4.34 Voelker Plains Management Area

Summary of Use and Management

Vegetative management in the Voelker Plains management area (MA) (Figure 4.34.1) will provide a variety of forest products; maintain or enhance wildlife habitat; protect areas with unique characteristics; and provide for forest based recreational uses. Timber management objectives for the 10-year planning period include improving the age-class distribution of jack pine, aspen and lowland spruce/fir; maintaining the presence of minor cover types on the landscape; and maintaining non-forest vegetation types. Wildlife management objectives include addressing the habitat requirements identified for the following featured species: American woodcock, beaver, black bear and Kirtland's warbler. Management activities may be constrained by site conditions and the skewed age-class distributions. Balancing age classes and spruce budworm will be issues for this 10-year planning period.

Introduction

The Voelker Plains management area is located on an outwash plain in central Marquette County. The management area covers 13,785 acres. The state forest ownership is somewhat fragmented interspersed with non-industrial and industrial private ownership. The major cover types are jack pine, aspen and lowland spruce/fir. Other attributes that played a role in the definition of this management area include:

- Dominated by two natural communities: dry northern forest and dry-mesic northern forest;
- Low- to medium-site quality;
- Provides multiple benefits including forest products and dispersed recreational activities; and
- Provides a variety of fish and wildlife habitats.

The management priority in this area includes the use of intensive early successional jack pine management for timber production on appropriate sites.

The predominant cover types, composition and projected harvest areas for the Voelker Plains Area management area are shown in Table 4.34.1.

Table 4.34.1. Summary of cover types, composition, limited factor area, manageable area and projected harvest area for the Voelker Plains management area (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
Jack Pine	47%	6,427	163	6,264	136	0	6,427	895	0
Lowland Spruce/Fir	11%	1,485	142	1343	453	0	1,485	149	0
Aspen	11%	1,457	16	1441	522	0	1,457	288	0
Red Pine	6%	878	131	747	0	278	878	68	278
Upland Spruce/Fir	4%	559	82	477	0	0	559	68	0
White Pine	4%	496	0	496	31	173	496	31	173
Upland Open/Semi-Open Lands	1%	196	0	196	0	0	196	0	0
Lowland Open/Semi-Open Lands	11%	1,581	0	1581	0	0	1,581	0	0
Misc Other (Water, Local, Urban)	0%	55	0	55	0	0	55	0	0
Others	5%	651	9	642	151	55	651	60	138
Total		13,785	543	13,242	1,293	506	13,785	1,559	589

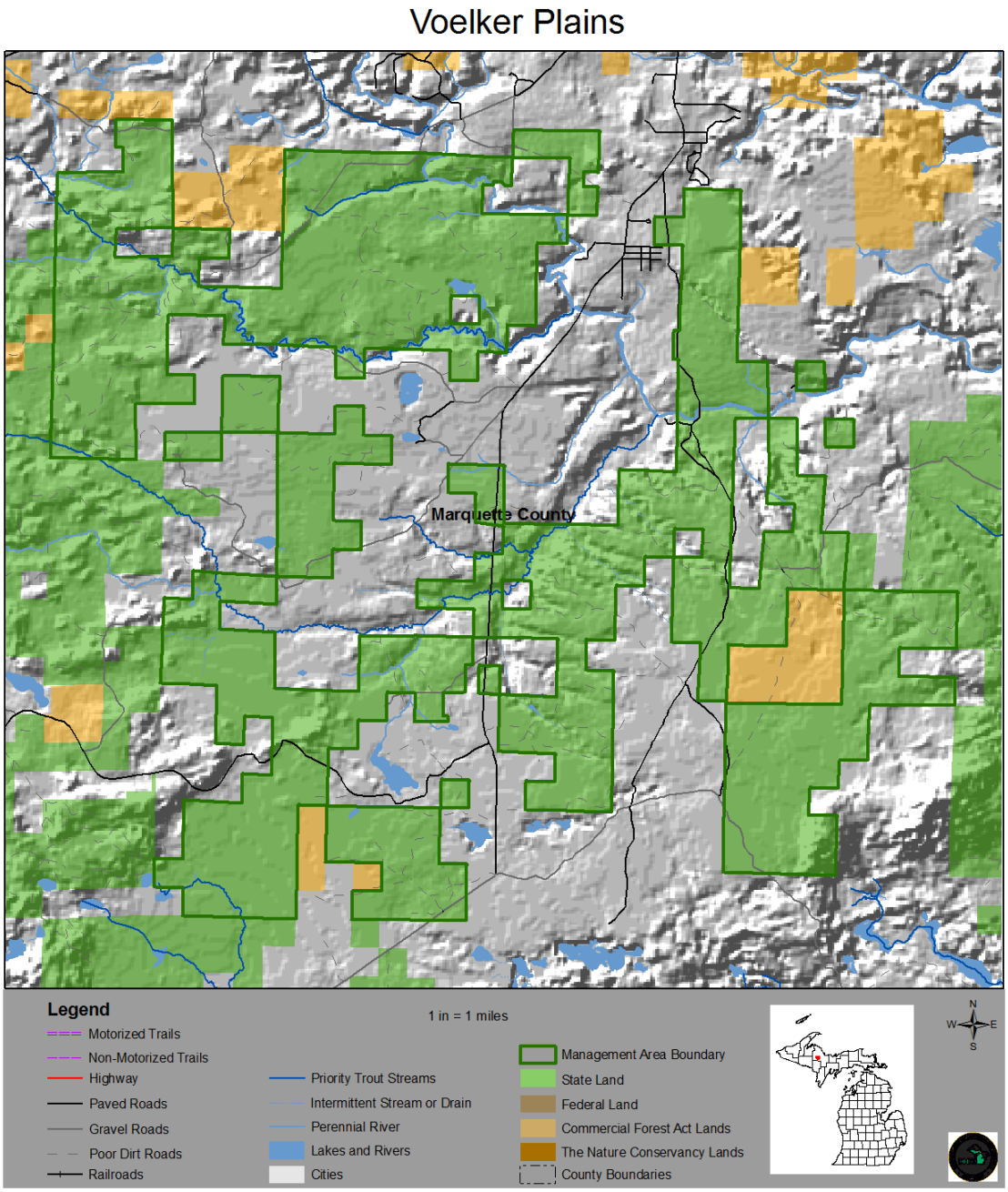

Figure 4.34.1. A map of the Voelker Plains management area (dark green boundary) in relation to surround state forest and other land in Marquette County, Michigan.

4.34.1 Forest Cover Type Management Direction

The following sections contain information on vegetation management for each of the major cover types, a grouping of minor cover types and important non-forested vegetation types for the Voelker Plains management area in the form of Desired Future Condition, 10-Year Management Objectives and Long-Term Management Objectives. This information applies to those portions of the forest where active management (i.e., timber harvest, prescribed fire, planting or mowing) will be conducted. In other portions of the state forest, the natural processes of succession and disturbance will provide ecological benefits. While most stands have a variety of tree species and other vegetation, they are classified by the species with dominant canopy coverage.

The following cover types are valued commercially for their timber products; ecologically as sources of habitat for numerous wildlife species; and for the variety of recreational opportunities they provide. Harvesting and regenerating these cover types will provide for a continuous flow of forest products and will help to ensure (or provide) wildlife habitat.

Jack Pine Cover Type

Current Condition

The jack pine cover type covers 6,427 acres (47%) of the management area (Table 4.34.1) and is poorly distributed across age classes (Figure 4.34.2). Jack pine is growing on dry-mesic to dry-sandy soils, which are productive for the species. Jack pine will be managed on a 60-year rotation (indicated by the red line in Figure 4.34.2). Jack pine acres are unevenly distributed across age classes. Over the last 20 years overmature jack pine stands have been harvested to reduce losses to jack pine budworm and windthrow. This has caused the surplus of young age class acres as seen in Figure 4.34.2. Extended drought conditions and subsequent jack pine plantation failures over the past five years has extended the time and increased the cost of regenerating some stands.

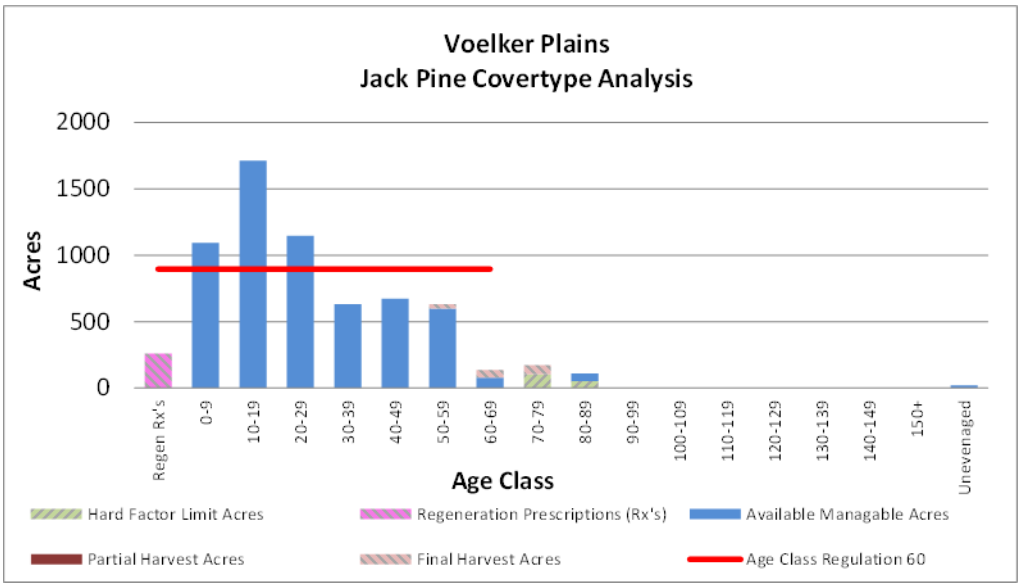

Figure 4.34.2. Graph of the age-class structure for the jack pine cover type on the Voelker Plains management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Balanced acres in each age class up to 60 years (indicated by the red line in Figure 4.34.2);
- Promote larger stands where practical;
- Provide an even supply of forest products; and
- Provide for a balanced mix of habitat conditions for a variety of wildlife.

Long-Term Management Objectives

- Harvest and regenerate jack pine using a 60-year rotation length;
- Regenerate approximately 895 acres each decade;
- Explore opportunities to harvest in the age classes with surplus acres (above the red line) presently in the 0-9, 10-19 and 20-29 year-old age classes as these classes grow older and reach merchantable size; and
- Biomass harvesting may facilitate the opportunities needed to harvest in these age classes early.

10-Year Management Objectives

- Harvest older age classes wherever practical;
- Monitor for jack pine budworm and other insect or disease problems; and
- Identify higher quality sites that may be suitable for conversion to aspen or red pine.

Lowland Spruce/Fir Cover Type

Current Condition

The lowland spruce/fir cover type covers 1,485 acres (11%) of the management area (Table 4.34.1). Lowland spruce/fir is poorly distributed across age classes, over-represented in the older age classes and underrepresented in the younger age classes (Figure 4.34.3). Lowland spruce-fir is often found in association with lowland conifer, cedar and tamarack cover types.

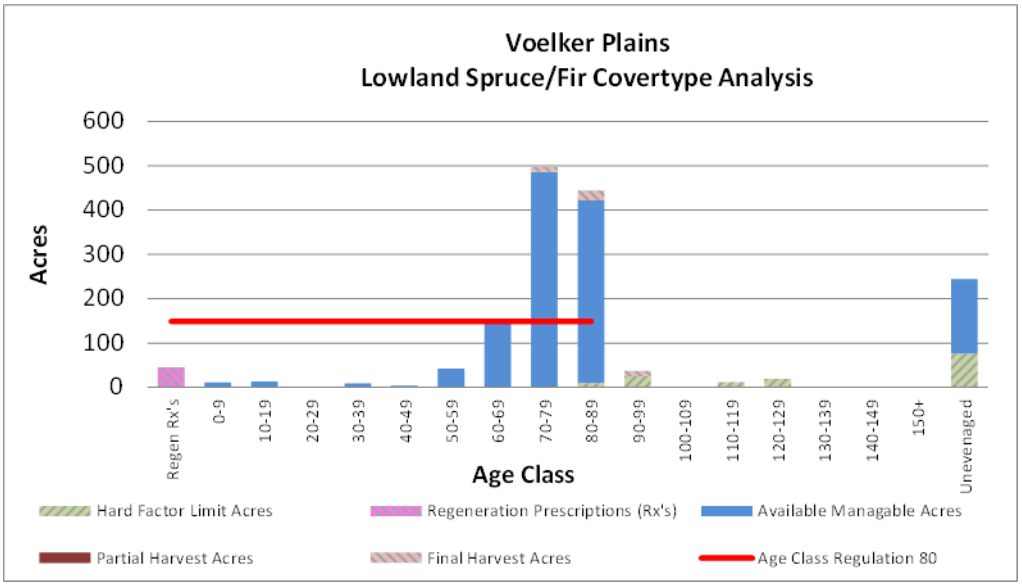

Figure 4.34.3. Graph of the age-class structure for the lowland spruce/fir cover type on the Voelker Plains management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Maintain approximately the current level of lowland spruce/fir cover type with better representation across all age classes.

Long-Term Management Objectives

- Work to improve age-class distribution, ultimately leading to harvesting and regenerating 149 about acres per decade on an 80-year rotation; and
- Monitor for insect and disease susceptibility and regenerate before widespread mortality occurs.

10-Year Management Objectives

- Harvest about 453 acres during this 10-year planning period; and
- Salvage harvesting may be needed during this 10-year planning period to reduce mortality losses in the older stands.

Aspen Cover Type

Current Condition

The aspen cover type covers 1,457 acres (11%) of the management area (Table 4.34.1) and is poorly distributed across age classes (Figure 4.34.4). Aspen is growing on dry-mesic to dry-sandy soils. Of the relatively few acres over the rotation

age of 40 years (40-49 years old on the graph) most are already scheduled for harvest. Early entry into younger age classes is unlikely during the next 10-year planning period because aspen in these age classes are neither of merchantable size nor economic maturity. The surplus of acres in the 30-39 year old age class will be an issue requiring more attention in the next 10-20 years.

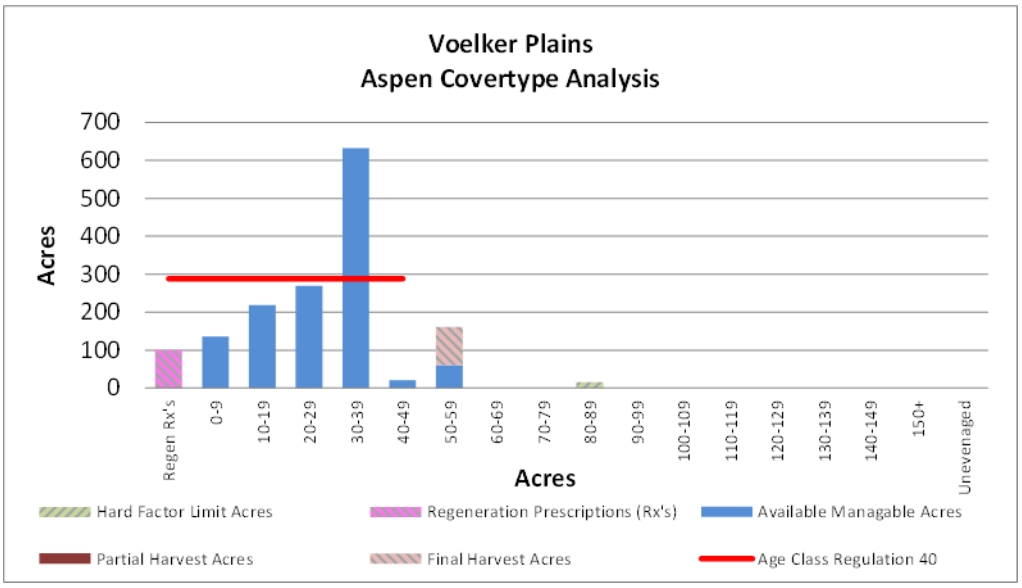

Figure 4.34.4. Graph of the age-class structure for the aspen cover type on the Voelker Plains management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Balanced acres in each age class over a 40-year rotation (indicated by the red line in Figure 4.34.4);
- Provide an even supply of forest products;
- Provide a balanced mix of habitat conditions for a variety of wildlife; and
- Provide for a variety of hunting-type opportunities.

Long-Term Management Objectives

- Regenerate approximately 288 acres each decade.

10-Year Management Objectives

- Harvest aspen in older age classes wherever practical up to 522 acres. However, there are relatively few acres that meet harvestable criteria so aspen production from this management area will be below target in this 10-year planning period.

Red Pine Cover Type

Current Condition

The red pine cover type covers 878 acres (6%) of the management area (Table 4.34.1) and is poorly distributed across age-classes (Figure 4.34.5). Red pine stands occur on dry-mesic sites similar to the aspen stands in this management area. Nearly 60% of the red pine in this management area is of plantation origin. The surplus in the 50-59 year-old age class on Figure 4.34.5 is indicative of the planting efforts of the 1950s that established many of these stands.

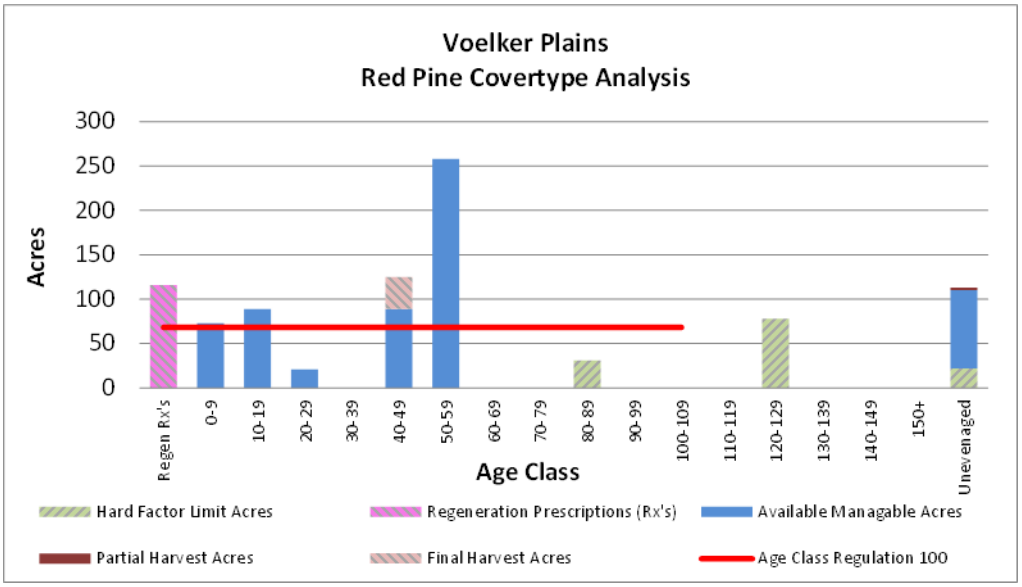

Figure 4.34.5. Graph of the age-class structure for the red pine cover type on the Voelker Plains management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Maintain the same number of acres of red pine in the management area and at approximately the same ratio of plantation pine to natural origin pine (approximately 33% plantation origin); and
- Balance age classes of the plantation origin red pine to reduce the surplus acres in the 50-59 year-old age class (indicated by the red line in Figure 4.34.5).

Long-Term Management Objectives

- Harvest and regenerate 68 acres and thin 278 acres each decade;
- Plantation stands will be managed on an 80-year rotation with intermediate harvests (thinning) as basal area guidelines are met;
- Maintain stands of natural origin on about 67% of the red pine acreage;
- Manage natural origin stands on an average 100-year rotation using natural regeneration techniques and scarification as needed; and
- Both natural origin and plantation stands will be thinned as necessary.

10-Year Management Objectives

- Harvest and regenerate zero acres of red pine in this planning period;
- Thin about 278 acres of red pine in this planning period; and
- Thinning should add natural regeneration gaps to promote stand species diversity.

Upland Spruce/Fir Cover Type

Current Condition

The upland spruce/fir cover type covers 559 acres (4%) of the management area (Table 4.34.1) and is poorly distributed across age classes (Figure 4.34.6). Spruce/fir is found on dry-mesic to mesic sites, which are productive for the species. Spruce/fir typically occurs as small stands occupying the transition zone between larger upland types (aspen and northern hardwood) and lowlands. These transitions have important wildlife values. Spruce/fir will be managed on a 60-year rotation to approximate a balanced age-class structure indicated by the red line in Figure 4.34.6. Of the relatively few acres over the rotation age of 60 years (60-69 years old on the graph) most are already scheduled for harvest or have hard limiting factors. Early entry into younger age classes is unlikely during the next 10-year period because spruce/fir in these age-classes is neither of merchantable size nor economic maturity.

Desired Future Condition

- Maintain approximately the current level of upland spruce-fir acreage.

Long-Term Management Objective

- Harvest and regenerate upland spruce/fir stands on a using a 60-year rotation.

10-Year Management Objective

- Harvest and regenerate zero acres of upland spruce/fir during this 10-year planning period.

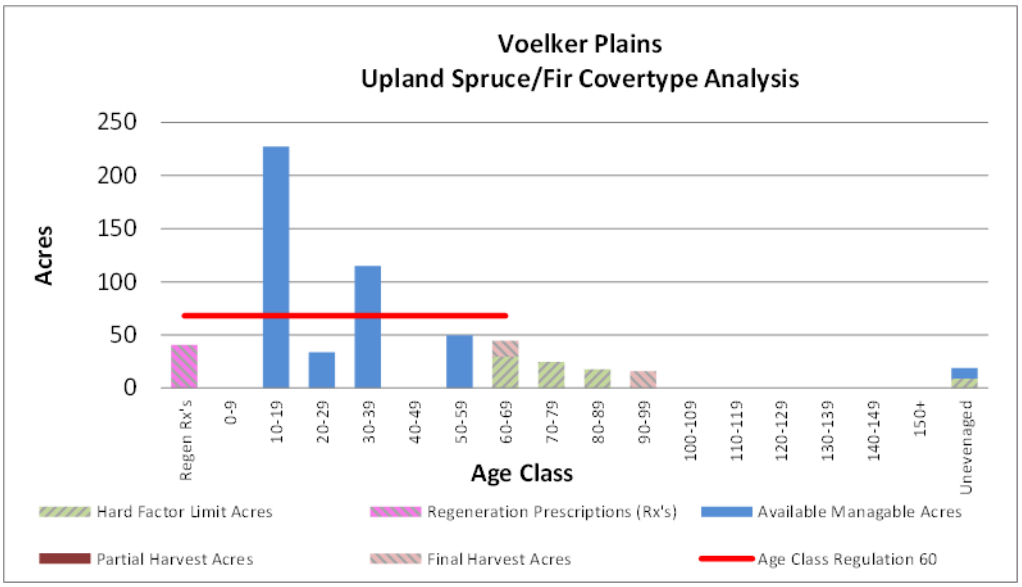

Figure 4.34.6. Graph of the age-class structure for the upland spruce/fir cover type on the Voelker Plains management area (2012 Department of Natural Resources inventory data).

White Pine Cover Type

Current Condition

Over 496 acres (4%) of the state forest land in this management area is white pine (Table 4.34.1). It is poorly distributed across age classes as seen in Figure 4.34.7. All of the white pine is of natural origin. There are no white pine plantations in the management area.

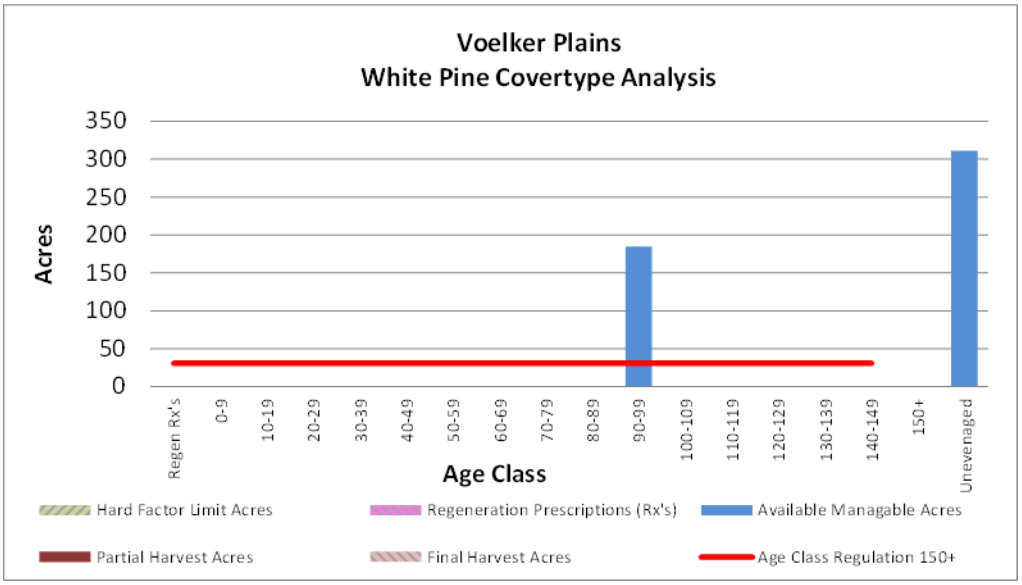

Figure 4.34.7. Graph of the age-class structure for the white pine cover type on the Voelker Plains management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Maintain natural origin white pine in this management area.

Long-Term Management Objective

- Manage natural origin stands on a 150-year rotation using natural regeneration techniques with shelterwood or patch clearcuts and scarification as needed; and
- Thin stands as necessary.

10-Year Management Objectives

- Thin about 173 acres of white pine over this planning period; and
- Regenerate 31 acres of natural origin stands within the next decade using shelterwood and small patch cuts.

Other Forested Cover Types

Current Condition

Other forested types make up 651 acres and are made up of natural mixed pines (246 acres), tamarack (94 acres), upland mixed forests (75 acres), northern hardwoods (70 acres), planted mixed pines (70 acres), lowland conifer (61 acres), cedar (31 acres) and mixed upland deciduous (four acres). Together these types make up about 5% of the management area ("Others" in Table 4.34.1).

Desired Future Condition

- Maintain the presence of the minor cover types within the management area.

Long-Term Management Objectives

- Manage minor cover types to maintain representation using appropriate silvicultural methods;
- Featured species habitat requirements will be taken in to consideration; and
- Maintain hemlock as it occurs.

10-Year Management Objectives

- Harvest those stands without harvest limitations adjacent to other planned harvest activities and where stand and habitat conditions indicate that harvesting is appropriate; and
- Expected harvests in these types will be less than 206 acres during this 10-year planning period.

Other Non-forested Cover Types

Current Condition

The following non-forested cover types are found on this management area: upland open/semi- open lands (196 acres – 11%), lowland open/semi-open lands (1,581 acres – 31%) and miscellaneous other (water, local, urban) (55 acres – 2%) (Table 4.34.1).

Desired Future Condition

- These areas will be maintained in the current condition.

Long-Term Management Objective

- Grass will be burned or mowed to prevent forest encroachment.

10-Year Management Objective

- Grass-types will be treated for opening maintenance as needed.

4.34.2 Featured Wildlife Species Management

Wildlife considerations in the Voelker Plains management area consist of: managing jack pine habitat with strategies that more closely mimic natural fire disturbance regimes and increasing stand size and striving to accommodate many species associated with xeric forest habitat is desirable. The primary focus of wildlife habitat management in the Voelker Plains management area will be to address the habitat requirements identified for the following featured species: American woodcock, beaver, black bear and Kirtland's warbler. Based on the selected featured species, some of the most significant wildlife management issues in the management area are: early successional forest conditions (associated with alder, riparian zones or forested wetlands), mast (hard and soft); habitat fragmentation, early successional forest; and large open land complexes. During this 10-year planning period, additional analyses to better define the spatial extent of priority areas (e.g., priority beaver streams) for featured species will be performed.

American Woodcock

The western Upper Peninsula goal for woodcock is to maintain or increase woodcock habitat. In priority areas, management should focus on maintaining early successional habitat associated with riparian zones and forested lowlands.

Wildlife habitat specifications:

- Maintain aspen cover type within the management area where associated with alder, riparian zones or forested wetlands;
- Balance aspen age-class distribution within the management area;
- Use silvicultural practices that encourage the aspen component in mixed stands associated with alder, riparian zones or forested wetlands; and
- Maintain or create rough openings associated with alder, riparian zones, regenerating aspen or forested wetlands within the management area.

Black Bear

The western Upper Peninsula black bear goal is to maintain or improve habitat. Management for bear should focus on improving existing habitat (e.g., maintaining corridors, mast and refuge trees) in this management area.

Wildlife habitat specifications:

- Maintain or increase the oak cover type and within stand oak component of hardwood forests within the management area;
- Maintain or increase mast by providing forest clearings that promote food sources such as pin cherry, juneberry/serviceberry, hazel, raspberry, blackberry and blueberry;
- Minimize herbicide use that would be detrimental to mast production;
- Maintain lowland conifer and hardwoods along and around drainages, vernal pools and forested wetlands; and
- Maintain refuge tree species with rough bark for cubs to escape (e.g., white pine and hemlock).

Beaver

The western Upper Peninsula goal for beaver is to maintain suitable habitat for beaver. Management for the species should focus on providing favorable food within 100 feet of streams that are not designated high priority trout streams. Consideration will be given to best management practices, trout stream management and trends in beaver nuisance permits issued.

Wildlife habitat specifications:

- Maintain or promote alder, aspen, birch, maple or willow within 100 feet of non-high priority trout streams with gradients of less than 15% and other bodies of water.

Kirtland's Warbler

The western Upper Peninsula goal for Kirtland's warbler during this planning period is to provide suitable breeding and foraging habitat within this management area. Management will focus on providing large patches (300-550 acres where possible) of early successional jack-pine forest with appropriate structural and compositional diversity on droughty outwash plains systems. When possible, large blocks should be created by managing several smaller harvest blocks adjacent to each other simultaneously.

Wildlife habitat specifications:

- Develop landscape level plans for Kirtland's warbler habitat within and across management areas to ensure suitable habitat is provided at any point in time across management areas within the ecoregion. Jack pine should be harvested in a manner that attempts to mimic both the size and structure of the stands that would result from fire.
- Develop harvest plans in the context of landscape-level plans. Strive to increase patch size to meet Kirtland's warbler habitat needs. Consider current and desired future patch size, age class distribution, and distance to other jack pine stands. When developing harvest plans, identify opportunities for increasing patch size:
    - Review state forest inventory in management area and identify adjacent stands with similar age classes that could reasonably be combined into one stand.
    - Collaborate in planning of the spatial arrangement and timing of harvest with willing major landowners within this outwash plain (e.g., U.S. Forest Service and Michigan Technological University).
    - Large blocks of regenerating jack pine adjacent to herbaceous openings are desirable as they function as open-lands until the trees are 3-4 feet in height and benefit open-land species as well.
- Post-disturbance legacies include simulated skips or fingers of jack pine; snags; and larger diameter, fire-tolerant trees such as red pine. These features should be left in stands of harvested jack pine as retention to benefit Kirtland's warbler.
- Scarify stands quickly after stands are harvested or use prescribed fire where feasible to maintain jack pine and to ensure maximum stem density.

4.34.3 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, when past surveys have indicated a possibility of their presence, or when appropriate habitat is available and the species is known to occur in the general region.

Past surveys have noted and confirmed two listed species and no natural communities of note occurring in the management area as listed in Table 4.34.2. 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.

Table 4.34.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Voelker Plains 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
Natural Community								
Poor conifer swamp		S4/G4	Confirmed				Tamarack	Late
Bird								
Kirtland's warbler	*Dendroica kirtlandii*	LE/E/G1/S1	Confirmed	PS	Very High	Pine barrens	Jack Pine	Early
						Dry northern forest	Jack Pine, Red Pine	Early
Butterflies								
Red-disked alpine	*Erbia discoidalis*	*SC/G5/S2S3*	Confirmed	MV	Low	Bog	Lowland open/semi-open	N/A
						Northern wet meadow	Lowland open/semi-open	N/A
						Pine barrens	Jack Pine	Early
						Muskeg	Lowland open/semi-open	N/A
						Patterned fen	Lowland open/semi-open	N/A
						Poor fen	Lowland 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

Approximately 215.8 acres of potential old growth have been identified within the Voelker Plains management area (Figure 4.34.8). These stands were identified for a broad range of reasons and were coded in the Operations Inventory database as Stand Condition 8. These stands area also special conservation areas until they are evaluated.

There are no high conservation value areas or ecological reference areas identified in this management area as illustrated in Figure 4.34.8.

Management goals during this planning period:

Goal 1: To develop and maintain a list of rare, threatened, endangered and special concern species and natural communities for the management area through a continuous inventory and through opportunistic focused inventory surveys.

Objective 1-1: Field staff should be trained and aware of the identification characteristics and natural history of rare, threatened, endangered and special concern species.

Objective 1-2: Occurrences of rare, threatened, endangered and special concern species noted during the inventory process by inventory staff should be verified and added to the body of knowledge for the management area.

Goal 2: To evaluate the potential old growth areas by the end of this 10-year planning period.

4.34.4 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 area include:

- White trunk rot of aspen
- *Hypoxylon* canker
- Jack pine budworm

- *Diplodia* shoot blight of pine
- *Sirococcus* shoot blight
- Spruce budworm.

When forest pests are detected, they are to be reported to the forest health specialist for treatment recommendations. The treatment of large outbreaks of forest pests will be coordinated on a state and regional level.

Several invasive exotic species of plants are thought to be located in the vicinity. When invasive species are detected, they will be reported to the forest health specialist and treatment options will be reviewed. Priority for treatment should be given to those species that threaten sensitive sites due to their location or growth characteristics and have population levels that may be successfully controlled. There are no known occurrences of species of concern that been documented in or near this management area.

4.34.5 Aquatic Resource Management

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 are identified in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment. Remove or discourage beaver populations on designated high priority trout streams.

High priority trout streams in this management area as shown in Figure 4.34.1.

4.34.6 Fire Management

This area is dominated by fire-adapted communities ranging from barrens at its heart to dry and dry-mesic northern forest communities make up the bulk of the land area that remains. This area was probably always subject to periodic stand replacement fires that spread rapidly over large areas, frequently in single events.

- This management area falls within the South 581 Zone Dispatch area, which calls for elevated readiness and response. Aggressive suppression is planned for the entire management area due to the potential for large fire growth.
- High-risk fuels combined with substantial wildland urban interface and intermix make this a prime area for Firewise practices and community wildfire protection planning.
- Recreational properties and public recreation sites provide good opportunities for establishing prevention messages for dispersed recreation causes.

4.34.7 Public Access and Recreation

This area has good public and management access. No recreational facilities are located in this area.

- Work to expand public access and recreation facilities as opportunities arise.

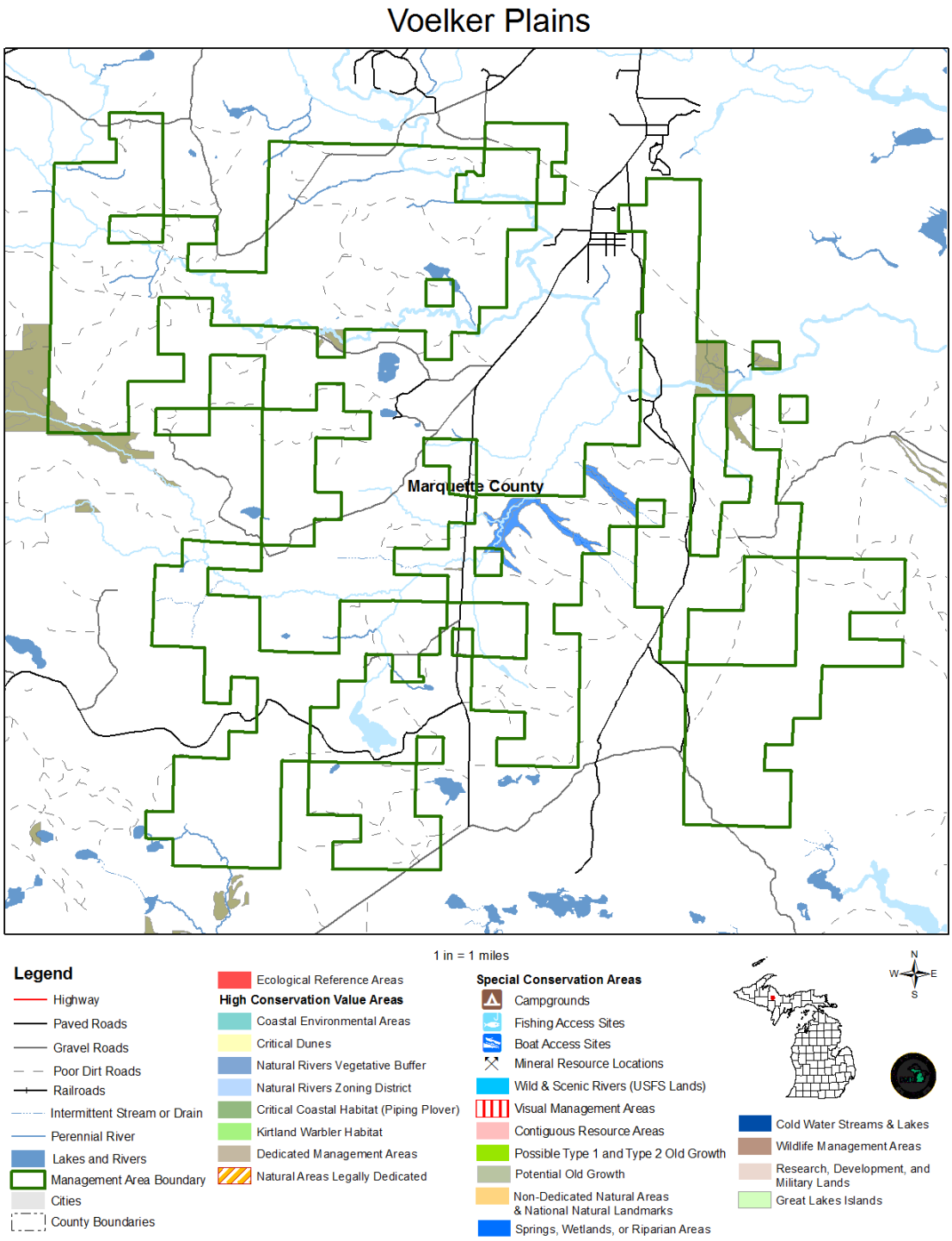

Figure 4.34.8. A map of the Voelker Plains management area showing the special resource areas.

4.34.8 Oil, Gas and Mineral Resources

Exploration and development for oil and gas has been limited to a few wells drilled in the eastern Upper Peninsula. No economic oil and gas production has been found in the Upper Peninsula.

Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium, coarse-textured till, and peat and muck. The glacial drift thickness variesbetween 10 and 100 feet. Sand and gravel pits are located in the management area and there is some potential for additional pits.

The Precambrian Archean Granite/Gneiss subcrops below the glacial drift.The Granite/Gniess could be used as dimension stone.

Metallic mineral exploration has not occurred in the general area of the management area in the past, but there could be potential.