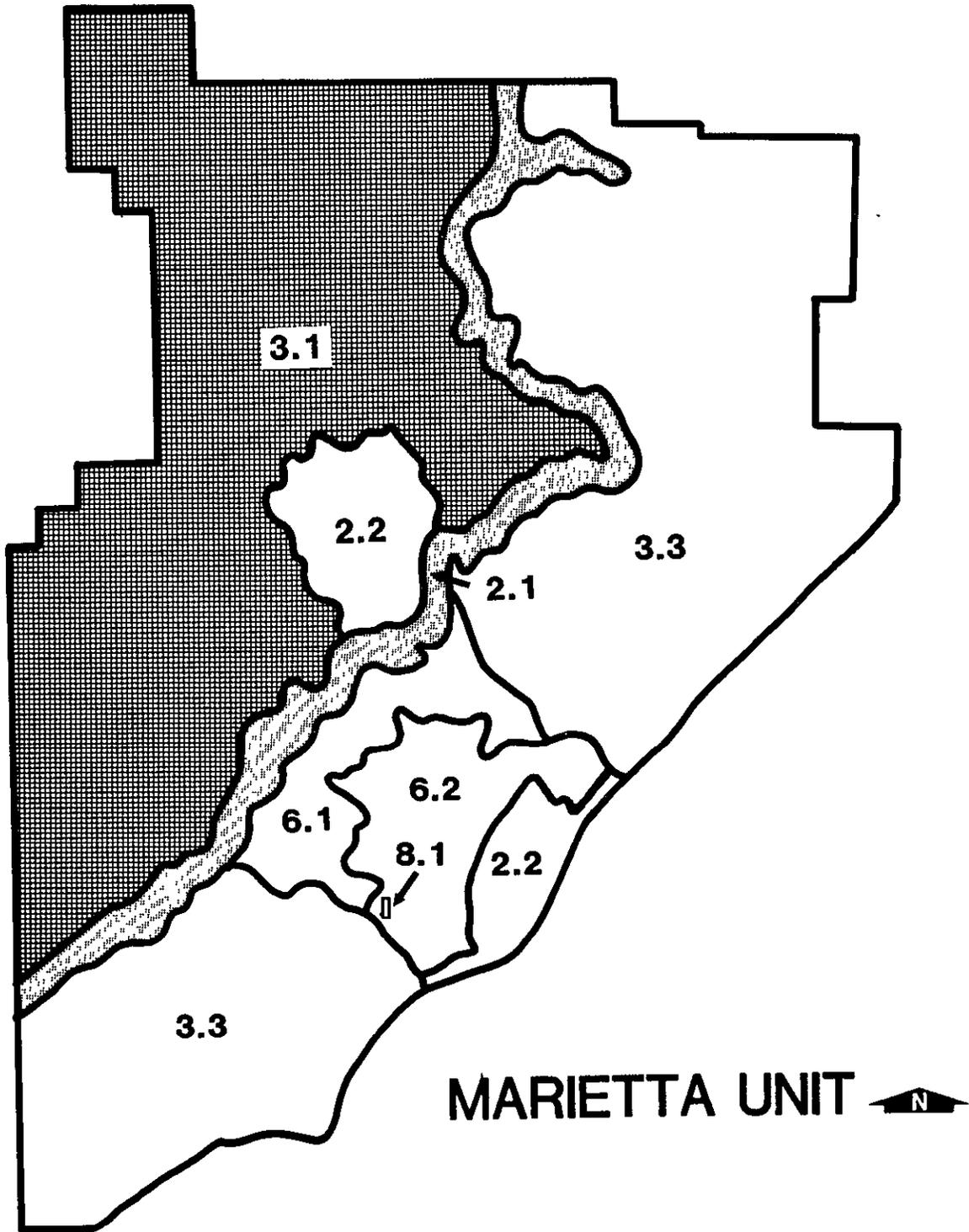
Category III allows only those utilities which serve facilities in the area and are in public's best interest (Management Areas 2.1 and 7.1).

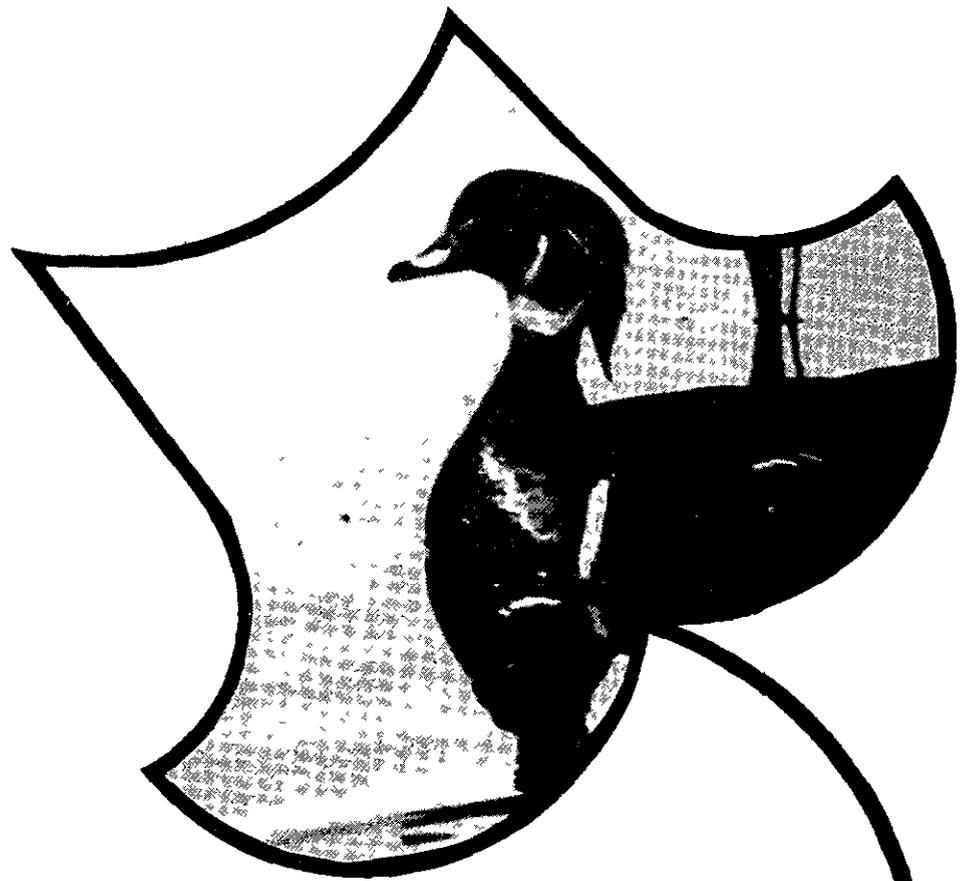
Category IV allows only those utilities which are permitted by the law or regulation establishing the area (Management Areas 8.1, 8.2 (none at present), and 9.2). See 1/2" to the mile Forest Plan Maps for the location of these areas.





IRONTON UNIT 





APPENDIX E

Stocking Levels Required to Meet
Oak-Hickory Objectives

APPENDIX E

STOCKING LEVELS REQUIRED TO MEET OAK-HICKORY OBJECTIVES

Figure E-1 and Table E-1 were developed to determine if Forest and management area composition objectives are being met. Oak-hickory composition objectives in regenerated stands will be evaluated at early ages. If overall, Forest and management area's oak-hickory composition objectives are not being met, precommercial thinning can be considered to favor the oak-hickory regeneration. As a result, the final percentage of oak-hickory stems should be adequate to meet composition objectives. As long as the number of oak-hickory stems does not fall below the level associated with the dashed line in Figure E-1 an oak-hickory stand type could be achieved thru thinning.

Data used to develop this Chart and Table came from:

Ashley, Burl. 1979. Determining adequacy of regeneration.
Proceeding from Regenerating Oaks in Upland Hardwoods. Purdue University.

Roach, Benjamin A. and Samuel F. Gingrich, 1968. Even-aged silviculture for upland central hardwoods. U.S. Department of Agriculture Handbook No. 355.

Sander, Ivan L. Personal Communication January 31, 1985.

Willison, Gary L., 1981. Natural regeneration twenty years after clearcutting as affected by site and size of opening in southeastern Ohio. Masters Thesis, Ohio State University.

FIGURE E-1

STOCKING LEVELS REQUIRED TO MEET OAK-HICKORY OBJECTIVES

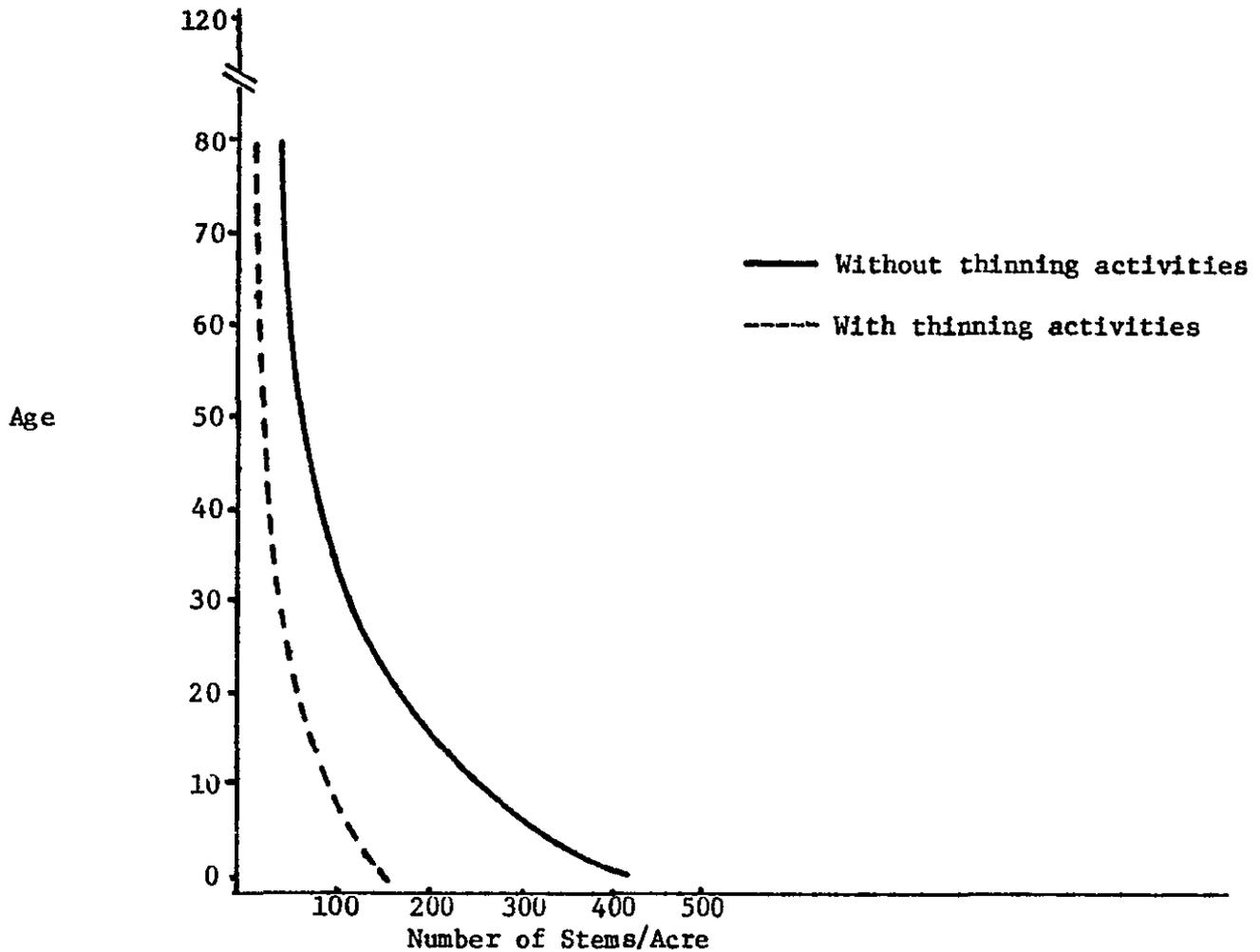


TABLE E-1
MINIMUM NUMBER OF DOMINANT
AND CO-DOMINANT OAK-HICKORY
Stems Per Acre ^{1/}

<u>Age</u>	<u>Number of Stems W/O Thinning</u>	<u>Number of Stems With Thinning</u>
5	325	120
10	255	90
15	221	80
20	164	70
25	140	60
30	126 ^{1/}	50

^{1/} "C" level upland central hardwoods, 5" dbh, 51% of total stems per acre.



APPENDIX F

Soil Limitations to Vegetative Management Activities

APPENDIX F

SOIL LIMITATIONS TO VEGETATIVE MANAGEMENT ACTIVITIES

INTRODUCTION

The following tables indicate the suitability and capability of the various soil mapping units on the Forest for vegetative management activities. These tables supplement information contained in the USDA published soil surveys of the various counties in which the forest lies. They are provided as guides to help plan and design harvesting, regeneration, and silvicultural activities. A moderate or severe rating alerts the Forest land manager that some site factor or mitigating measure should be reviewed or considered early in the planning stage of project implementation.

Table F-1, pages F-5 to F-18, presents information on limitations to the normal timber harvesting activities of haul road and major skid road construction, log landing construction, and equipment operability for logging areas.

Table F-2, page F-21 to F-31, has information on soil ratings for regeneration and silvicultural activities of mechanized site preparation and planting equipment, chemical site preparation and timber stand improvement, and prescribed fire.

LIMIT TO NORMAL TIMBER HARVEST ACTIVITIES

DESCRIPTION OF TABLE F-1 ITEMS (Page F-5)

Column 1: The soil name and map unit symbol are listed.

Column 2: (Haul Road and Major Skid Trail Location):

The intent of this rating is to indicate the degree and kind of limitations for location and construction of haul roads, and location of major skid trails associated with timber harvest activities. These ratings apply primarily to "low standard" haul roads, but should also be indicative of problems and relative costs associated with higher standard roads. The major difference is that a shallow depth to bedrock would be more critical on higher standard roads due to more cutting required in construction.

Considerable soil compaction can be expected on haul roads and major skid trails. Soils are rated on the properties that influence traffic ability and use of hauling equipment. The properties considered are, texture, Unified and AASHTO groups, depth to bedrock, duration and depth of water table, drainage, flooding, slope, surface stoniness and rock outcrops, erodibility and stability.

This rating is intended to be a guide to the relative physical suitability of alternative locations. It is not intended to provide specific design information as this requires on-site investigations. It should, however, provide some preliminary information for design consideration, especially as related to soil materials and drainage characteristics.

Subcolumn 2a: Degree of limitation: This is rated "slight", "moderate", or "severe", according to the following definitions.

SLIGHT: No serious limitations to location, construction, long-term maintenance, season of use, or returning to forest production.

MODERATE: There is/are some limitation(s) which can be overcome through the application of routine construction techniques. Initial location, construction and/or maintenance costs will be higher than if rated slight. Temporary facility locations may be more difficult to return to desired condition than if rated "slight." Season of use may be somewhat limited.

SEVERE: There is/are some limitation(s) which would require the application of extraordinary and/or expensive techniques to overcome. Location, construction and/or maintenance costs would be high, or season of use may be severely restricted. There may be significant risk of environmental damage from constructing roads or locating trails on these areas unless special design techniques are used.

Subcolumn 2b: Limiting Factor(s): If entry in column 2a is "slight", this entry is usually left blank. If entry in column 2a is "moderate" or "severe", the limiting site characteristic(s) is/are listed.

Column 3: Log Landing Location: The intent of this rating is to indicate degree and kind of limitations for location of log landings.

This rating is intended to be a guide to the relative physical suitability of alternative locations. Soils are rated on the properties that influence trafficability and use of hauling and loading equipment. Soil properties considered are texture of surface layer and subsoil, slope, stoniness, depth to bedrock, drainage, wetness, flooding, erodibility, and stability. Slope affects equipment use, erodibility and cutting and filling needed. Large stones and boulders that are difficult to move affect equipment operability, configuration and location of landings. Wetness and flooding affect frequency and duration of use. Soil texture affects erodibility and trafficability. Stability reflects the possibility of mass slippage during and following use.

Subcolumn 3a: Degree of Limitation: This is rated "slight", "moderate", or "severe", according to the following definitions.

SLIGHT: No serious limitations to location, season of use or returning to forest production.

MODERATE: There is/are some limitations(s) which can be overcome through such practices as grading, surfacing, drainage, etc. Landings located on these areas are usually more difficult to return to forest resource production than if rated "slight". Season of use may be somewhat limited.

SEVERE: There is/are some limitations which would require the application of extraordinary and/or expensive techniques to overcome. Costs of establishment and maintenance would be high, or season of use may be severely restricted. There may be significant risk of environmental damage from constructing log landings on these sites. Temporary landing locations may be difficult or impossible to return to desired condition.

Subcolumn 3b: Limiting Factor(s): If entry in column 3a is "slight", this entry is usually left blank. If entry in column 3a is "moderate" or "severe", the limiting site characteristic(s) is/are listed.

Column 4: Equipment Operability for Logging Areas: "Logging Areas" refers to the general logging area from the stump to a major skid trail. The "slight", "moderate", and "severe" adjective ratings apply primarily to the rubber-tired skidder. The definitions and subsequent subcolumns are intended to suggest that other types of log-moving equipment can sometimes be utilized to reduce or overcome site limitations that would apply to the rubber-tired skidder. Soils are rated on the properties that influence trafficability, erodability and stability. The site characteristics considered are slope, stability, wetness, drainage, stoniness and surface texture.

Subcolumn 4a: Degree of Limitation is rated "Slight", "Moderate", or "Severe" according to the following definitions.

SLIGHT: Physical site characteristics impose little or no limitations on kind of equipment or time of operation.

MODERATE: Some limitations in kind of equipment and/or times of operation are needed in order to permit efficient equipment use and/or limit environmental damage.

SEVERE: Special equipment and/or techniques are needed, and/or time of efficient operation is very limited.

Subcolumn 4b: Limiting factor(s): If the corresponding entry in Subcolumn 3a is "slight", this column is normally left blank; if "moderate" or "severe", the limiting site characteristic(s) is/are named.

Subcolumn 4c: Operating period: This rating reflects a "best estimate" of the period of a normal year that a rubber tired skidder could be operated efficiently, unhampered by site characteristics, and without causing significant environmental damage. The rating is a range of the total number of months of the year that the rubber-tired skidder could be safely and efficiently operated. Note that on problem sites, this operating period could normally be extended through the use of high-flotation or track-type skidders, and/or high lead cable logging equipment. The following classes of rating periods are suggestions. The Forest may adjust these periods to better fit local conditions.

**Operating Season
No. Months**

Explanation

- 11-12 Year-long, no significant problems. Limited 1 to 3 days following significant rainfall during spring, summer, and fall.
- 9-11 Normally limited only during spring thaw, and for less than 3 to 4 days following significant rainfall during spring, summer and fall.
- 6-9 Limitations persist about 1 month following spring thaw, and for about a week following significant rainfall events during spring, summer, and fall.
- 3-6 Limitations normally persist throughout the spring months, in late fall before freeze, and for a week or more following significant rainfall events.
- 1-3 Limitations normally persist throughout the year except during the frozen winter period.
- 0 Normally too steep, too unstable, or too wet to consider the use of rubber-tired skidders.

TABLE F-1
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Alford							
AfB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
AfC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
AfD	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
Allegheny							
AgB, AlB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
AgC, AlC, AkC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
AlD, AkD	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
AlG	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Barkcamp							
BoD	:Moderate	:Slope	:Severe	:Slope	:Slight	: -	:11-12
BaF, BoF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Berks							
BeC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
Berks-Westmoreland							
BkD	:Moderate	:Texture	:Severe	:Slope	:Moderate	:Slope	:11-12
BkE	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
BkF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Belpre							
BeC	:Moderate	:Texture	:Moderate	:Slope,	:Slight	: -	:11-12
	:	:	:	:Texture	:	:	:
BeD	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
BeE	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
BeF	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Bethesda							
BhB, BkB, BtB	:Moderate	:Texture	:Moderate	:Slope	:Slight	: -	:11-12
BtC	:Moderate	:Texture	:Moderate	:Slope	:	:	:
BhD, BkD, BoD	:Moderate	:Texture	:Severe	:Slope	:Slight	: -	:11-12
BtE, BoE	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
BoF, BhF, BkF	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Brookside							
BrC, BsC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
BrD, BsD	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
BrE, BsE	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
BtF	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Chagrin							
Cg, Cd	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Chili							
ChA	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
ChB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
ChC	:Moderate	:Texture	:Moderate	:Texture, :Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:
Coolville							
CoB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
Coolville-Rarden							
CpC, CrC2	:Moderate	:Texture	:Moderate	:Texture, :Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:
CrD2	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
Cuba							
Cu	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
Culleoka-Upshur							
Cp C2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
Cp D2	:Moderate	:Texture	:Severe	:Slope	:Slight	: -	:11-12
Culleoka-Steinsburg- Vandalia							
CsE	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
DeKalb							
CkC, DkC2	:Moderate	:Texture	:Moderate	:Texture, :Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:
DkD, DkD2	:Moderate	:Texture	:Severe	:Slope	:Moderate	:Slope	:11-12
DkE, DkE2	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
DkF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
DeKalb-Gilpin, Stony DsG	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
DeKalb-Rock Outcrop DkF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
DeKalb-Stony loam DmF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
DeKalb-Westmoreland DtD	:Moderate	:Texture	:Severe	:Slope	:Moderate	:Slope	:11-12
DtE	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
DtF, DuF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Elba-Belpre Complex EID	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
EIE	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
EIF	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Elba-Brookside-Berks Complex EbF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Enoch EnE	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Fairpoint							
FaB	:Moderate	:Texture	:Moderate	:Texture, :Slight	: -		:11-12
	:	:	:	:Slope	:	:	:
FaD, FbD	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
FbE	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
FbF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Genesee							
Ge	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:9-11
Gilpin							
GdB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
GdC	:Moderate	:Texture	:Moderate	:Texture, :Slight	: -		:11-12
	:	:	:	:Slope	:	:	:
GdD	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
GdE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
GdF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Gilpin and DeKalb							
GdE	:Severe	:Slope	:Severe	:Slope	:Slight	: -	:11-12
GdG	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Gilpin-Upshur Complex benched							
G1E	:Moderate	:Texture	:Moderate	:Texture, :Slight	: -		: 11-12
	:	:	:	:Slope	:	:	:
G1G	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Gilpin-Upshur Complex							
GkB2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
GkC2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GkD, GkD2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GnE, GkE2, GkE3	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
GkG, GnG, GkG3	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Gilpin-Latham							
GmD	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
Gilpin-Rarden							
GdE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Gilpin-Westmoreland							
GoB2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
GoC2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
CoD2, GoD3	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
CoE2, GoE3	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:
CpG, GoG2	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Glenford							
GfA, GmA, GnA	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
GfB, GmB, GnB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
GnC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Guernsey							
GsB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
GsC, GuC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
Guernsey-Upshur Complex							
GuC, GrC2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GuD, GrD2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GuE, GrE2	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
GsG, GrG2, GuG	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Guernsey-Westmore							
GwC2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GwD2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GwE2, GwE3	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
GwG2	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Guernsey-Westmoreland							
GwC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GwD	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
GwE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Lily							
LhC, LnC	:Moderate	:Texture	:Moderate	:Texture, :Slight	: -		:11-12
	:	:	:	:Slope	:	:	:
LgD, LnD	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
Lily-Upshur Complex							
LkD	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:	:	:	:	:	:
Linside							
Ln, Lh	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:9-11
Melvin							
Md, Me, Mh	:Severe	:Drainage	:Severe	:Drainage	:Moderate	:Wetness	:6-9
Mentor							
MeA	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
MeB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
MeC	:Moderate	:Texture	:Moderate	:Texture, :Slight	: -		:11-12
	:	:	:	:Slope	:	:	:
Negley							
NeC	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
NeG	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Newark Ne, Nn	:Severe	:Drainage	:Severe	:Drainage	:Slight	: -	:9-11
Nolin No	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
Omulga OmB, OtB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
OmC, OtC	:Moderate	:Texture	:Moderate	:Texture, :Slope	:Slight	: -	:11-12
Orrville Or	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
Rarden-Coolville RcD2	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Rarden-Gilpin RbC2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
RbD2	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Shelocta SbB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
SbC	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
SbC	:Moderate	:Texture, :Slope	:Severe	:Slope	:Moderate	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Shelocta-Berks Association							
SbE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Shelocta-Brownsville Assoc.							
ScE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
ScF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Shelocta-Cruze							
ScD	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
ScE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Shelocta-Latham Association							
SdE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Shelocta-Steinsburg Assoc.							
SeF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Shelocta-Wharton Assoc.							
SdE	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Steinsburg							
StD	:Moderate	:Texture,	:Severe	:Slope	:Moderate	:Slope	:11-12
	:	:Slope	:	:	:	:	:
StE	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
StF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Steinsburg-Shelocta Assoc. SeF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Stendal St	:Severe	:Drainage	:Severe	:Drainage	:Slight	: -	:9-11
Tioga Tg, To	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
Upshur UpB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
UpC, UpC2, UrC3	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
UpD, UpD2, UrD3	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
UpE	:Severe	:Slope	:Severe	:Slope	Slight	: -	:11-12
Upshur Association UtG	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Upshur-Gilpin Assoc. UgC	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
UsF, UsF3	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Upshur-Gilpin Assoc. UgE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Upshur-Elba							
UsC	:Moderate	:Texture	:Moderate	:Slope,	:Slight	: -	:11-12
	:	:	:	:Texture	:	:	:
UsD	:Moderate	:Texture	:Severe	:Slope	:Slight	: -	:11-12
Vandalia							
VaC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
VaD	:Moderate	:Texture,	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:Slope	:	:Slope	:	:	:
VaE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
VaF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12
Vandalia-Brookside Complex							
VbD	:Moderate	:Texture,	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:Slope	:	:Slope	:	:	:
VbE	:Severe	:Slope	:Moderate	:Texture,	:Moderate	:Slope	:11-12
	:	:	:	:Slope	:	:	:
Vandalia-Culleoka Assoc.							
VpE	:Severe	:Slope	:Moderate	:Texture,	:Moderate	:Slope	:11-12
	:	:	:	:Slope	:	:	:
Vandalia-Culleoka Complex							
VnD3	:Moderate	:Texture,	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:Slope	:	:Slope	:	:	:

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	(4c) Operating Period (No. Mos.)
Wellston							
WdB, WeB, WhB, WhB2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WdC, WhC, WhC2	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
WhD, WhD2	:Moderate	:Texture,	:Severe	:Slope	:Slight	: -	:11-12
	:	:Slope	:	:	:	:	:
Westmore							
WeB, WmB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WeC, WmC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
Westmoreland							
WmC, WoC	:Moderate	:Texture	:Moderate	:Texture,	:Slight	: -	:11-12
	:	:	:	:Slope	:	:	:
WmD, WoD	:Moderate	:Texture,	:Severe	:Slope	:Slight	:	:11-12
	:	:Slope	:	:	:	:	:
WmE, WnE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
Westmoreland-Berks Assoc.							
WpE	:Severe	:Slope	:Severe	:Slope	Moderate	:Slope	:11-12
Westmoreland-Guernsey							
WhC	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WhD, WrD	:Moderate	:Texture	:Moderate	:Slope	:Slight	: -	:11-12
WhE	:Severe	:Slope	:Severe	:Slope	:Moderate	:Slope	:11-12
WhF	:Severe	:Slope	:Severe	:Slope	:Severe	:Slope	:11-12

TABLE F-1 (con't.)
SOIL RATINGS FOR TIMBER HARVEST ACTIVITIES

(1) Soil Name/ Map Unit Symbol	Haul Road/Major Skid Trail (2)		(3) Log Landings		Equipment Operability (4) for Logging Areas		
	(2a) Degree of Limitation	(2b) Limiting Factors	(3a) Degree of Limitation	(3b) Limiting Factor	(4a) Degree of Limitation	(4b) Limiting Factor	Operating Period (4c) (No. Mos.)
Wheeling							
WrA, WtA	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WmB, WeB, WrB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WrC	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WrD	:Moderate	:Texture, :Slope	:Severe	:Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:
Woodsfield							
WoB, WtB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WtC, WtC2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WtD, WtD2	:Moderate	:Texture, :Slope	:Moderate	:Texture	:Slight	: -	:11-12
	:	:	:	:	:	:	:
Woodsfield-Zanesville							
WzB	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WzC	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
WzD	:Moderate	:Texture, :Slope	:Severe	:Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:
Zanesville							
ZaB, ZnB, ZnB2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
ZnC, ZnC2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
ZnD, ZnD2	:Moderate	:Texture, :Slope	:Moderate	:Texture, :Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:
Zanesville-Woodsfield							
ZoB, ZoB2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
ZoC, ZoC2	:Moderate	:Texture	:Moderate	:Texture	:Slight	: -	:11-12
ZoD2	:Moderate	:Texture, :Slope	:Moderate	:Texture, :Slope	:Slight	: -	:11-12
	:	:	:	:	:	:	:

**SOIL RATINGS FOR
REGENERATION AND
SILVICULTURAL
ACTIVITIES**

DESCRIPTION OF TABLE F-2 ITEMS

Column 1: The soil name and map unit symbol are listed.

Column 2: Mechanized Site Preparation, Planting and/or Row Seeding (does not include broadcast seeding)

This is to rate the degree and state the kind of limitations imposed by physical site characteristics, to mechanized operations such as site preparation, planting, and row seeding. The ratings are based on both limitations to efficient equipment operation, and hazards to the site from operation of the equipment.

There are many different methods and kinds of equipment that can be used to prepare a site for regeneration. Most of the mechanical methods and techniques result in some soil disturbance. The degree of soil disturbance varies tremendously according to kind of equipment, how the equipment is operated, and soil-site conditions at the time of the operation. The degree of soil disturbance needed to achieve the regeneration objectives varies according to species, regeneration methods, and site conditions.

The ratings are based on the assumption of operating techniques which do not displace or remove topsoil from the site, or create channels to concentrate storm runoff. Planting and row seeding equipment should be operated on the contour of the slope as much as possible, to minimize channeling of storm runoff.

Subcolumn 2a: Degree of Limitation

SLIGHT: Little or no limitation on kind of equipment or time of use due to erodibility or other physical characteristics of the site.

MODERATE: Moderate limitation on kind of equipment, season of use, or both, due to physical site characteristics. This may reflect a physical limitation to the efficient use of the equipment, or a hazard to the site from the use of the equipment, or both.

SEVERE: Severe limitations on kind of equipment, season of use, or both. May reflect physical limitation to efficient use of equipment, or a hazard to the site from the use of the equipment, or both.

Subcolumn 2b: Limiting factors are stated for those sites rated moderate or severe.

Column 3: Chemical site preparation: This is a subjective rating based on the expected influence of soil-site characteristics which would limit or fail to limit the movement of chemicals into groundwater or surface water supplies.

Subcolumn 3a: SLIGHT: No significant environmental hazards from chemicals used in accordance with established guidelines. Soil characteristics are such that chemicals are not likely to be released into water supplies.

MODERATE: Small amounts of chemicals may be released into surface or underground water supplies in unusual circumstances, such as high rainfall soon after application of the chemical(s).

SEVERE: If chemicals are applied, there is a significant risk that a portion of them will be released into groundwater or surface water supplies.

Subcolumn 3b: Limiting Factor(s)

Shows limiting factor(s) where rating in subcolumn 3a is moderate or severe.

Column 4: Prescribed Burn:

Prescribed burn may be used to (1) reduce fire hazard, (2) improve planting opportunities, (3) retard plant competition, (4) prepare a seedbed, and (5) release seeds.

Prescribed burn can be influenced by season, soil moisture content, fuel moisture, fuel conditions, and wind.

There has been much debate regarding the effects of fire on soils. Research has shown both positive and negative effects. Generally, the adverse effects are related to the intensity and duration of heat at the soil surface; the higher the temperature and the longer the duration, the more the adverse effect. Soil-site characteristics are also important in determining the effects of fire.

Subcolumn 4a: Ratings:

SLIGHT: Prescribed burn will not normally result in significant adverse impacts.

MODERATE: In order to avoid significant adverse impacts, more care is required to plan, schedule, and conduct prescribed burns under conditions of lower air temperatures, higher soil and fuel moisture conditions, etc.

SEVERE: Burning on these sites runs a risk of significant long-term adverse impacts to the site unless accompanied by extraordinary mitigating measures to minimize duration and intensity of surface heating.

Subcolumn 4b: Limiting factors are stated for those sites rated moderate or severe.

TABLE F-2
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	Mechanized Site Preparation & Planting Equipment (2a) : (2b)	Chemical Site Preparation/TSI (3a) : (3b)	Prescribed Fire (4a) : (4b)
Map Unit/Taxonomic Unit	:Degree of :Limiting :Degree of :Limiting :Degree of :Limiting :Limitation:Factor(s):Limitation:Factor(s):Limitation:Factor(s)		
Alford	:	:	:
AfB	:Moderate	:Erodes	:Moderate
	:	:Easily	:
AfC	:Severe	:Erodes	:Moderate
	:	:Easily	:
AfD	:Severe	:Erodes	:Severe
	:	:	:
Allegheny	:	:	:
AgB, AlB	:Moderate	:Erodes	:Moderate
	:	:Easily	:
AgC, AlC, AkC	:Severe	:Erodes	:Moderate
	:	:Easily	:
AlD, AkD	:Severe	:Erodes	:Moderate
	:	:Easily	:
AlG	:Severe	:Erodes	:Severe
	:	:Easily	:
	:	:	:
Barkcamp	:	:	:
BoD	:Severe	:Erodes	:Moderate
	:	:Easily	:
BaF, BoF	:Severe	:Erodes	:Severe
	:	:Easily	:
	:	:	:
Berks	:	:	:
BeC	:Moderate	:Erodes	:Moderate
	:	:Easily	:
	:	:	:
Berks-Westmoreland	:	:	:
BkD	:Severe	:Erodes	:Moderate
	:	:Easily	:
BkE	:Severe	:Erodes	:Moderate
	:	:Easily	:
BkF	:Severe	:Erodes	:Severe
	:	:Easily	:
	:	:	:
Belpre	:	:	:
BeC	:Moderate	:Erodes	:Moderate
	:	:Easily	:
BeD	:Moderate	:Erodes	:Moderate
	:	:Easily	:
BeE	:Severe	:Erodes	:Moderate
	:	:Easily	:
BeF	:Severe	:Erodes	:Severe
	:	:Easily	:
	:	:	:

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	:	(2)	:	(3)	:	(4)
	:	Mechanized Site	:		:	
	:	Preparation &	:	Chemical Site	:	
	:	Planting Equipment	:	Preparation/TSI	:	Prescribed Fire
	:	(2a)	:	(2b)	:	(3a) : (3b) : (4a) : (4b)
	:	Degree of	:	Limiting	:	Degree of
Map Unit/Taxonomic Unit	:	Limitation:	:	Factor(s):	:	Limitation:
	:	Factor(s):	:	Limitation:	:	Factor(s):
Bethesda	:		:		:	
BhB, BkB, BtB	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
BtC	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
BhD, BkD, BoD	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
BtE, BoE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
BhF, BkF, BoF	:	Severe	:	Erodes	:	Severe
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
	:		:		:	
Brookside	:		:		:	
BrC, BsC	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
BrD, BsD	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
BrE, BsE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
BtF	:	Severe	:	Erodes	:	Severe
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
	:		:		:	
Chagrín	:		:		:	
Cg, Cd	:	Slight	:	--	:	Sight
	:		:		:	--
	:		:		:	
Chili	:		:		:	
ChA	:	Slight	:	--	:	Sight
	:		:		:	--
ChB	:	Slight	:	--	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
ChC	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
	:		:		:	
Coolville	:		:		:	
CoB	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
Coolville-Rarden	:		:		:	
CpC, CrC2	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
CrD2	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
	:		:		:	
Cuba	:		:		:	
Cu	:	Slight	:	--	:	Slight
	:		:		:	--
	:		:		:	

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	Mechanized Site	Chemical Site	Prescribed Fire
	Preparation & Planting Equipment	Preparation/TSI	(4a) (4b)
	(2a) (2b)	(3a) (3b)	(4a) (4b)
	Degree of Limitation	Degree of Limitation	Degree of Limitation
Soil Name/Map Unit Symbol	Factor(s)	Factor(s)	Factor(s)
Culleoka-Upshur	:	:	:
CpC2	:Moderate	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
CpD2	:Severe	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
Culleoka-Stensburg-Vandalia	:	:	:
CsE	:Severe	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
	:	:	:
DeKalb	:	:	:
DkC, DkC2	:Moderate	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
DkD, DkD2	:Severe	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
DkE, DkE2	:Severe	:Erodes	:Moderate :Runoff :Moderate :Slope
	:	:Easily	:
DkF	:Severe	:Erodes	:Severe :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
DeKalb-Gilpin, Stony	:	:	:
DsG	:Severe	:Erodes	:Severe :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
DeKalb-Rock Outcrop	:	:	:
DkF	:Severe	:Erodes	:Severe :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
DeKalb Stony loam	:	:	:
DmF	:Severe	:Erodes	:Severe :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
DeKalb-Westmoreland	:	:	:
DtD	:Severe	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
DtE	:Severe	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
DtF, DuF	:Severe	:Erodes	:Severe :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
Elba-Belpre-Complex	:	:	:
E1D	:Moderate	:Erodes	:Moderate :Runoff :Slight :--
	:	:Easily	:
E1E	:Severe	:Erodes	:Moderate :Runoff :Moderate :Slope
	:	:Easily	:
E1F	:Severe	:Erodes	:Severe :Runoff :Moderate :Slope
	:	:Easily	:
	:	:	:

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	:	(2)	:	(3)	:	(4)
	:	Mechanized Site	:		:	
	:	Preparation &	:	Chemical Site	:	
	:	Planting Equipment	:	Preparation/TSI	:	Prescribed Fire
	:	(2a)	:	(2b)	:	(3a) (3b) (4a) (4b)
	:	Degree of	:	Limiting	:	Degree of
Soil Name/Map Unit Symbol	:	Limitation:	:	Factor(s):	:	Limitation:
	:	Factor(s):	:	Limitation:	:	Factor(s):
Elba-Brookside-Berks Complex	:		:		:	
EbF	:	Severe	:	Erodes	:	Severe
	:		:	Runoff	:	Severe
	:		:		:	Slope
	:		:		:	
Enoch	:		:		:	
EnE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Moderate
	:		:		:	Slope
	:		:		:	
Fairpoint	:		:		:	
FaB	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
FaD, FbD	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
FbE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Moderate
	:		:		:	Slope
	:		:		:	
FbF	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Moderate
	:		:		:	Slope
	:		:		:	
Genesee	:		:		:	
Ge	:	Slight	:	--	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
Gilpin	:		:		:	
GdB	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
GdC	:	Moderate	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
GdD	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
GdE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
GdF	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Moderate
	:		:		:	Slope
	:		:		:	
	:		:		:	
Gilpin and DeKalb	:		:		:	
GdE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
GdG	:	Severe	:	Erodes	:	Severe
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
Gilpin-Upshur Complex,	:		:		:	
Benched	:		:		:	
G1E	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
G1G	:	Severe	:	Erodes	:	Severe
	:		:	Runoff	:	Moderate
	:		:		:	Slope
	:		:		:	
	:		:		:	

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	Mechanized Site Preparation & Planting Equipment (2a) : (2b)	Chemical Site Preparation/TSI (3a) : (3b)	Prescribed Fire (4a) : (4b)
Soil Name/Map Unit Symbol	Degree of Limitation:Factor(s)	Degree of Limitation:Factor(s)	Degree of Limitation:Factor(s)
Gilpin-Upshur Complex	:	:	:
GkB2	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GkC2	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GkD, GkD2	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GnE, GkE2, GkE3	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GkG, GnG, GkG3	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Moderate :Slope : :
Gilpin-Latham	:	:	:
GmD	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
Gilpin-Rarden	:	:	:
GdE	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
Gilpin-Westmoreland	:	:	:
GoB2	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GoC2	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GoD2, GoD3	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GoE2, GoE3	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GpG, GoG2	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Moderate :Slope : :
Glenford	:	:	:
GfA, GmA, GnA	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GfB, GmB, GnB	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GnC	:Severe :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
Guernsey	:	:	:
GsB	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :
GsC, GuC	:Moderate :Erodes : :Easily	:Moderate :Runoff : :	:Slight :-- : :

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	Mechanized Site	Chemical Site	
	Preparation & Planting Equipment	Preparation/TSI	Prescribed Fire
	(2a)	(2b)	(3a) (3b) (4a) (4b)
<u>Soil Name/Map Unit Symbol</u>	<u>Degree of Limitation:Factor(s)</u>	<u>Degree of Limitation:Factor(s)</u>	<u>Degree of Limitation:Factor(s)</u>
Guernsey-Upshur Complex	:	:	:
GuC, GrC2	:Moderate	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
GuD, GrD2	:Severe	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
Gue, GrE2	:Severe	:Erodes	:Moderate :Runoff :Moderate :Slope
	:	:Easily	:
GsG, GrG2, GuG	:Severe	:Erodes	:Moderate :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
Guernsey-Westmore	:	:	:
GwC2	:Moderate	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
GwD2	:Severe	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
GwE2, GwE3	:Severe	:Erodes	:Moderate :Runoff :Moderate :Slope
	:	:Easily	:
GwG2	:Severe	:Erodes	:Severe :Runoff :Severe :Slope
	:	:Easily	:
	:	:	:
Guernsey-Westmoreland	:	:	:
GwC	:Moderate	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
GwD	:Severe	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
GwE	:Severe	:Erodes	:Moderate :Runoff :Moderate : --
	:	:Easily	:
	:	:	:
Lily	:	:	:
LhC, LnC	:Severe	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
LgD, LnD	:Severe	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
	:	:	:
Lily-Upshur Complex	:	:	:
LkD	:Severe	:Erodes	:Moderate :Runoff :Slight : --
	:	:Easily	:
	:	:	:
Linside	:	:	:
Ln, Lh	:Slight	: --	:Slight : -- :Slight : --
	:	:	:
Melvin	:	:	:
Md, Me, Mh	:Severe	:Drainage	:Severe :Drainage :Slight : --
	:	:	:

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	Mechanized Site Preparation & Planting Equipment (2a) : (2b)	Chemical Site Preparation/TSI (3a) : (3b)	Prescribed Fire (4a) : (4b)
Soil Name/Map Unit Symbol	:Limiting :Degree of :Limiting :Degree of :Limiting :Degree of	:Factor(s) :Limitation:Factor(s) :Limitation:Factor(s) :Limitation:Factor(s)	:Factor(s) :Limitation:Factor(s) :Limitation:Factor(s) :Limitation:Factor(s)
Mentor	:	:	:
MeA	:Slight	: --	:Moderate :Runoff
MeB	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
MeC	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
	:	:	:
Negley	:	:	:
NeC	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
NeE	:Severe	:Erodes	:Moderate :Runoff
	:	:Easily	:
	:	:	:
Newark	:	:	:
Ne, Nn	:Moderate	:Drainage	:Moderate :Drainage
	:	:Erodes	:
	:	:Easily	:
	:	:	:
Nolin	:	:	:
No	:Slight	: --	:Moderate :Runoff
	:	:	:
Omulga	:	:	:
OmB, OtB	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
OmC, OtC	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
	:	:	:
Orville	:	:	:
Or	:Slight	: --	:Moderate :Runoff
	:	:	:
Rarden-Coolville	:	:	:
RcD2	:Severe	:Erodes	:Moderate :Runoff
	:	:Easily	:
	:	:	:
Rarden-Gilpin	:	:	:
RbC2	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
RbD2	:Severe	:Erodes	:Moderate :Runoff
	:	:Easily	:
	:	:	:
Shelocta	:	:	:
SbB	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
SbC	:Moderate	:Erodes	:Moderate :Runoff
	:	:Easily	:
	:	:	:

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	:	(2)	:	(3)	:	(4)
	:	Mechanized Site	:		:	
	:	Preparation &	:	Chemical Site	:	
	:	Planting Equipment	:	Preparation/TSI	:	Prescribed Fire
	:	(2a)	:	(2b)	:	(3a) (3b) (4a) (4b)
	:	Degree of	:	Limiting	:	Degree of
Soil Name/Map Unit Symbol	:	Limitation:	:	Factor(s):	:	Limitation:
	:		:		:	
	:		:		:	
Shelocta (con't.)	:		:		:	
SbD	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
	:		:		:	
Shelocta-Berks Association	:		:		:	
SbE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
	:		:		:	
Shelocta-Brownsville Association	:		:		:	
ScE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
	:		:		:	
ScF	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
Shelocta-Latham Assoc.	:		:		:	
SdE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
Shelocta-Steinsburg Assoc.	:		:		:	
ScF	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
Shelocta-Wharton Assoc.	:		:		:	
SdE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
Steinsburg	:		:		:	
StD	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	
	:		:		:	
StE	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Slope
	:		:		:	
	:		:		:	
StF	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Severe
	:		:		:	Slope
	:		:		:	
	:		:		:	
Steinsburg-Shelocta Assoc.	:		:		:	
SeF	:	Severe	:	Erodes	:	Moderate
	:		:	Runoff	:	Severe
	:		:		:	Slope
	:		:		:	
	:		:		:	
Stendal	:		:		:	
St	:	Moderate	:	Drainage	:	Moderate
	:		:	Drainage	:	Slight
	:		:		:	--
	:		:		:	
Tioga	:		:		:	
Tg, To	:	Slight	:	--	:	Moderate
	:		:	Runoff	:	Slight
	:		:		:	--
	:		:		:	

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	: Mechanized Site	: Chemical Site	: Prescribed Fire
	: Preparation & Planting Equipment	: Preparation/TSI	: (4a) : (4b)
	: (2a) : (2b)	: (3a) : (3b)	
	:Degree of Limiting	:Degree of Limiting	:Degree of Limiting
Soil Name/Map Unit Symbol	:Limitation:Factor(s)	:Limitation:Factor(s)	:Limitation:Factor(s)
Upshur	:	:	:
UpB	:Moderate	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
UpC, UpC2, UrC3	:Moderate	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
UpD, UpD2, UrD3	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
UpE	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
Upshur Association	:	:	:
UtG	:Severe	:Erodes	:Severe
	:	:Easily	:Runoff
	:	:	:Severe
	:	:	:Slope
Upshur-Gilpin Complex	:	:	:
UgC	:Moderate	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
UsF, UsF3	:Severe	:Erodes	:Severe
	:	:Easily	:Runoff
	:	:	:Severe
	:	:	:Slope
Upshur-Gilpin Assoc.	:	:	:
UgE	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Moderate
	:	:	:Slope
Upshur-Elba	:	:	:
UsC	:Moderate	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
UsD	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
	:	:	:
Vandalia	:	:	:
VaC	:Moderate	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
VaD	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
VaE	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Moderate
	:	:	:Slope
VaF	:Severe	:Erodes	:Severe
	:	:Easily	:Runoff
	:	:	:Severe
	:	:	:Slope
Vandalia-Brookside Complex	:	:	:
VbD	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Slight
VbE	:Severe	:Erodes	:Moderate
	:	:Easily	:Runoff
	:	:	:Moderate
	:	:	:Slope

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	(2)	(3)	(4)
	Mechanized Site	Chemical Site	Prescribed Fire
	Preparation & Planting Equipment	Preparation/TSI	(4a) : (4b)
	(2a) : (2b)	(3a) : (3b)	(4a) : (4b)
	Degree of Limiting	Degree of Limiting	Degree of Limiting
Soil Name/Map Unit Symbol	Limitation:Factor(s)	Limitation:Factor(s)	Limitation:Factor(s)
Vandalia-Culleoka Assoc. VpE	: Severe : Erodes : Easily	: Moderate : Runoff	: Moderate : Slope
Vandalia-Culleoka Complex VnD3	: Severe : Erodes : Easily	: Moderate : Runoff	: Slight : --
Wellston WdB, WeB, WhB, WhB2	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
WdC, WhC, WhC2	: Severe : Erodes : Easily	: Moderate : Runoff	: Slight : --
WhD, WhD2	: Severe : Erodes : Easily	: Moderate : Runoff	: Slight : --
Westmore WeB, WmB	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
WeC, WmC	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
Westmoreland WmC, WoC	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
WmD, WoD	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
WmE, WnE	: Severe : Erodes : Easily	: Moderate : Runoff	: Moderate : Slope
Westmoreland-Berks Assoc. WpE	: Severe : Erodes : Easily	: Moderate : Runoff	: Moderate : Slope
Westmoreland-Guernsey WhC	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
WhD, WrD	: Moderate : Erodes : Easily	: Moderate : Runoff	: Slight : --
WhE	: Severe : Erodes : Easily	: Moderate : Runoff	: Moderate : Slope
WhF	: Severe : Erodes : Easily	: Severe : Runoff	: Severe : Slope

TABLE F-2 (con't.)
SOIL RATINGS FOR REGENERATION AND SILVICULTURAL ACTIVITIES

(1)	:	(2)	:	(3)	:	(4)
		Mechanized Site				
		Preparation &		Chemical Site		
		Planting Equipment		Preparation/TSI		Prescribed Fire
		(2a)	(2b)	(3a)	(3b)	(4a) : (4b)
		:Degree of	:Limiting	:Degree of	:Limiting	:Degree of
Soil Name/Map Unit Symbol		:Limitation:	Factor(s)	:Limitation:	Factor(s)	:Limitation:
						Factor(s)
Wheeling						
Wr, WtA		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WmB, WpB, WrB		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WrC		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WrD		:Severe	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
		:	:	:	:	:
Woodsfield						
WoB, WtB		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WtC, WtC2		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WtD, WtD2		:Severe	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
		:	:	:	:	:
Woodsfield-Zanesville						
WzB		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WzC		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
WzD		:Severe	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
		:	:	:	:	:
Zanesville						
ZaB, ZnB, ZnB2		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
ZnC, ZnC2		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
ZnD, ZnD2		:Severe	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
		:	:	:	:	:
Zanesville-Woodsfield						
ZoB, ZoB2		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
ZoC, ZoC2		:Moderate	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
ZoD2		:Severe	:Erodes	:Moderate	:Runoff	:Slight : --
		:	:Easily	:	:	:
		:	:	:	:	:



APPENDIX G

Cultural Resources

APPENDIX G

CULTURAL RESOURCES

INTRODUCTION

Humans have occupied the area now designated as the Wayne National Forest for over 12,000 years. For all except the last 200 years, archaeological investigations provide the only surviving record of how these "prehistoric" groups lived and worked.

The first groups to occupy southern Ohio are believed to have arrived toward the end of the Pleistocene period, as the last glaciers retreated northward. The fragmentary information so far recovered suggests these people (called Paleo-Indians) lived in small nomadic groups. Their subsistence method was hunting and gathering, with an emphasis on big game species including mastodon and bison. Few sites from the Paleo-Indian period have so far been located in the Forest area.

About 8,000 B.C., the physical environment of southern Ohio became warmer and plant and animal species gradually changed. Subsistence strategies and technologies also showed changes as "Archaic" period humans began to exploit a more diverse variety of plant and animal resources. The Early Archaic (8000-6000 B.C.) showed a continued emphasis on hunting, with most sites consisting of small, temporary hunting camps. The Middle Archaic (6000-4000 B.C.) saw the development of ground and polished tools, as well as a marked increase in the ratio of plant-processing tools and bone artifacts. The Late Archaic (4000-1000 B.C.) saw the elaboration of new technologies from the Middle Archaic, and a continued increase in the types of resources used. The earliest burial mounds and a regional trade network for valued raw materials originated during this period.

The Early Woodland period (2000-200 B.C.) showed much overlap with Archaic traditions, but was characterized by the introduction of pottery. By 1000 B.C. the Adena culture was fully established, typified by the construction of burial mounds and earthworks and the introduction of agriculture. The Middle Woodland Period (200 B.C.-A.D. 400) saw the rise of the Hopewell culture, which had an increased population density, more agriculture, social stratification, and a further elaboration of preceeding trade networks and burial practices. This Hopewell cultural florescence, however, appeared to have been confined to the larger river valleys, with lifeways in the forested upland areas continuing much as they had in the Archaic and Early Woodland periods. By the Late Woodland Period (A.D. 400-1000), the high achievements of the Hopewell culture were in decline, leaving a simpler level of cultural complexity and increased utilization of agriculture.

About A.D. 1000, the Fort Ancient culture of the Late Prehistoric period became established in Ohio. This local variation of the Mississippian culture complex was typified by intensive agriculture, large stable villages, and the construction of large flat-topped mounds covered by temple structures. Fort Ancient cultures occupied the Ohio area at the time of European contact. The primary Algonquin-speaking tribal groups that occupied the Forest area at this time were the Shawnee, Delaware and Miami, all believed to be relatively late arrivals to this area.

Euro-American exploration of southern Ohio began with LaSalle, who visited the area in 1669. French and later English trappers and traders were the only non-Indian inhabitants of the area until agricultural settlement began after the Revolutionary War. The most important settlement determinants were the locations of land surveys and the development of early transportation systems. These included existing river systems and Indian "traces" and later the construction of the National Road and canal systems. The years 1850 to 1880 saw intensive building.

Marietta was the earliest settlement in the Forest area, begun around 1790. The upland areas away from the river valleys, however, were slower to be settled, with subsistence primarily dependent on subsistence-level farming. Later, the discovery of oil and gas deposits brought in the oil industry. This produced a new economic stimulus for the area, but did not produce great changes in the lifeways of the local residents.

The Athens area was first settled around 1810. It was also a marginal agricultural area, but the presence of sizable coal deposits resulted in large-scale mining operations beginning in the 1870's. Large coke ovens were constructed and led to major logging operations. A brick and tilemaking industry also flourished during the late nineteenth century, as well as oil and gas activity. These industrial enterprises began to decline in the early part of the twentieth century, leaving strip mining, subsistence-level agriculture, some gas and oil exploration, and education as the area's economic base.

Ironton also initially was settled around 1810. This region contains the State's richest seams of coal and iron ore. The development of these resources began around 1830. During the mid and late nineteenth century, the Ironton area's economy was dominated by iron ore recovery and processing, with secondary charcoal and transportation industries also important users of the Forest area. The importance of the iron industry began to decline in the 1890's, with a variety of economic resources: coal, agriculture and light manufacturing now supporting the area.

CULTURAL RESOURCE INVENTORY

The Wayne National Forest administers 177,761 acres within the State of Ohio. Between 1965 and the end of 1985, 19,266 (or approximately 10.8 percent) of this land had been inventoried for the presence of cultural resources. Most inventory has

been conducted on an as-needed basis, where areas scheduled to be impacted by ground-disturbing activities receive survey priority.

Cultural resource surveying on the Wayne National Forest is primarily conducted by two groups. These are paraprofessional archaeologists from within the Forest Service and by professional archaeologists representing private consulting companies and academic institutions. As of the end of 1985, 423 cultural resource reports had been completed on the Wayne National Forest, 408 (97 percent) by paraprofessionals, 15 (3 percent) by private contractors. In terms of actual survey areas, 3,072 acres (19 percent) have been surveyed by paraprofessionals, 15,564 acres (81 percent) by private contractors. If cultural resource survey continues at an annual average of 3,500 acres per year, the Wayne National Forest will have received a complete survey by the year 2031.

CULTURAL RESOURCE OVERVIEW

An overview of cultural resources on the Wayne National Forest was completed in 1978. Since the majority of sites known to exist on the Forest has been recorded since the publication of the overview, a major update is needed. The primary areas that need to be reassessed, based on new information, are research designs for determining site significance, and predictive modeling for sites locations (to allow for greater accuracy in drawing up the sensitivity maps that determine survey intensity). Hereafter, the overview document should be reviewed by the Forest at five year intervals to determine whether or not additional updates are needed.

SITE EVALUATION AND NATIONAL REGISTER NOMINATIONS

As a result of cultural resource surveys, 192 archaeological sites have been recorded on National Forest System lands in Ohio. The majority of these archaeological sites remain unevaluated (Class II sites). A small percentage of these sites have been evaluated to determine whether they are eligible for inclusion on the National Register of Historic Places (Class I sites), or if they are not significant (Class III sites). National direction requires all sites on National Forest System lands to be evaluated.

Evaluating the significance of a site usually requires subsurface testing and assessment by a professional archaeologist. The Preferred Alternative calls for the evaluation of seven archaeological sites per year on the Wayne National Forest. Determining which sites should be evaluated will be decided based on a prioritized list which will be reviewed and updated on an annual basis by the Forest.

Sites that are determined to be significant will be eligible for nomination to the National Register of Historic places. This can be done on a individual basis, or groups of significant sites that share common values may be submitted together in a thematic nomination. A list of significant sites eligible for National Register Nomination will be prepared and updated annually. Two National Register nominations per year are projected by the Wayne National Forest.

**CULTURAL RESOURCE
PROTECTION AND
MAINTENANCE**

An immediate need of the Wayne National Forest cultural resource program is the protection of identified sites from the adverse effects of natural decay and human vandalism. Protecting sites can take the form of physical improvements such as installing barrier fences, seeding and mulching areas to stabilize eroding slopes, and controlling plant growth around historic structures. Ongoing preventative measures take the form of monitoring sensitive sites for illegal digging with follow-up of law enforcement specialists when appropriate, and also attempting to educate the public to the scientific value of archaeological resources.

Two sites per year are scheduled to be given protective action. In addition, ongoing educational programs and monitoring schedules will be drawn up on an annual basis.

Significant historical sites, especially standing structures, will require regular maintenance in order to prevent adverse effects from natural decay. A list of sites and structures that will require maintenance will be compiled, and a maintenance schedule will be developed. One site per year is scheduled to receive maintenance.

Also requiring maintenance are the artifacts and records relating to cultural resources. Artifacts collected by the Forest Service will be curated by the appropriate District until it becomes necessary to contract with a permanent curation facility. Cultural resource inventory reports and site forms are stored at the Supervisor's Office in Bedford, Indiana. Private contractors who recover artifacts during the course of surveys are required to provide proof of a valid curation agreement with an appropriate facility before a contract can be awarded.

Modifications, either through maintenance or enhancement, of significant structures on the Forest will be made according to guidelines presented in the Secretary of the Interior's Standards for Rehabilitation of Historic Structures.

Under the terms of a Programmatic Memorandum of Agreement that exists between the Wayne National Forest and the State of Ohio, copies of cultural resource inventory and site forms will also be forwarded to the Ohio Historic Preservation Officer for State records.

**CULTURAL RESOURCE
INTERPRETATION**

Interpretation of cultural resources on the Wayne National Forest takes place on two levels. First, there is professional level scientific interpretation of data based on site location and content. This takes the form of reports concerning inventory and data recovery projects, and the presentation of a broader analysis of this data through professional journals and conferences.

A second and equally important level of interpretation is that provided to the general public. This consists of interpretive signing of sites and the publication of educational pamphlets and other materials about the history and prehistory of the Forest area. The Forest Plan has scheduled one interpretive project per year, to be decided upon by District Rangers and the Forest Archaeologist. Cultural resource interpretation provides excellent opportunities for volunteer involvement in the Forest's cultural resource program.

P

PREFACE

1

INTRODUCTION

2

MANAGEMENT SITUATION

3

*PLAN RESPONSE TO
MANAGEMENT PROBLEMS*

4

MANAGEMENT DIRECTION

FW

2.1

3.2

6.2

8.2

2.2

3.3

6.3

9.1

MA

2.3

3.4

7.1

9.2

3.1

6.1

8.1

PP

Proposed Practices

5

*IMPLEMENTATION, MONITORING
AND EVALUATION*

6

INDEX

A

Implementation Schedules

B

Management Indicator Species

C

*Vegetation Management Practices -
Rational for Choices*

D

*Map of Transmission and Utility
Corridor Restrictions*

E

*Stocking Levels Required to Meet
Oak-Hickory Objectives*

F

*Soil Limitations to Vegetative
Management Activities*

G

Cultural Resources