

4.9 MA 9 – Jordan Valley Management Area

Summary of Use and Management

The Jordan Valley management area (MA) is a “special management area” going back to 1974 with the intent of preserving the land for multi-use outdoor recreation in a near-natural setting. Management will underscore special emphasis on quiet recreational use. Mineral exploration and extraction is not permitted in the valley portion of the management area though Antrim gas development occurs nearby. Management will emphasize the continuation of selective management of the northern hardwood resource and the balancing of the aspen age classes so as to sustainably produce various forest products, enhance game and non-game wildlife habitat, protect areas of unique character and provide for forest-based recreational uses, including the North Country Trail, campgrounds and snowmobile trails. Management activities are constrained by Natural River Zoning District along the Jordan River and its tributaries, areas proposed as old growth, scenic vistas, natural area and connector between the two and three large swamp complexes: Jordan River, Hitchcock and Deer Lake. Expected trends within this 10-year planning period are increased recreational pressure; petroleum development pressure; introduced pests and diseases, especially beech bark disease and emerald ash borer (beech and ash are significant species in northern hardwood stands); and continued acquisition of private in-holdings.

Introduction

This management area is mostly a valley located within the moraines in Antrim, Charlevoix and Otsego counties in the northern Lower Peninsula and contains 35,214 acres of state forest (Figure 4.9.1).

In 1972, the Department of Natural Resources Natural Resource Commission dedicated the Jordan River and its tributaries under the Natural Rivers Act as a wild and scenic river, Michigan’s first such dedication. The Forestry Division (now Forest Resources Division) of the DNR followed up with a comprehensive management plan for the enhancement, control and protection of the state forest lands within the valley. The goals stated in the plan are:

- Maintain the high water quality in the Jordan River and its tributaries.
- Manage and control use in order to maintain and enhance the environmental integrity of the Jordan River Valley, with special emphasis on quiet recreational use.
- Manage the trees, shrubs, forbs and grasses in order to maintain a vigorous biological community and to protect water quality.
- Manage and maintain fish and wildlife under a scientific basis for the benefit of man.
- Acquire through purchase or exchange those private lands within the Jordan Valley Block State Forest boundary.

The primary attributes which identify the Jordan Valley management area include:

- The management area falls within Albert’s Vanderbilt sub-region (Albert, 1995). State forest ownership includes several outlying parcels and ownership connectivity within the main block is impacted by numerous private in-holdings.
- Prior to European settlement, the uplands in this landscape were predominantly northern mesic forest dominated by sugar maple and hemlock. The swampy riparian zone along the river was historically and is presently dominated by mixed swamp conifers. The current upland cover types are dominated by northern hardwoods species including beech, sugar maple, hemlock, basswood, ironwood and yellow birch. Red pine, a minor component circa-1800, was planted on cleared hardwood sites. Aspen occurs on 10% of the management area.
- Due to the proximity of this management area to the communities of Gaylord, Boyne City, East Jordan and Mancelona, the forest resources contribute social and economic values to the area.
- Snowmobile and hiking trails cross the area, including the Jordan River Pathway and a portion of the North Country Trail.
- Campgrounds include the Pinney Bridge hike-in only campground and the Graves Crossing State Forest Campground.
- Designated scenic vista locations are Deadman’s Hill and Landslide Creek.
- The Jordan Valley Management Plan classifies the topography of this management area as having 29% of the area as having slight-moderate slope limitations, 54% severe-very severe slope limitations and 17% wet area limitations.

Jordan Valley

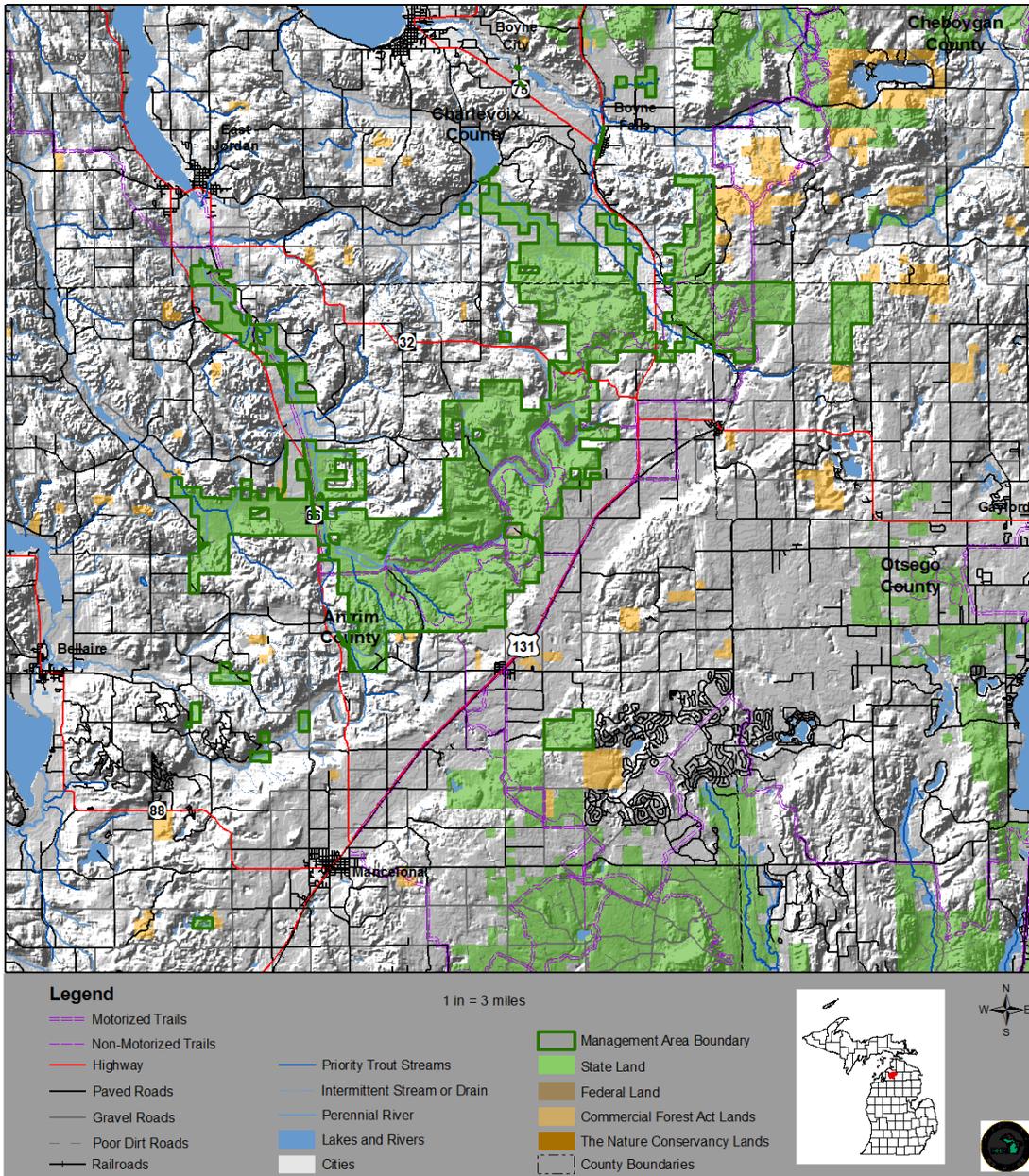


Figure 4.9.1. A map of the Jordan Valley management area (dark green boundary) in relation to surrounding state forest and other lands in Antrim County with small portions in Charlevoix and Otsego counties, Michigan.

Table 4.9.1. Current cover types, acreages, projected harvests and projected acreages at the end of the ten-year planning period for the Jordan Valley management area, northern Lower Peninsula ecoregion (2012 Department of Natural Resources inventory data).

Cover Type	Cover %	Current Acreage	Hard Factor Limited Acres	Manageable Acres	10 Year Projected Harvest (Acres)		Projected Acreage in 10 Years	Desired Future Harvest (Acres)	
					Final Harvest	Partial Harvest		Final Harvest	Partial Harvest
Northern Hardwood	62%	21,721	2,338	19,383		9,269	21,721		9,269
Lowland Conifers	11%	3,957	3,166	791	88		3,957	88	
Aspen	10%	3,518	888	2630	401		3,518	376	
Cedar	3%	967	967				967		
Lowland Deciduous	2%	801	561	240	27		801	27	
Upland Open/Semi-Open Lands	6%	2,200		2200			2,200		
Lowland Open/Semi-Open Lands	3%	973		973			973		
Misc Other (Water, Local, Urban)	1%	225		225			225		
Others	2%	852	239	613	113	116	852	74	162
Total		35,214	8,157	27,057	630	9,385	35,214	565	9,431

4.9.1 Forest Cover Type Management Direction

The following sections contain information on vegetation management direction in the form of **Desired Future Conditions, 10-Year Management Objectives and Long-Term Management Objectives** for each of the major cover types or forest communities within the management area. This information applies to those portions of the forest where active management (e.g., timber harvest, prescribed fire, planting or mowing) will be conducted. In other portions of the state forest, natural succession will achieve ecological objectives. While most stands have a variety of trees species and other vegetation, stands or communities are classified by the species which has the dominant canopy coverage.

4.9.1.1 Forest Cover Type Management – Northern Hardwoods

Current Condition

Northern hardwood acres (Figure 4.9.2) total 21,721 acres or 62% of the management area (Table 4.9.1), and are located throughout the management area on habitat class AFOCa and AFO sites (see Appendix E).

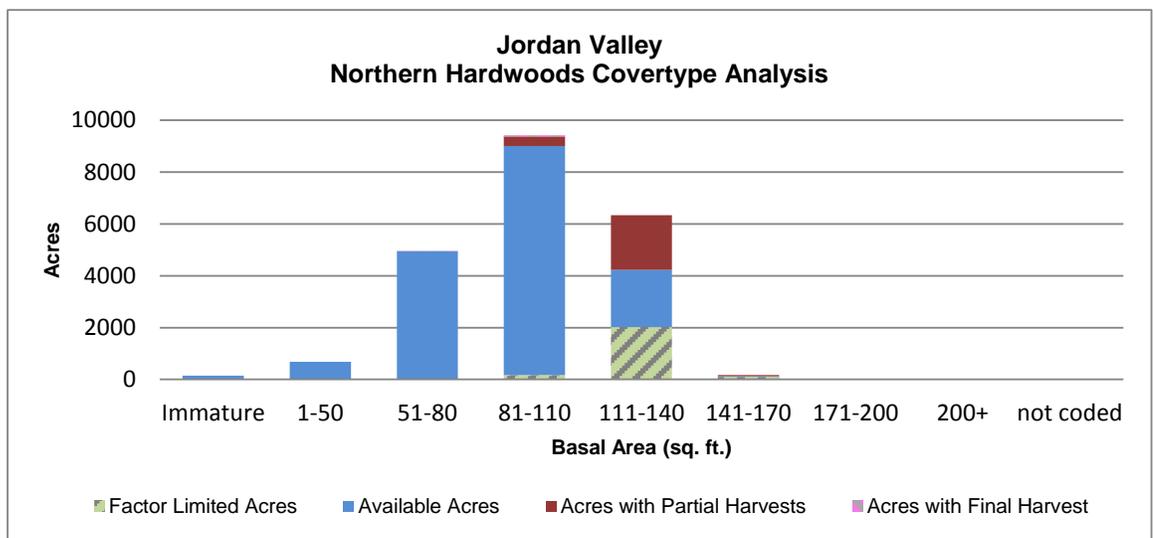


Figure 4.9.2. Basal area distribution for northern hardwoods in the Jordan Valley management area (2012 Department of Natural Resources inventory data).

Northern hardwoods are valued ecologically as sources of habitat for numerous species of wildlife including bear, white-tailed deer, marten and various song birds, commercially for pulp and saw logs and for a wide range of forest recreation.

Many of the stands have portions located on steep slopes or have seeps that limit treatment options. During the past 10 years, 5,000 acres were treated in the management area. There are 2,338 acres of northern hardwoods that have met harvest criteria, but have site conditions that limit harvest (hard factor limit acres). There are 2,550 acres that have a partial harvest pending and these acres are included in the current basal area range.

Desired Future Condition

- Northern hardwoods-dominated forest communities will be maintained on operable sites through selective harvesting to achieve an uneven-aged stand structure to provide for a continuous supply of timber products, wildlife habitat and recreational opportunity.

10-Year Management Objectives

- Selectively harvest a projected 9,269 acres of northern hardwood characterized as having a basal area of 111 square feet per acre or greater; and
- Where necessary and feasible, consider harvesting stands from the lower basal area ranges to expedite the balancing of basal area distributions.

Long-Term Management Objectives

- Emerald ash borer and beech bark disease will change the stand composition of the northern hardwoods in this management area. As these species lessen in the upland hardwood stands, consider introducing oak for mast in stands without oak;
- Continue to conduct salvage harvests of beech affected by beech bark disease and ash where present and affected by emerald ash borer, using Beech Bark Disease Management Guidelines and Emerald Ash Borer Guidelines; and
- Consider the need to delay further selection harvesting due to resultant lower than normal residual basal area in post-salvage harvest stands.

4.9.1.2 Forest Cover Type Management – Aspen

Current Condition

Aspen acres total 3,518 or 10% of the management area (Table 4.9.1). Forest communities dominated primarily by aspen in this management area are valued ecologically as sources of habitat for numerous species of wildlife including ruffed grouse, hare, woodcock, bear, white-tailed deer and various song birds, commercially for pulp and saw logs and for a wide range of forest recreation.

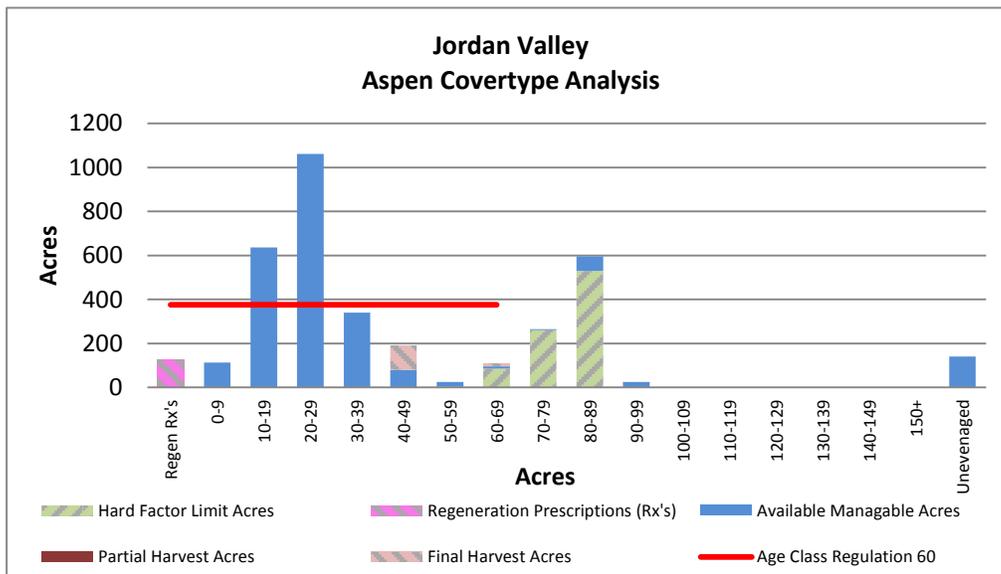


Figure 4.9.3. Age-class distribution for aspen in the Jordan Valley management area (2012 Department of Natural Resources inventory data).

Aspen occurs throughout the area on AFOCa and AFO sites. Accessible aspen has been consistently harvested over the last 40 years and most of the accessible aspen in this management area is younger than the 60-year rotation age (Figure 4.9.3). Approximately 888 acres of aspen have met harvest criteria but have site conditions that limit harvest. There are 126 acres that have regeneration harvest pending and these acres are included in the regeneration prescription class.

Desired Future Condition

- Aspen-dominated forest communities will be maintained on operable sites through even-aged management with acres balanced between 0-69 years of age to provide for a sustainable harvest, wildlife habitat and recreation opportunity.

10-Year Management Objectives

- In accordance with the Jordan Valley Management Plan, the size of clearcuts will be kept to 20 acres or less where possible;
- Conduct final harvests on a projected 401 acres of aspen in this 10-year planning period; and
- Where necessary and feasible, consider harvesting stands below the rotation age to expedite the balancing of age-class distributions.

Long-Term Management Objectives

- Continue management to balance the age-class distribution; and
- Desired future harvest levels are projected at 376 acres for final harvest per 10-year period.

4.9.1.3 Forest Cover Type Management – Cedar and Lowland Conifer

Cedar (Figure 4.9.4) acres total 967 acres or 3% of the management area and lowland conifer (Figure 4.9.5) acres total 3,957 or 11% of the management area. These acres constitute a significant portion of the management area.

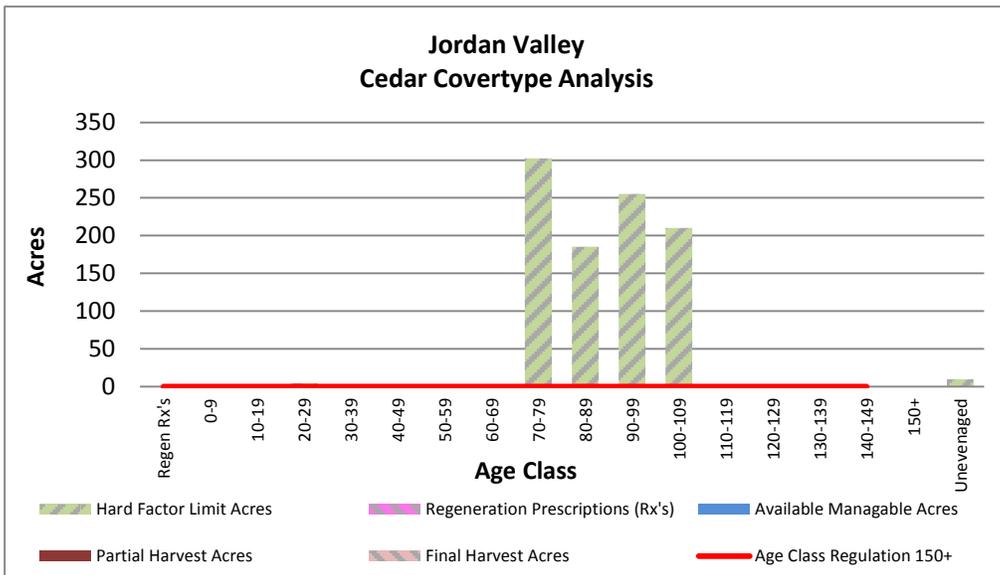


Figure 4.9.4. Age-class distribution for cedar in the Jordan Valley management area (2012 Department of Natural Resources inventory data).

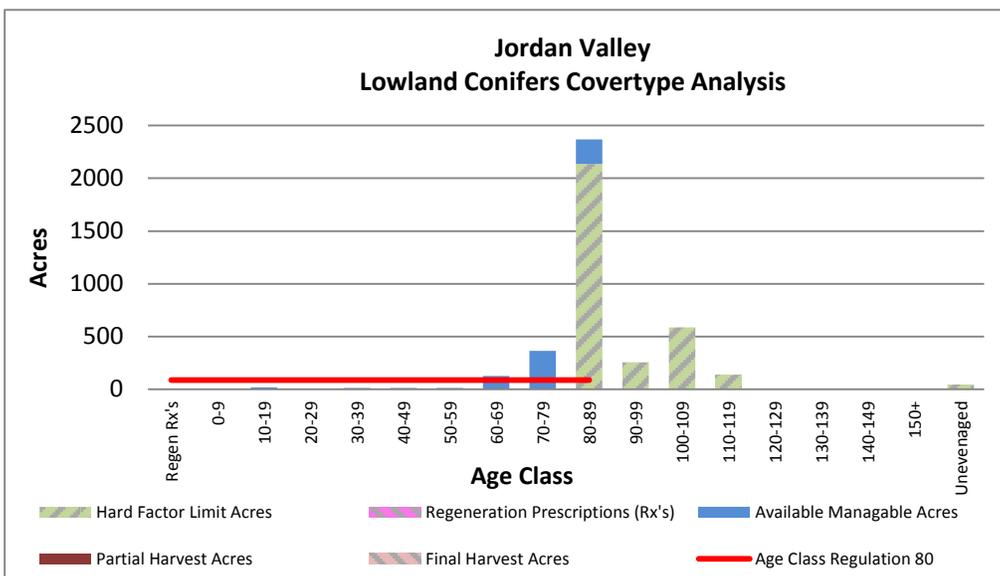


Figure 4.9.5. Age-class distribution for lowland conifers in the Jordan Valley management area (2012 Department of Natural Resources inventory data).

All 967 acres of cedar and 1,832 acres of lowland conifers are hard factor limited due to access and operability issues and may offer only limited opportunities for management.

Desired Future Condition

- These cover types will contribute to the compositional diversity of the landscape and wildlife habitat while providing forest products.

10-Year Management Objectives

- Conduct final harvests on a projected 88 acres of lowland conifer where feasible;
- Additional opportunities to increase harvest prescriptions in lowland forest types will be assessed, both in and outside (due to forest health issues) of normal years-of-entry; and
- Consider methods to ensure adequate regeneration of lowland types.

Long-Term Management Objectives

- Continue efforts to regenerate lowland types where feasible; and
- Desired future harvest levels are projected at 88 acres for lowland conifer final harvests per 10-year period.

4.9.1.4 Forest Cover Type Management – Upland Open/Semi-Open Lands

Current Condition

Upland open/semi-open lands acres total 2,200 or 6% of the management area. This category is a combination of the following non-forested land cover types: herbaceous open land, upland shrub, low-density trees and bare/sparsely vegetated.

These non-forested areas are a result of natural processes of fire, frost or other disturbances which create openings in the forest canopy along with the past management practices to maintain these areas. These communities are valued ecologically as sources of open land habitat for numerous species of wildlife.

Desired Future Condition

- The amount of upland open/semi-open lands will be at or above the current level to provide habitat for species which use openings.

10-Year Management Objectives

- Consider management to maintain upland open/semi-open lands; and
- If necessary and feasible, use herbicides to control invasive exotic species.

Long-Term Management Objectives

- Continue management to maintain upland open/semi-open lands at or above current levels; and
- Continue to protect stands from illegal off-road vehicle use.

4.9.1.5 Forest Cover Type Management – Lowland Open/Semi-Open Lands

Current Condition

Lowland open/semi-open lands (lowland shrub, marsh, treed bog and bog) communities in this management area are valued ecologically as sources of habitat for numerous species of wildlife. Lowland open/semi-open acres total 973 acres or 3% of the management area (Table 4.9.1).

Desired Future Condition

- Lowland open/semi-open lands sites will be maintained at or above current levels to provide wildlife habitat.

10-Year Management Objectives

- Management in lowland open/semi-open lands will be minimal. What little maintenance that will be done will be to maintain the hydrology and open characteristics.

Long-Term Management Objectives

- Continue management to maintain upland open/semi-open lands at or above current levels;
- Continue to protect stands from illegal off-road vehicle use; and
- Where feasible and necessary, use control methods on invasive non-native species.

4.9.1.6 Forest Cover Type Management – Other Types

Individual cover types which may cover less than 5% of the management area include: lowland deciduous, 801 acres or (2% of the management area) (Table 4.9.1), red pine, 244 acres (1%) and upland spruce/fir, 140 acres (<1%). Other types including non-forested types and small scattered acres total 852 acres (2%). All of the timbered and non-timbered communities have important ecological values and are important habitat for numerous wildlife species.

Desired Future Condition

- These communities will be managed on operable sites, contributing to the compositional diversity of the landscape while providing for continual harvest and to contribute to the preservation of regional biodiversity by providing habitat for a unique suite of plants and wide variety of animal species.

10-Year Management Objectives

- Seek opportunities to harvest, where appropriate, the scattered acreages of upland and lowland minor types where access and operability will not adversely impact sensitive areas;
- The following species are projected for regeneration harvests: upland spruce/fir 58 acres, red pine 22 acres and lowland deciduous 27 acres; and
- Partial harvests are projected for 58 acres of red pine and 17 acres of upland conifers and 20 acres of natural mixed pines.

Long-Term Management Objectives

- Future management decisions need to consider the continuing Antrim gas development pressure in the area;
- Continue management decisions to consider the intensive recreation use at overlooks, snowmobile trails, the North Country Trail, fishing, mushrooming, etc.;
- Continue management of other types to produce a sustainable level of forest products, habitat and recreational opportunities; and
- Continue management to regenerate lowland types where feasible.

4.9.2 Featured Wildlife Species

Each of the featured species outlined below includes recommended practices with regard to forest and/or wetland management.

The following have been identified as featured species for this management area during this 10-year planning period:

- American marten
- Black bear
- Black-throated blue warbler
- Golden-winged warbler
- Pileated woodpecker
- Red-shouldered hawk
- Ruffed grouse
- Wild turkey
- White-tailed deer
- Wood thrush

The primary focus of wildlife habitat management in the Jordan Valley management area will be to address the habitat requirements identified for the listed featured species. Based on the selected featured species, some of the most significant wildlife management issues in the management area are the maintenance of young forest; extensive mature forest; large open grassland complexes and marsh/grassland complexes; the retention of large, over-mature trees and snags; and the maintenance and expansion of hard mast, understory shrub and mesic conifer components.

A more detailed overview of featured species is included in Section 3.

American Marten

The goal for American marten in the northern Lower Peninsula is to increase available habitat. American marten needs mature mixed forest stands or old conifer-dominated stands, with dead and down material for maintaining a stable and sufficient supply of small mammals as prey. American marten are rarely found outside the forest canopy. This species depends upon live-tree dens, snags and coarse woody debris for loafing (resting) and denning sites. State forest management should address the maintenance and improvement of extensive and mature forest tracts, corridors, dead wood and conifer components in priority landscapes.

Wildlife Habitat Specifications:

- Identify, maintain, develop or restore large forested tracts and forested corridors.
- In even-aged management systems, within-stand retention should focus on large diameter (>15 inches in diameter at breast-height) trees, known cavity trees and/or mesic conifers to maintain/increase denning and loafing sites.
- Where possible, increase both standing-dead and downed-dead wood by:
 - Applying at least the minimum level of within-stand retention to all stands in management area;
 - Writing harvest specifications to leave slash at the stump or to minimize the removal of slash; and
 - Limiting or prohibiting firewood permits at marten-occupied sites.

Black Bear

The goal for black bear in the northern Lower Peninsula is to maintain or improve habitat. Black bears have large home ranges and require large contiguous tracts of diverse forests with a mixture of cover types. They tend to use forested riparian corridors in their movements (which can be extensive). Hard mast is critical in the fall for bears to achieve adequate weight gains before denning. State forest management for the species should focus on improving existing habitat by minimizing forest fragmentation and maintaining oak to offset potential population declines due to changes in land-use.

Wildlife Habitat Specifications:

- Identify, maintain, develop or restore forested corridors that connect larger forested tracts, paying particular attention to riparian zones.
 - Implementation of riparian guidance (best management practices) will be sufficient to meet the black bear habitat specifications related to preventing fragmentation and maintaining corridors.
- Conduct silvicultural practices that maintain or increase oak-dominated stands and the oak component of mixed stands.
 - Implementation of the 10-year management direction for oak will be sufficient to meet black bear habitat specifications.

Black-throated Blue Warbler

The goal for black-throated blue warbler in the northern Lower Peninsula is to maintain available habitat. Black-throated blue warbler is an area-sensitive species (e.g., densities increase exponentially with increasing patch size) mainly occurring in mesic deciduous forest tracts >50 years in age and >250 acres in size, with a dense understory layer for nesting and foraging. State forest management for the species should focus on maintaining mature, large (>50 years old and >250 acres) mesic deciduous forest tracts with a dense understory layer for nesting and foraging.

Wildlife Habitat Specifications:

- Identify, maintain, develop or restore mesic-deciduous tracts >50 years old and >250 acres in size;
- Maximize forest interior (of northern hardwood stands) within the management area by increasing the portion of forest over 250 acres; minimizing edges (concentrating openings, oil and gas development, roads and pipelines along the forest or stand edge); and providing canopy gaps through single tree and group selection harvest practices; and
- Conduct silvicultural practices to maintain or promote a well-developed shrub understory.

Golden-winged Warbler

The goal for golden-winged warbler nest in the northern Lower Peninsula is to maintain or increase available habitat. Golden-winged warbler nest in a variety of shrubby and early-successional forest sites including moist woodlands, willow and alder thickets and young forests of sapling aspen and fire cherry. Habitat tracts of 25-125 acres can support several pairs and are preferred over both smaller and larger areas. State forest management should focus on the maintenance of young aspen (0-10 years old) in association with lowland shrub and grasslands in priority landscapes.

Wildlife Habitat Specifications:

- Identify commercial and non-commercial treatment opportunities in aspen and alder adjacent to or within lowland shrub and grassland. Treatment areas 25-125 acres are preferred.
 - Implementation of 10-year management direction for aspen, lowland aspen and lowland deciduous will be sufficient to meet this golden-winged warbler nest habitat specification.
- Within management area, maintain 20% of aspen associated with lowland shrub and grasslands in the 0-10 year age class.

Pileated Woodpecker

The goal for pileated woodpecker in the northern Lower Peninsula is to maintain available habitat. Pileated woodpeckers prefer stands greater than 40 years old for foraging and greater than 70 years old for nesting and roosting and abundance is positively related to the density of trees >12 inches in diameter at breast height. State forest management should focus on the maintenance of a component of large diameter trees (>12 inches in diameter at breast height) at the landscape scale.

Wildlife Habitat Specifications:

- Maintain a component of large diameter trees greater than 12 inches in diameter at breast height.
 - Implementation of Within Stand Retention Guidance, factor-limited acres, uneven-aged management in the northern hardwoods type, special conservation areas with objectives for big tree management and continued mortality from insect and disease will be sufficient to meet the pileated woodpecker habitat specifications for large trees in this management area.

Red-shouldered Hawk

The goal for red-shouldered hawk in the northern Lower Peninsula is to maintain available habitat. Red-shouldered hawks nest in contiguous, mature, closed canopy, hardwood forests. Nesting habitat consists primarily of well-stocked pole or sawtimber stands (stocking densities 6 and 9) with a closed canopy (80-100%) and basal area of at least 98 square feet per acre. Nests are usually found in deciduous trees with a mean of 23 inches in diameter at breast height. State forest management activities should focus on the maintenance of large blocks (>385 acres) of mesic northern forest with the appropriate level of large diameter trees in priority landscapes.

Wildlife Habitat Specifications:

- All suspected red-shouldered hawk nests are to be reported to local wildlife staff and confirmed nests documented in accordance with the DNR *Approach to the Protection of Rare Species on State Forest Lands* (CI 4172) and included in Integrated Forest Monitoring, Assessment and Prescriptions Geographic Decision Support System when there is an expected operational impact. For red-shouldered hawk, the wildlife habitat specifications contained within Michigan DNR's *Interim Management Guidelines for Red-Shouldered Hawks and Northern Goshawk on State Forest Lands* (August 2012) will be followed.

Ruffed Grouse

The goal for grouse in the northern Lower Peninsula is maintain available habitat. Ruffed grouse prefer young (6-15 year-old), even-aged deciduous stands that typically support 8,000-10,000 woody stems/acre. Although ruffed grouse use many different forest types (aspen, birch, oak-hickory), aspen can support higher densities than those attained in other forest types. The juxtaposition of different age classes allows for different life history requirements to be met within a small area and promotes higher grouse densities. Ideal aspen stands will be of 40-160 acres under a 40-year rotation with staggered harvests of 25% every 10 years in 10-40 acre harvest units. Larger harvest units should have irregular boundaries and include one or two 1-3-acre unharvested inclusions. State forest management should focus on maintaining and balancing the age-class distribution for aspen and oak cover types in priority landscapes.

Wildlife Habitat Specifications:

- Maintain the aspen cover type and the aspen component in mixed stands within the management area.
 - Implementation of 10-year management direction for aspen, lowland aspen and lowland deciduous will be sufficient to meet this ruffed grouse habitat specification.
- Move to balance the age-class distribution of aspen and continue management to regenerate oak to maintain young forests across the management area.
 - Implementation of 10-year management direction for aspen, lowland aspen, lowland deciduous and oak will be sufficient to meet this ruffed grouse habitat specification.
- Maintain the upland shrub cover type specifically junberry, hawthorn, cherry and other mast producing shrub components.
 - Implementation of 10-year management direction for upland brush will be sufficient to meet this grouse habitat specification.

Wild Turkey

The goal for turkey in the northern Lower Peninsula is maintain available habitat. In northern Lower Peninsula, snow depth is the primary limiting factor that restricts turkey population expansion as deep snow limits access to winter food. The availability of acorns can help mediate the impacts of deep snow. A secondary limiting factor throughout their range is good brood cover. Openings with grasses and forbs and little or no overstory trees are preferred. State forest management should focus on providing natural winter food, maintaining and regenerating oak and maintaining brood-rearing openings to improve brood-production and winter survival.

Wildlife Habitat Specifications:

- Maintain and increase the number of brood-rearing openings (forest openings, savannas, barrens, hayfields, etc.).
 - Implementation of 10-year management direction for upland open land will be sufficient to meet this turkey habitat specification.
- Through opening maintenance, planting and pruning, provide sources of winter food that are accessible above the snow (food plots, annual grains, fruit-bearing trees or shrubs).
 - Implementation of 10-year management direction for upland open land will be sufficient to meet this turkey habitat specification.
- Conduct silvicultural practices that conserve the oak component in forest stands and promote oak regeneration.
 - Implementation of 10-year management direction for oak will be sufficient to meet this turkey habitat specification.

White-tailed Deer

The goals for white-tailed deer habitat in the northern Lower Peninsula are to: 1) Maintain spring and summer forage and improve recreational access through openings management; 2) Maintain the overall proportion of potential woody browse such as aspen; 3) Maintain or increase the oak component in forest stands and promote oak regeneration; and 4) Maintain and promote functional shelter in wintering complexes.

Wildlife Habitat Specifications:

- Annual manage at least 3,000 acres of forest openings across the ecoregion to provide spring and summer forage and recreational opportunities.
 - Implementation of 10-year management direction for upland open land and upland shrub will be sufficient to meet this deer habitat specification.
- Maintain the aspen cover type and the aspen component in mixed stands within the management area.
 - Implementation of 10-year management direction for aspen, lowland aspen and lowland deciduous will be sufficient to meet this deer habitat specification.
- Move to balance the age-class distribution of aspen and continue management to regenerate oak to maintain young forests across the management area.
 - Implementation of 10-year management direction for aspen, lowland aspen, lowland deciduous and oak will be sufficient to meet this deer habitat specification.

- Conduct silvicultural practices that conserve the oak component in forest stands and promote oak regeneration.
 - Implementation of 10-year management direction for oak will be sufficient to meet this deer habitat specification.
- Manage cedar and hemlock with the main objectives of regeneration and providing future functional cover.
 - Implementation of 10-year management direction for cedar and lowland conifer will be sufficient to meet this deer habitat specification.
- Promote hemlock on appropriate sites using silviculture to increase within-stand hemlock components.

Wood Thrush

The goal for wood thrush in the northern Lower Peninsula is to maintain available habitat. Wood thrush occur primarily in upland, mesic deciduous and mixed forests with large trees, diverse tree communities, moderate undergrowth and a well-developed litter layer.

Wood thrush is highly susceptible to nest predation and brood parasitism, which increases with forest fragmentation. State forest management for the species should focus on maintaining large (>250 acres) forest tracts, minimizing edge and promoting a dense understory layer for nesting and foraging.

Wildlife Habitat Specifications:

- Identify, maintain, develop or restore mesic-deciduous tracts >50 years old and >250 acres in size;
- Maximize forest interior (of northern hardwood stands) within the management area by increasing the portion of forest over 250 acres, minimizing edges (concentrating openings, oil and gas development, roads and pipelines along the forest or stand edge); and providing canopy gaps through single tree and group selection harvest practices; and
- Conduct silvicultural practices to maintain or promote a well-developed shrub understory.

4.9.3 Rare Species and Special Resource Area Management

All forest operations must be reviewed for potential conflicts between rare species and proposed forest operations following the guidance in DNR's *Approach to the Protection of Rare Species on State Forest Lands* (IC4172). This is especially important when listed species are present or past surveys have indicated a possibility of their presence.

Past surveys have noted and confirmed six listed species and no natural communities of note occurring in the management area as listed in Table 4.9.2. Any established management guidelines will be followed. Further surveys for special species and natural communities will be carried out as a matter of course during the inventory process and opportunistically for special more focused surveys.

As shown in Figure 4.9.6, the Jordan Valley is a 1,569 acre non-dedicated natural area that is a special conservation area as are Dead Man's Hill and Landslide Creek overlooks.

The Jordan River and its tributaries have been identified as a natural river and along with its corridor are also designated as a high conservation value area as shown in Figure 4.9.6.

There are no ecological reference areas identified for the Jordan Valley management area.

Management goals during this planning period:

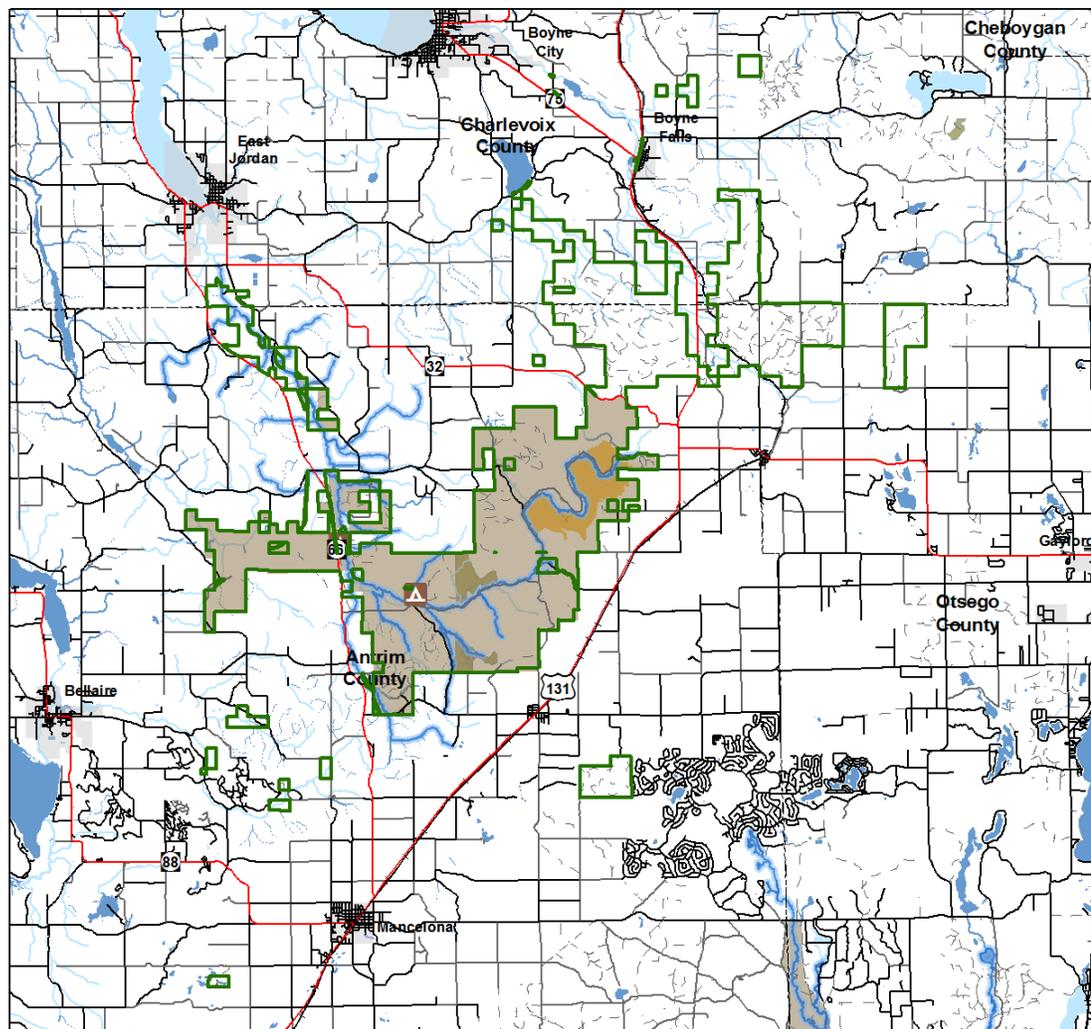
- Document occurrences of rare, threatened, endangered and special concern species and natural communities for the management area through the inventory process or with occasional focused surveys.
- Evaluate all potential Type 1, potential Type 2 and potential old growth areas to determine their status as a special resource area.
- Develop and maintain management and monitoring plans for ecological reference areas on state forest land.

Table 4.9.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Jordan Valley management area.

Common Name	Scientific Name	Status	Status in Management Area	Climate Change Vulnerability Index (CCVI)	Confidence	Natural Community Association	Probable Cover Types	Successional Stage
Birds								
Northern goshawk	<i>Accipiter gentilis</i>	SC/G5/S3	Confirmed	PS	Very High	Mesic northern forest	Northern Hardwood	Late
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern hardwood swamp	Black Ash	Late
						Floodplain forest	Lowland mixed	Mid
						Dry northern forest	Jack Pine, Red Pine	Late
						Dry-mesic northern forest	White Pine	Late
						Boreal forest	Upland & Lowland Sp/F	Mid
Grasshopper sparrow	<i>Ammodramus saviannarum</i>	SC/G5/S3S4	Confirmed	PS	Moderate	Dry sand prairie	Upland open/semi-open	N/A
						Mesic prairie	Upland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Lakeplain wet-mesic prairie	Lowland open/semi-open	N/A
						Wet prairie	Lowland open/semi-open	N/A
						Wet-mesic sand prairie	Lowland open/semi-open	N/A
						Hillside prairie	Upland open/semi-open	N/A
						Mesic sand prairie	Upland open/semi-open	N/A
Red-shouldered hawk	<i>Buteo lineatus</i>	T/G5/S3-4	Confirmed	PS	Very High	Floodplain forest	Lowland mixed	Mid
						Dry-mesic northern forest	White Pine	Late
							Northern Hardwood	Late
Mammal								
Woodland vole	<i>Microtus pinetorum</i>	SC/G5/S3S4	Confirmed	PS	Very High	Dry-mesic northern forest	White Pine	Late
						Mesic northern forest	Northern Hardwood	Late
						Floodplain forest	Lowland mixed	Mid
						Oak-pine barrens	Oak	Mid
			Bur oak plains	Upland open/semi-open	N/A			
Snail								
Spike-lip crater snail	<i>Appalachina sayanus</i>	SC/G5/SU	Confirmed	HV	Low	Mesic northern forest	Northern Hardwood	Late
						Rich conifer swamp	Tamarack	Late
						Northern hardwood swamp	Black Ash	Late
						Hardwood-conifer swamp	Lowland Mixed	Mid
			Floodplain forest	Lowland mixed	Mid			
Reptile								
Eastern Massasauga rattlesnake	<i>Sistrurus catenatus catenatus</i>	C/SC/G3G4T3T4Q/S3S4	Confirmed	HV	High	Coastal fen	Lowland open/semi-open	N/A
						Dry-mesic prairie	Upland open/semi-open	N/A
						Dry sand prairie	Upland open/semi-open	N/A
						Poor conifer swamp	Tamarack	Late
						Bog	Lowland open/semi-open	N/A
						Emergent marsh	Lowland open/semi-open	N/A
						Northern wet meadow	Lowland open/semi-open	N/A
						Intermittent wetland	Lowland open/semi-open	N/A
						Coastal plain marsh	Lowland open/semi-open	N/A
						Wet-mesic sand prairie	Lowland open/semi-open	N/A
						Wet prairie	Lowland open/semi-open	N/A
						Prairie fen	Lowland open/semi-open	N/A
						Northern fen	Lowland open/semi-open	N/A
						Rich conifer swamp	Tamarack	Late
						Northern hardwood swamp	Black Ash	Late
						Floodplain forest	Lowland mixed	Mid
						Northern shrub thicket	Upland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late
						Dry northern forest	Jack Pine, Red Pine	Early
							Oak-pine barrens	Mid
	Pine barrens	Jack Pine	Early					
	Mesic prairie	Upland open/semi-open	N/A					
	Mesic sand prairie	Upland open/semi-open	N/A					
	Hardwood-conifer swamp	Lowland Mixed	Mid					
Plant								
Ram's head lady's-slipper	<i>Cypripedium arietinum</i>	SC/G3/S3	Confirmed			Rich conifer swamp	Tamarack	Late
						Boreal forest	Upland & Lowland Sp/F	Mid
						Volcanic bedrock lakeshore	Upland open/semi-open	N/A
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Poor fen	Lowland open/semi-open	N/A
						Wooded dune & swale complex	Upland open/semi-open	N/A
						Dry northern forest	Jack Pine, Red Pine	Late
						Dry-mesic northern forest	White Pine	Late
						Great Lakes barrens	Upland open/semi-open	N/A
						Limestone bedrock glade	Upland open/semi-open	N/A
						Volcanic bedrock glade	Upland open/semi-open	N/A
						Granite bedrock glade	Upland open/semi-open	N/A

Climate Change Vulnerability Index: EV – Extremely Vulnerable; HV – Highly Vulnerable; MV – Moderately Vulnerable; PS – Presumed Stable; and IL – Increase Likely.

Jordan Valley



Legend

<ul style="list-style-type: none"> — Highway — Paved Roads — Gravel Roads - - - Poor Dirt Roads — Railroads — Intermittent Stream or Drain — Perennial River — Lakes and Rivers — Management Area Boundary — Cities - - - County Boundaries 	<ul style="list-style-type: none"> — Ecological Reference Areas High Conservation Value Areas — Coastal Environmental Areas — Critical Dunes — Natural Rivers Vegetative Buffer — Natural Rivers Zoning District — Critical Coastal Habitat (Piping Plover) — Kirtland Warbler Habitat — Dedicated Management Areas — Natural Areas Legally Dedicated 	<ul style="list-style-type: none"> Special Conservation Areas — Campgrounds — Fishing Access Sites — Boat Access Sites — Mineral Resource Locations — Wild & Scenic Rivers (USFS Lands) — Visual Management Areas — Contiguous Resource Areas — Possible Type 1 and Type 2 Old Growth — Potential Old Growth — Non-Dedicated Natural Areas & National Natural Landmarks — Springs, Wetlands, or Riparian Areas 	<ul style="list-style-type: none"> — Cold Water Streams & Lakes — Wildlife Management Areas — Research, Development, and Military Lands — Great Lakes Islands
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Figure 4.9.6. A map of the Jordan Valley management area showing the special resource areas.

4.9.4 Forest Health Management

Although forest health issues span the entire landscape, some specific threats are more important in this management area due to the species composition, site quality or other factors. Some of the more important forest health pests in this management area include emerald ash borer and beech bark disease and management should be adapted as follows:

- Full site use (e.g., stocking, desired species and low species diversity) on high-quality northern hardwood sites heavily impacted by beech bark disease and/or emerald ash borer is important;
- Consider planting red or white oaks, white or red pines, black cherry, white spruce, etc. as site conditions and quality allow; and

- Herbicides may be needed to control competing vegetation and/or to reduce density of ash and beech regeneration.

Invasive Species

Invasive species pose a major threat to forest resources. They impact timber production, wildlife habitat and recreational access. Locations of invasive species mapped in and within a five-mile buffer of the management area are summarized in Table 4.9.3 below. This information was compiled from the Midwest Invasive Species Information Network database, but it should not be considered complete. Local staff has located *Phragmites* in the management area. This information and other sources that show the extent and location of invasives should be used to inform of the potential for additional sightings that should be documented. Invasives that merit eradication efforts are those species that threaten sensitive sites due to their location or growth characteristics and have population levels that may be successfully controlled.

Table 4.9.3. Locations of invasive species mapped in and within a five-mile buffer of the management area (Midwest Invasive Species Information Network database).

Jordan Valley - FMD MA	Cases within FMD Areas	Cases within 5-Mile Buffer	Total number of cases	Total number of different Invasive Species
	0	5	5	4
Invasive Species within FMD Areas	Occurrences	Invasive Species within 5-Mile Buffer	Occurrences	
-	-	Amur Honeysuckle <i>Lonicera maackii</i>	1	
-	-	Garlic Mustard <i>Alliaria petiolata</i>	1	
-	-	Glossy Buckthorn <i>Rhamnus frangula</i>	2	
-	-	Japanese Knotweed <i>Fallopia japonica</i>	1	

4.9.5 Aquatic Resources

Fisheries Division management unit biologists will review proposed forest management activities using the compartment review process and will consider the potential impact of proposed prescriptions upon riparian and aquatic values. Management prescriptions will be modified to account for riparian and aquatic values by applying the standards and guidance documents listed in the introduction to this plan section to the unique conditions specific to any given forest stand.

Prescription of riparian management zone widths greater than the minimum widths provided in IC4011 (*Sustainable Soil and Water Quality Practices on Forest Land*) must be justified and documented during the compartment review process.

Forested stands adjacent to designated high priority trout streams will specifically be managed to discourage beaver use in accordance with both DNR Policy and Procedure 39.21-20 Beaver Management and IC 4011. Designated high priority trout streams for this management area are shown in Figure 4.9.1 and listed in Appendix F.

4.9.6 Fire Management

Northern hardwoods which have historically been a major component of this management area are rarely impacted by natural fire regimes. However, disturbance through fire has played an important role in the initial propagation and maintenance small inclusions of aspen or grass/upland brush types. Wildfire risk and fuel loading is increased in young dense conifer plantations.

The Michigan DNR has a prescribed fire program and maintains a well-trained staff to conduct prescribed burns for silviculture, habitat maintenance or habitat restoration. Each year, all burns prescribed on state forests, parks and wildlife game lands are evaluated and ranked, with funding allocated to the highest priority burns. The ability to fund prescribed burns is based on available funding, the total acres prescribed for burning and the prioritized ranking of individual burns. The demand for prescribed burning money frequently exceeds the amount of funding and some recommended burns may not be funded for that fiscal year. Once funded, the ability to implement a burn is dependant on suitable prescribed burning weather, a suitable fuel (vegetation) condition, local staffing and other resources.

The following fire management concepts should be applied in the management area:

- Consider opportunities to incorporate fire as a tool to restore or maintain managed openings; and

- Recognize that increased recreational use within the management area will present more wildland fire challenges to wildfire suppression.

4.9.7 Public Access and Recreation

Access for management and/or recreation is generally limited throughout much of this management area due to wet sites and limited access from adjacent landowners. The Department will continue to seek access across adjacent private property. In accordance with the Department's *Sustainable Soil and Water Quality Practices on Forest Land*, upon completion of harvesting, temporary spur and seasonal roads will be closed and stabilized.

Although managing recreational opportunities is the primary responsibility of Parks and Recreation Division, timber management activities may impact the quality of recreational opportunities and management modifications will be considered to minimize these impacts. There is one state forest campground in the management area as shown in Figure 4.9.6.

Management modifications that may minimize possible recreational trail and other infrastructure impacts are agreed upon by recreation staff in Parks and Recreation Division and Forest Resources Division staff through the compartment review process. Public input received through meetings, including the compartment review process and other forums, will also be considered. Trail protection specifications can be applied through the vegetative management system in the design and administration of timber management activities. Guidance for within-stand retention may also be used along trails to minimize impacts which may include modifications to management such as maintaining conifers to shade winter snow trails. Where modifications to management may not be compatible with timber management objectives, opportunities to educate the public on the Department's timber management policies may be considered. Specifications and guidance for management around trails may include, but is not limited to: vegetative management system Sections 5.2.39, 5.2.40, 5.2.41 and 5.2.42 and the Department of Natural Resources Within Stand Retention Guidance.

Access for management and/or recreation is generally limited throughout much of this management area due to wet sites and limited access from adjacent landowners. The Department will continue to seek access across adjacent private property. In accordance with the Department's *Sustainable Soil and Water Quality Practices on Forest Land*, upon completion of harvesting, temporary spur and seasonal roads will be closed and stabilized.

4.9.8 Oil, Gas and Mineral Development

Surface sediments consist of coarse-textured till, glacial outwash sand and gravel and postglacial alluvium, end moraines of coarse-textured till and lacustrine (lake) sand and gravel. The glacial drift thickness varies between 10 and 800 feet. Sand and gravel pits are located in this management area and there is good potential for additional pits.

The Mississippian Coldwater and Sunbury Shales and Devonian Berea Sandstone, Bedford, Antrim and Ellsworth Shales and Traverse Group subcrop below the glacial drift. The Traverse Limestone has limestone/dolomite potential, especially in areas of thin glacial till.

Oil and gas production from the Antrim Shale is located throughout this management area. Antrim development has been allowed along the edges of the official Jordan Valley management area with horizontal drilling from outside the boundary to reduce hydrocarbon drainage of state lands. The Collingwood Formation may also have oil and gas potential in this area and over half of the management area is leased, primarily for the Antrim. If drilling is successful for the Collingwood, additional drilling in the management area as well as along the border of the Jordan Valley management area could occur.

Metallic mineral production is not supported by the geology given the depth to known metallic bearing formations.

Administration of oil and gas development on state forest land is provided by both the DNR and Department of Environmental Quality to ensure that minerals shall be developed in an orderly manner to optimize revenue consistent with other public interest and natural resource values.

Lease classification of state lands is guided by DNR Oil and Gas Lease Classification Procedure No. 27.23-15. Contained within each DNR Oil and Gas Lease Agreement are environmental terms which detail requirements for permits to drill issued by the Department of Environmental Quality, supervisor of wells pursuant to Part 615 of 1994 PA 451, as amended. No operations are to take place in a wetland (as defined in Part 303 of 1994 PA 451, as amended), habitat critical to the survival of an endangered species and designated under provisions of Part 365 of 1994 PA 451, as amended or a site designated by the secretary of state to be of historical or archeological significance, unless a plan to eliminate negative impacts to archeological or historical resources is agreed upon. Areas identified as having special wildlife, environmental, recreational significance and/or state surface require a development plan which will minimize

negative impacts and will minimize surface waste while remaining consistent with the spacing requirements established by the supervisor of wells. All pipelines from the well site are required to follow existing well roads or utility corridors and all pipelines are to be buried below plow depth. Forest operations (including harvest and planting trees, prescribed fire, and wildfire response) in the management area may require modification to accommodate the presence of pre-existing oil and gas pipelines located at or near the ground surface. Abandoned well sites should be incorporated back into state forest stands as either forest openings or re-forested areas, as determined by the vegetation plan contained in the lease agreement or as subsequently decided in compartment review.