

4.22 MA 22 – Milakokia Lake Management Area

Summary of Use and Management

Vegetative management in the Milakokia Lake management area (MA) (Figure 4.22.1) will emphasize providing for forest-based recreational opportunities; providing various timber products; and maintaining or enhancing wildlife habitat. Big Manistique Lake, South Manistique Lake and Milakokia Lake are all fishing destinations with local amenities supporting this activity throughout the year. Deer hunting is an important activity and this management area includes several deer wintering special conservation areas. Expected issues in this 10-year planning period include: access across private property; increased recreational pressure, including off-road vehicle use; introduced pests and diseases, including beech bark disease and emerald ash borer; and invasive plants, including purple loosestrife and garlic mustard.

Introduction

The Milakokia Lake management area is located in the central part of the eastern Upper Peninsula in Schoolcraft and Mackinac Counties and has 14,387 acres of state-owned land. The primary attribute in identifying this management area is the remote character of all of the isolated parcels of state owned land. Additional attributes which were important in identifying this management area include:

- The management area falls within the Niagaran Escarpment and Lake Plain subsection 8.1 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- The dominant landforms consist of coarse textured glacial till, peat and muck and lacustrine sand and gravel.
- Numerous old railroad grades cross through this management area and many of them are still being used such as Pike Lake Grade and Bryan Grade.
- Hunting, snowmobiling and fishing are popular activities here as this management area is close to several towns. There are several campgrounds and boat access sites in the area.
- The management area has several special conservation area deer wintering areas. Great blue heron colonies are also found in the management area.

The state owned land in this management area is fragmented into many small parcels. There are several small communities nearby, including: Blaney Park, Gulliver, Gould City, Germfask, Curtis, Corinne and Helmer. The Milakokia Lake management area is within both the Sault and Shingleton Forest Management Units. The current predominant cover types, acreages and projected harvest acres for the management area are shown in Table 4.22.1.

Table 4.22.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Milakokia Lake management area, eastern Upper 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
Cedar	26%	3,719	59	3,660	100	0	3,719	229	0
Aspen	19%	2,716	8	2,708	44	0	2,716	451	0
Lowland Open/Semi-Open Lands	16%	2,237	0	2,237	0	0	2,237	0	0
Northern Hardwood	10%	1,508	0	1,508		827	1,508	0	741
Lowland Aspen/Balsam Poplar	7%	952	152	800	49	0	952	133	0
Lowland Conifers	6%	813	328	485	54	0	813	54	0
Lowland Spruce/Fir	5%	674	231	443	49	0	674	49	0
Upland Open/Semi-Open Lands	2%	313	0	313	0	0	313	0	0
Misc Other (Water, Local, Urban)	1%	124	0	124	0	0	124	0	0
Others	9%	1,331	78	1,253	119	34	1,331	151	34
Total	100%	14,387	857	13,530	415	861	14,387	1,067	775

Others includes: lowland deciduous, upland spruce/fir, lowland mixed forest, upland mixed forest, mixed upland deciduous, tamarack, paper birch and hemlock.

Milakokia Lake

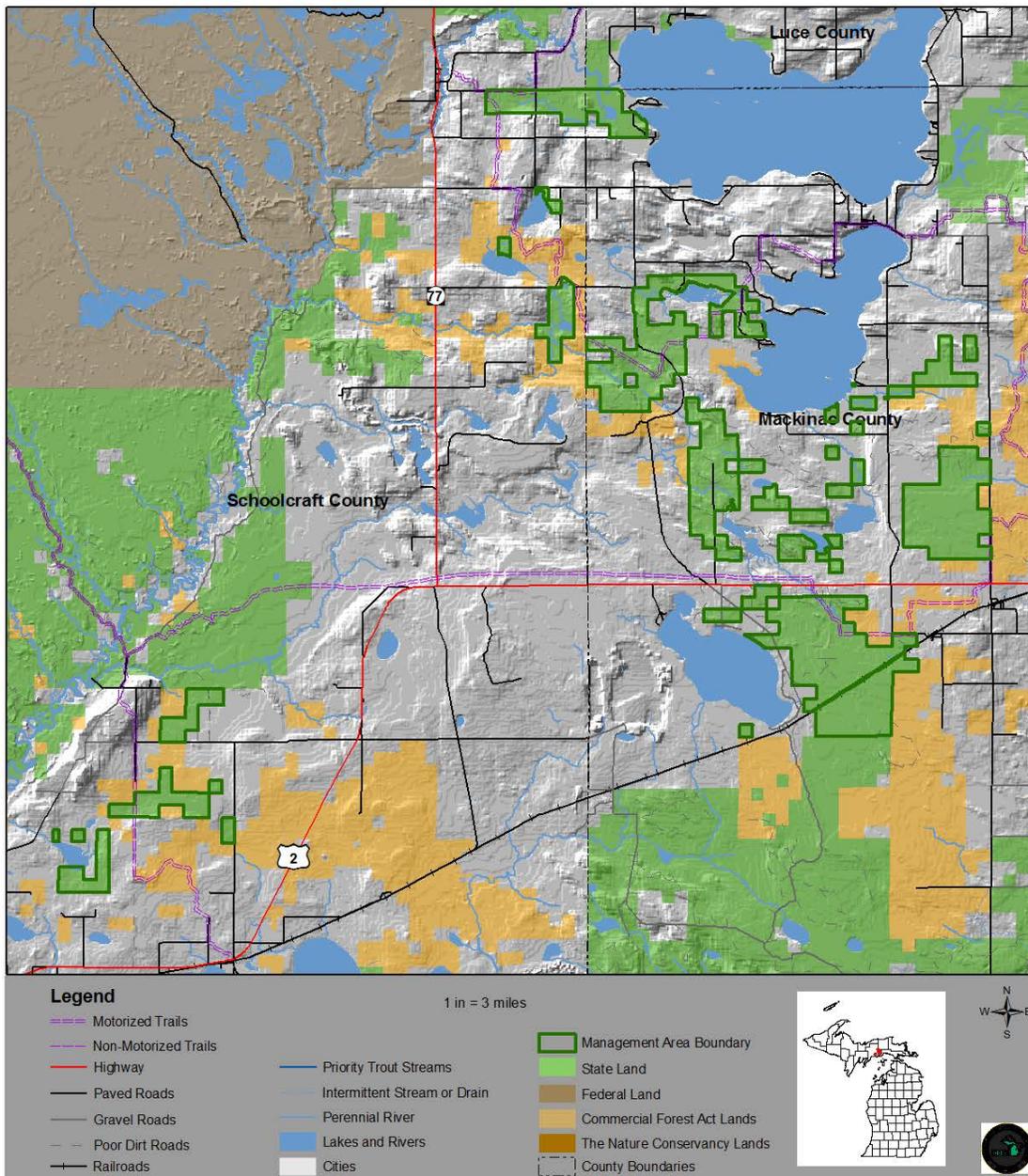


Figure 4.22.1. Location of Milakokia Lake management area (dark green boundary) in relation to surrounding state forest lands, other ownerships and Lake Michigan.

4.22.1 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 (i.e., timber harvest, prescribed fire, planting and mowing) will be conducted. In other portions of the state forest, passive management resulting in natural succession will achieve ecological objectives. While most stands have a variety of tree species and other vegetation, they are classified by the predominant species.

All of the following cover types are valued commercially for their timber products; ecologically as sources of habitat for numerous species; and for the variety of recreational opportunities they provide. Harvesting these cover types will provide for a continuous flow of forest products and values.

Section 4.22.1.1 Forest Cover Type Management - Cedar

Current Condition

Cedar occurs on 3,719 acres (26%) of the management area (Table 4.22.1). Many of the cedar stands are within deer wintering area special conservation areas. Maintaining a closed canopy structure provides important cover for deer and reduces snow depth within the stands. Some of the stands are in areas inaccessible to harvest, mainly due to the fragmented nature of the management area. In the past, regeneration of cedar has proven difficult. Regeneration harvests have been implemented though a small trial of strip cuts. In areas where deer browse is a concern these stands may not be actively harvested at this time. Cedar stands will be managed to maintain winter habitat for deer and to retain this forest type in the landscape.

Currently there are no cedar stands prescribed for harvest (Figure 4.22.2). At this time there are 59 acres of cedar with site conditions limiting harvest this entry period. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Cedar stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

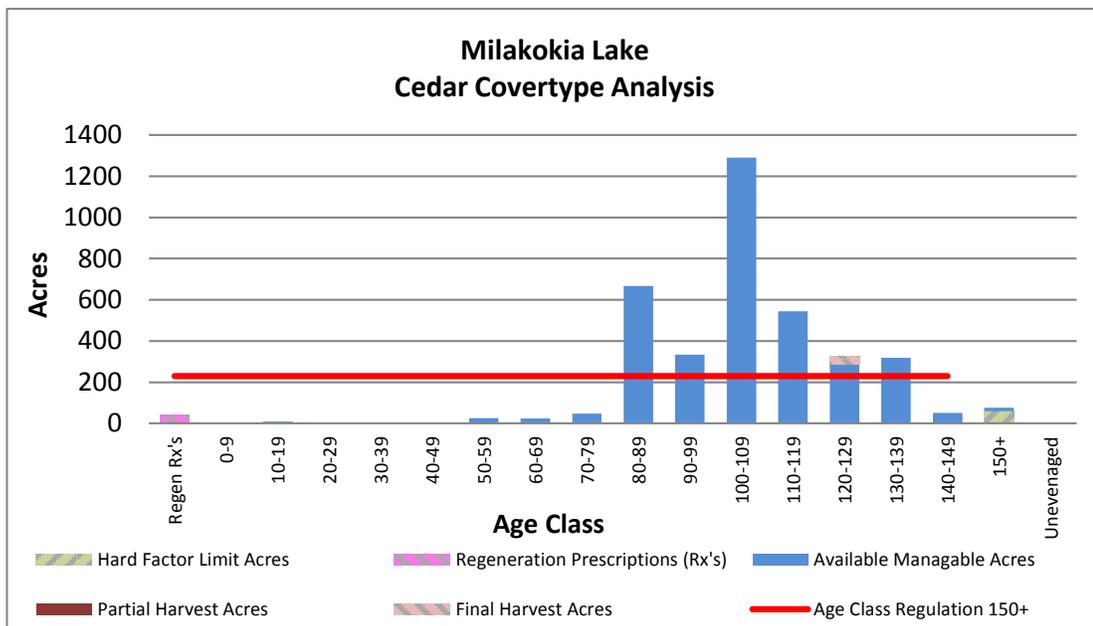


Figure 4.22.2. Age-class distribution of cedar in the Milakokia Lake management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Outside deer wintering areas, cedar may be maintained through even-aged management, balancing acres between 0-159 years of age providing for a regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of cedar is 100 acres. However, harvest of this type, if it occurs, may vary widely from the projected harvest in order to meet the long term management objectives.
- Ensure that cedar and/or hemlock recruitment/regeneration is reliable if harvesting in this cover type.

Long-Term Management Objectives

- Develop a comprehensive deer wintering area management plan;
- Focus cedar management on winter habitat for deer;
- Look for opportunities to test different methods of regenerating cedar, especially outside the deer wintering areas; and
- Consider harvest of cedar before rotation age to begin to diversify the age classes providing for a regulated harvest of approximately 229 acres per decade.

Section 4.22.1.2 Forest Cover Type Management - Aspen

Current Condition

Aspen occurs on 2,716 acres (19%) of the management area (Table 4.22.1). Aspen is distributed throughout the management area on outwash plains, lake plains and moraines with dry-poor nutrient to mesic-medium to rich-nutrient sites. Kotar habitat types include PARVAa, ATFD, AFPo and AFOAs (see appendix E). Aspen has been consistently harvested and regenerated resulting in almost 80% of the stands being less than 30 years old (Graph 4.22.2). Aspen in age classes over rotation age may be inaccessible for harvest.

Currently there are 216 acres of aspen prescribed for final harvest (Figure 4.22.3). Approximately 180 acres of other cover types are expected to convert to aspen after harvest. These acres are shown in the regeneration prescriptions column in Figure 4.22.3. There are eight acres of aspen that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Inaccessible stands of aspen will eventually succeed to late successional species.

Desired Future Condition

- Aspen will be maintained on operable sites through even-aged management with acres balanced between 0-59 years of age providing for a regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- A regulated harvest would allow approximately 451 acres of aspen to be harvested per decade; and
- The projected 10-year final harvest of aspen is 44 acres which is a reduction from the target regulated amount due to the current age-class structure where the majority of stands are less than rotation age and not yet merchantable.

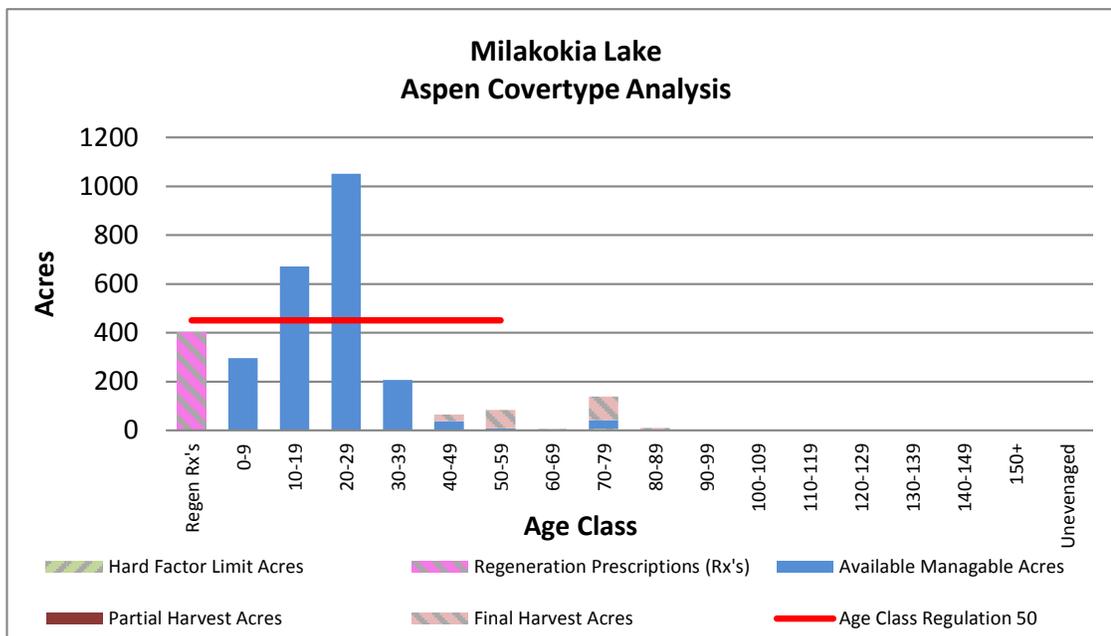


Figure 4.22.3. Age-class distribution of aspen in the Milakokia Lake management area (2012 Department of Natural Resources inventory data).

Long-Term Management Objectives

- Balance the age classes of available aspen providing for a regulated harvest of approximately 451 acres per decade (red line in Figure 4.22.3).

Section 4.22.1.3 Forest Cover Type Management – Lowland Open/Semi-Open Lands

Current Condition

Lowland open/semi-open lands occur on 2,237 acres (16%) (Table 4.22.1). This category is a combination of lowland shrub (1,797 acres), treed bog (330 acres), bog (0 acres) and marsh (110 acres). These cover types function ecologically as sources of habitat for numerous species of wildlife. These stands are found in association with creeks, rivers and lowland forested stands. Some of these stands fall within the special conservation area deer wintering areas.

Desired Future Condition

- Lowland open/semi-open lands will be retained in their current state to ensure an adequate level of wildlife habitat and recreational opportunity while protecting the special conservation area values found in these cover types.

Long-Term Management Objectives

- Within these stands allow natural processes to occur while protecting their ecological values from man-made disturbances.

Section 4.22.1.4 Forest Cover Type Management – Northern Hardwoods

Current Condition

Northern hardwood stands occur on 1,508 acres (10%) of the management area (Table 4.22.1). The majority of the hardwood stands were periodically select harvested to work toward an uneven-aged multi-storied structure. This type of management will produce stands with trees of varying sizes and ages. Northern hardwood stands are distributed on outwash plains, moraines, lake plains and ground moraines of mesic-poor to rich-nutrient sites with Kotar habitat types of PARVAa, ATFD, AFPO and AFOAs (see Appendix E). In northern hardwood stands where quality warrants stands with a basal area over 120 square feet per acre will be harvested using single tree selection, decreasing stocking levels to a basal area of approximately 80 square feet per acre. In general, this will allow most hardwood stands to be select harvested every 20 years. Where site quality is poor shelterwood and other even-aged harvesting systems will be considered. Recent even aged harvests are shown in the immature column in Figure 4.22.4.

Beech bark disease is found throughout the management area and salvage of affected beech is ongoing. Northern hardwood stands that had a component of beech now have decreased stocking levels due to beech bark disease mortality and salvage harvesting. Further selection harvesting will be delayed due to resultant lower than normal residual basal area.

Currently there are 298 acres of northern hardwood with a partial harvest method of cut assigned (Figure 4.22.4). At this time there are no acres of northern hardwood that have site conditions limiting their harvest.

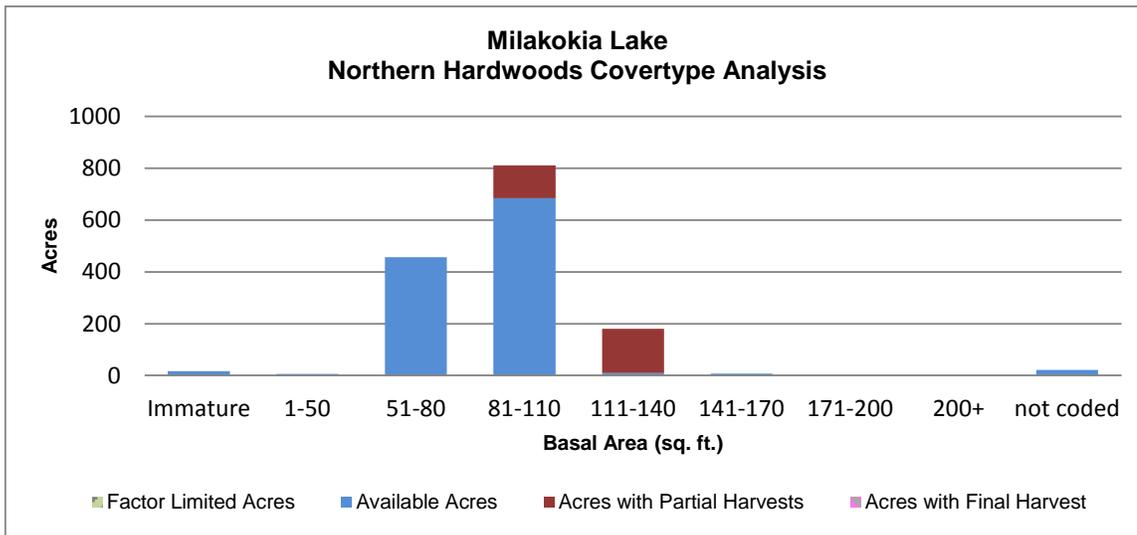


Figure 4.22.4. Basal area distribution of northern hardwood in the Milakokia Lake management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Northern hardwood stands will be maintained on operable sites, generally by using individual tree selection harvesting to provide uneven-aged composition and structurally diverse stands. Harvesting will provide for a continuous flow of timber products and a variety of wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected partial or selection harvest of northern hardwood is 827 acres;
- Continue salvage harvests of beech affected by beech bark disease using Beech Bark Disease Management Guidelines;
- Evaluate stands previously dominated by beech to determine the impact of beech bark disease on regeneration;
- Track beech regeneration in these stands;
- To favor regeneration of hardwood species other than beech, consider herbicide applications on beech regeneration; and
- In areas where beech was plentiful, consider planting oak and disease resistant beech to improve the availability of hard mast.

Long-Term Management Objectives

- Select harvest northern hardwood stands on a 20-year cycle.

Section 4.22.1.5 Forest Cover Type Management – Lowland Aspen/Balsam Poplar

Current Condition

Lowland aspen/balsam poplar occurs on 952 acres (7%) of the management area (Table 4.22.1). Lowland aspen/balsam poplar stands have been successfully harvested and regenerated in recent years resulting in almost 70% of the available acres being younger than 30 years old (Figure 4.22.5). Many stands over rotation age have not been harvested due to access problems.

Currently there are 49 acres lowland aspen/balsam poplar prescribed for final harvest. There are 152 acres of lowland aspen/balsam poplar that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from harvest calculations. Lowland aspen/balsam poplar in inaccessible areas will eventually succeed to late successional species.

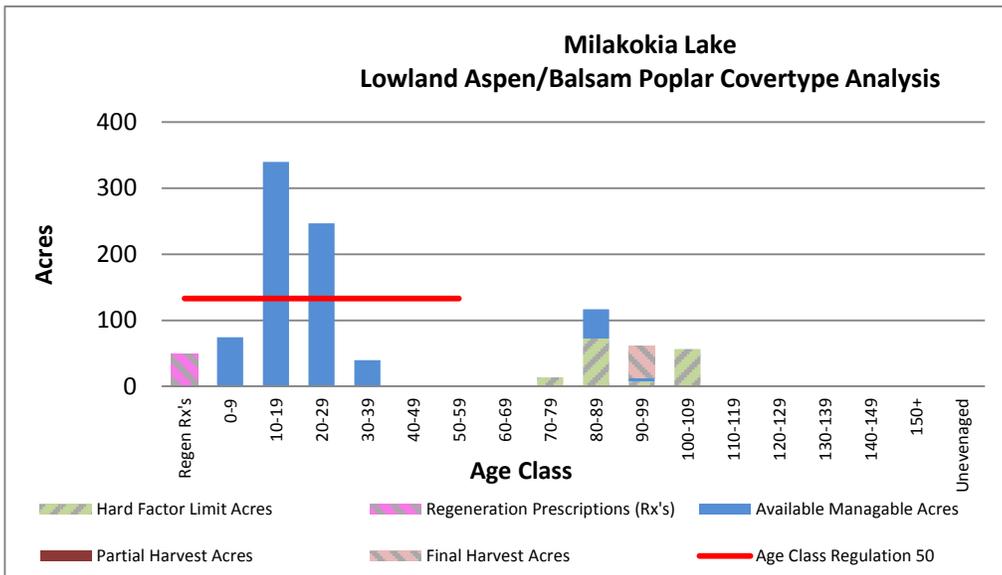


Figure 4.22.5. Age-class distribution of lowland aspen/balsam poplar in the Milakokia Lake management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Lowland aspen/balsam poplar will be maintained on operable sites through even-aged management with acres balanced between 0-59 years of age providing for a regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of lowland aspen/balsam poplar is 49 acres. This reduction from the regulated amount is due to the current age-class structure where the majority of the stands are younger than rotation age and are not yet merchantable.

Long-Term Management Objectives

- Balance the age class of accessible lowland aspen/balsam poplar providing for a regulated harvest of approximately 133 acres per decade.

Section 4.22.1.6 Forest Cover Type Management – Lowland Conifers

Current Condition

Lowland conifers occur on 813 acres (6%) of the management area (Table 4.22.1). Lowland conifer stands in this area have been successfully harvested and regenerated with natural regeneration (Figure 4.22.6). Some of these stands are within deer wintering area special conservation areas. Many of the stands are found in association with streams and are sometimes inaccessible.

Currently there are no acres of lowland conifers with a final harvest prescribed. There are 328 acres of lowland conifers that have site conditions limiting their harvest this entry. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Lowland conifer stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

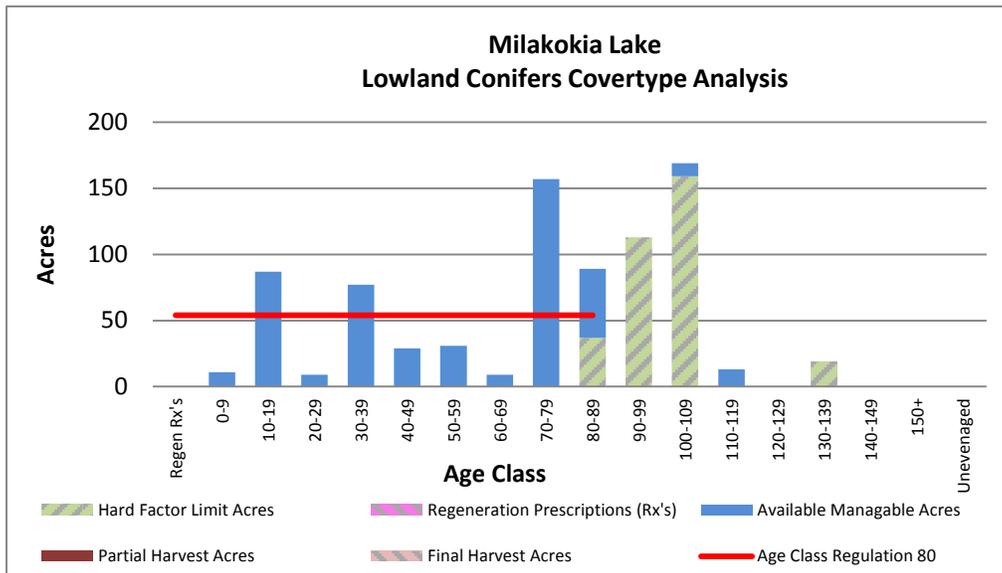


Figure 4.22.6. Age-class distribution of lowland conifer in the Milakokia Lake management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Lowland conifer stands will be maintained on operable sites through even-aged management, with acres balanced between 0-89 years of age, to provide for continual harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of lowland conifers is 54 acres to work toward balancing the age classes.

Long-Term Management Objectives

- Balance the age class structure of accessible lowland conifer stands providing for a regulated harvest of approximately 54 acres every decade.

Section 4.22.1.7 Forest Cover Type Management – Lowland Spruce/Fir

Current Condition

Lowland spruce/fir stands are found on 674 acres (5%) of the management area (Table 4.22.1). The age class distribution of lowland spruce/fir stands is poor, with almost half of the acres in the 80-89 year age class (Figure 4.22.7). Natural regeneration is expected in recently harvested stands.

Currently there are 59 acres of lowland spruce/fir with a final harvest prescribed. There are 231 acres of lowland spruce/fir that have site conditions limiting their harvest this entry period. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Inaccessible stands of lowland spruce/fir will remain until biological maturity and will be subject to natural processes, resulting in a range of successional stages.

Desired Future Condition

- Lowland spruce/fir will be maintained on operable sites through even-aged management with acres balanced between 0-89 years of age to provide for regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of lowland spruce/fir is 49 acres to work toward balancing the age classes.

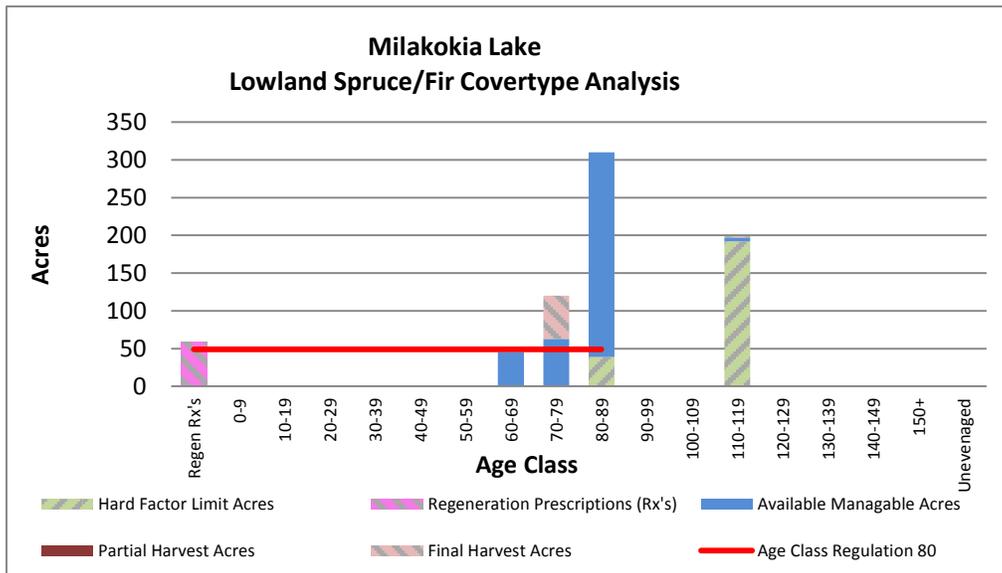


Figure 4.22.7. Age-class distribution of lowland spruce/fir in the Milakokia Lake management area (2012 Department of Natural Resources inventory data).

Long-Term Management Objectives

- Balance the age classes of available lowland spruce/fir providing for a regulated harvest of approximately 49 acres each decade.

Section 4.22.1.8 Forest Cover Type Management – Other Types

Current Condition

The other types (1,331 acres or 9%) category is comprised of forested cover types with less than 5% of the total management area acres (Table 4.22.1). It includes: lowland deciduous (534 acres), upland spruce/fir (243 acres), lowland mixed forest (171 acres), upland mixed forest (165 acres), mixed upland deciduous (99 acres), tamarack (65 acres), paper birch (50 acres) and hemlock (4 acres). Miscellaneous other (124 acres of 1%) includes water, roads and soil/sand/rock.

Most of these cover types are managed as even-aged stands using natural regeneration after harvest. Following general timber management guidelines, conduct regeneration harvests as stands become available. Attempt to balance age classes where possible.

There are 78 acres of these other minor cover types that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest. Inaccessible stands may never be harvested and will be subject to successional processes.

Desired Future Condition

- These cover types may be managed on operable sites, contributing to the compositional diversity of the landscape while providing for continual harvest, available wildlife habitat and recreation opportunity.

10-Year Management Objectives

- Following general timber management guidelines, conduct regeneration harvests as stands become available, followed by natural regeneration. Attempt to balance age classes where possible.
- The projected 10-year final harvest of other types is 119 acres.
- The projected 10-year partial harvest of other types is 34 acres.

Long-Term Management Objectives

- Continue management of these other cover types to provide a sustainable yield of forest products and wildlife habitat.

4.22.2 – Featured Species Management

Though state land ownership in this management area is fragmented, for the most part the habitat is intact. Deer overwinter in cedar and lowland conifers along the shore of the Big Manistique Lake and Milikokia Lake in close proximity to residential areas. Wildlife priorities in this management area include the maintenance of deer wintering complexes, management for mature forest conditions and structure in northern hardwoods and early successional aspen.

American Woodcock

The goal for woodcock in the eastern Upper Peninsula is to maintain or increase habitat. Management should address the maintenance of adequate early successional habitat to provide feeding, nesting and brood-rearing habitat and opportunity for hunting.

Wildlife habitat specifications:

- Balance aspen age class distribution within the management area.
- Maintain or increase the aspen cover type within the management area. Where associated with alder, riparian zones or forested wetlands use silvicultural practices that encourage the aspen component in mixed stands.
- Maintain rough openings associated with alder, riparian zones or forested wetlands.

Blackburnian Warbler

The goal for blackburnian warbler is to maintain suitable breeding habitat. Management for the species should focus on within stand diversity, habitat fragmentation and conifer components in this management area.

Wildlife habitat specifications:

- Increase the mesic conifer (e.g., hemlock, white pine, red pine and upland spruce-fir) component by: a) Retaining a larger percentage of mesic conifer during harvests; b) Using silvicultural practices that encourage the regeneration of mesic conifer; and c) Where desired/feasible, underplanting hemlock, white pine and white spruce in hardwood-dominated stands on suitable sites without a seed source.
- Provide more older mesic conifers, particularly hemlock, in the landscape by: a) Allowing some actively managed stands of mesic conifer to grow beyond standard rotation ages; b) Including mature mesic conifers as within-stand structure retained during harvests by following Within-Stand Retention Guidance during harvests; and c) Maintaining mature mesic conifer stands within travel corridor and riparian zone or Type 1 or Type 2 old growth special conservation areas.
- Harvest in hemlock stands, or harvest of hemlock where it is a component in other cover types, will only occur where successful hemlock recruitment is clearly demonstrated.
- Use silvicultural practices that retain, recruit and expand multi-story hemlock stands and hemlock inclusions within hardwood complexes through group selection, scarification and/or direct planting. Hemlock is only to be harvested where successful hemlock recruitment is clearly demonstrated.

Red-shouldered Hawk

The goal for red-shouldered hawk is to maintain or improve suitable habitat in the ecoregion. Management activities should focus on the maintenance of large blocks of mesic northern forest with the appropriate level of large diameter trees in priority landscapes.

Wildlife Habitat Specifications:

- All known woodland raptor nests should be reported to local wildlife staff and included in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment. Confirmed red-shouldered hawk nests are to be documented in accordance with the DNR Approach to the protection of Rare Species on State Forest Lands (CI 4172) and included in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support System. For Red-shouldered hawk nests, 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 until the workgroup has completed the guidance that will permanently replace the interim guidelines.

White-tailed Deer

The eastern Upper Peninsula goals for white-tailed deer are to: 1) Maintain existing deer wintering complexes and 2) Expand the extent of areas suitable as winter deer habitat, especially in the medium and high snowfall zones. Management should focus on maintaining habitat quality in priority wintering complexes. DNR Department procedure 32.22-07 states "Coniferous swamps are important as winter deeryards and shall be managed primarily for deer. The objective shall be to maintain them for this purpose and through commercial cuttings and silvicultural practices, improve these areas to provide winter cover and food for deer." There is a complex relationship between deer abundance; available summer and winter habitat; timber management; and regeneration tree species, particularly white cedar and hemlock. It is recognized that meeting both timber management and deer goals presents challenges for the department and our stakeholders. Information on deer wintering complexes is currently being updated and new management guidelines are being developed. When completed, these will provide additional direction for managing these critical areas for white-tailed deer.

Wildlife habitat specifications for deer wintering complexes:

- Strive to maintain > 50% of the land area within deer wintering complexes in mixed or pure stands of cedar, hemlock, white and black spruce, white and natural red pine, balsam fir, mixed swamp conifer and mixed upland conifer-hardwood.
- In northern white cedar and hemlock cover types that are commonly occupied by deer during severe winters, especially in medium and high snowfall zones, maintain canopy closure of >65%.
- In deer wintering complexes in low snowfall areas and within ¼-mile of severe-winter cover in the higher snowfall zones, write prescriptions that strive to maintain canopy closure of 40-65%, favoring cedar, hemlock, white spruce, black spruce, balsam fir and white pine.
- Provide winter forage in deer wintering complexes through stands of regenerating hardwood or brush, including preferred species of red maple, sugar maple, aspen, yellow birch, ashes, oaks, dogwood, crabapple, elderberry, high-bush cranberry, sumac and hazel.
- Enhance accessibility to winter browse within deer wintering complexes by maintaining mature mesic conifer components within upland hardwood stands or by maintaining or enhancing sheltered travel corridors between areas of conifer cover and browse.
- Provide spring break out areas by maintaining open hardwood stands on southern exposures and herbaceous openings adjacent to deer wintering complexes.
- When possible, timber harvests within deer wintering complexes should be carried out only during winter months and tops should be left. Chipping of non-bole wood and whole-tree harvesting in the deer wintering complexes should be avoided, but will be discussed on a case-by-case basis through the compartment review process
- Harvests of cedar and hemlock may only be conducted when:
 - There is reasonable confidence of successful recruitment/regeneration of the cover types; or
 - There is a forest health issue (e.g., hemlock wooly adelgid); or
 - Part of an approved research project; or
 - Removal of selected trees will facilitate a reduction of harvest trails, landings, etc. to minimize soil sedimentation and possible soil compaction issues.
- Provide fall foods in the form of hard and soft mast, and provide dense escape cover or bedding areas in the form of early successional forests, brush and warm-season grasses that will encourage fall deer use in areas open to public hunting. Where habitat types are appropriate, increase diversity of hard mast by planting oak.

4.22.3 – Rare Species and Special Resource Area Management

All forest operations must be reviewed for potential conflicts with rare species 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 seven listed species as well as two natural communities of note occurring in the management area as listed in Table 4.22.2. A colony of great blue herons has also been identified. 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 4.22.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Milakokia Lake 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								
Common loon	<i>Gavia immer</i>	T/G5/S3-4	Confirmed	HV	Very High	Emergent Marsh	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
Bald eagle	<i>Haliaeetus leucocephalus</i>	SC/G5/S4	Confirmed	IL	Moderate	Bog	Lowland open/semi-open	N/A
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern hardwood swamp	Black Ash	Late
						Poor conifer swamp	Tamarack	Late
						Rich Tamarack swamp		
						Floodplain forest	Lowland mixed	Mid
						Southern hardwood swamp		
						Dry northern forest	Jack Pine, Red Pine	Early
Dry-mesic northern forest	White Pine	Late						
Osprey	<i>Pandion haliaetus</i>	SC/G5/S2-3	Confirmed	PS	Low	Mesic northern Forest	Northern Hardwood	Late
						Coastal fen	Lowland open/semi-open	N/A
						Northern hardwood swamp	Black Ash	Late
						Floodplain forest	Lowland Mixed	Mid
						Hardwood-conifer swamp	Lowland Mixed	Mid

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

Special conservation areas in the management area are cold water streams, and deer wintering areas. Concentrated recreation area special conservation areas (boat access sites and state forest campgrounds) are listed in the Recreation section 4.22.7 below.

There have been no high conservation value areas or ecological reference areas identified in this management area as illustrated in Figure 4.22.8.

The management goal during this planning period is:

- 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.

Milakokia Lake

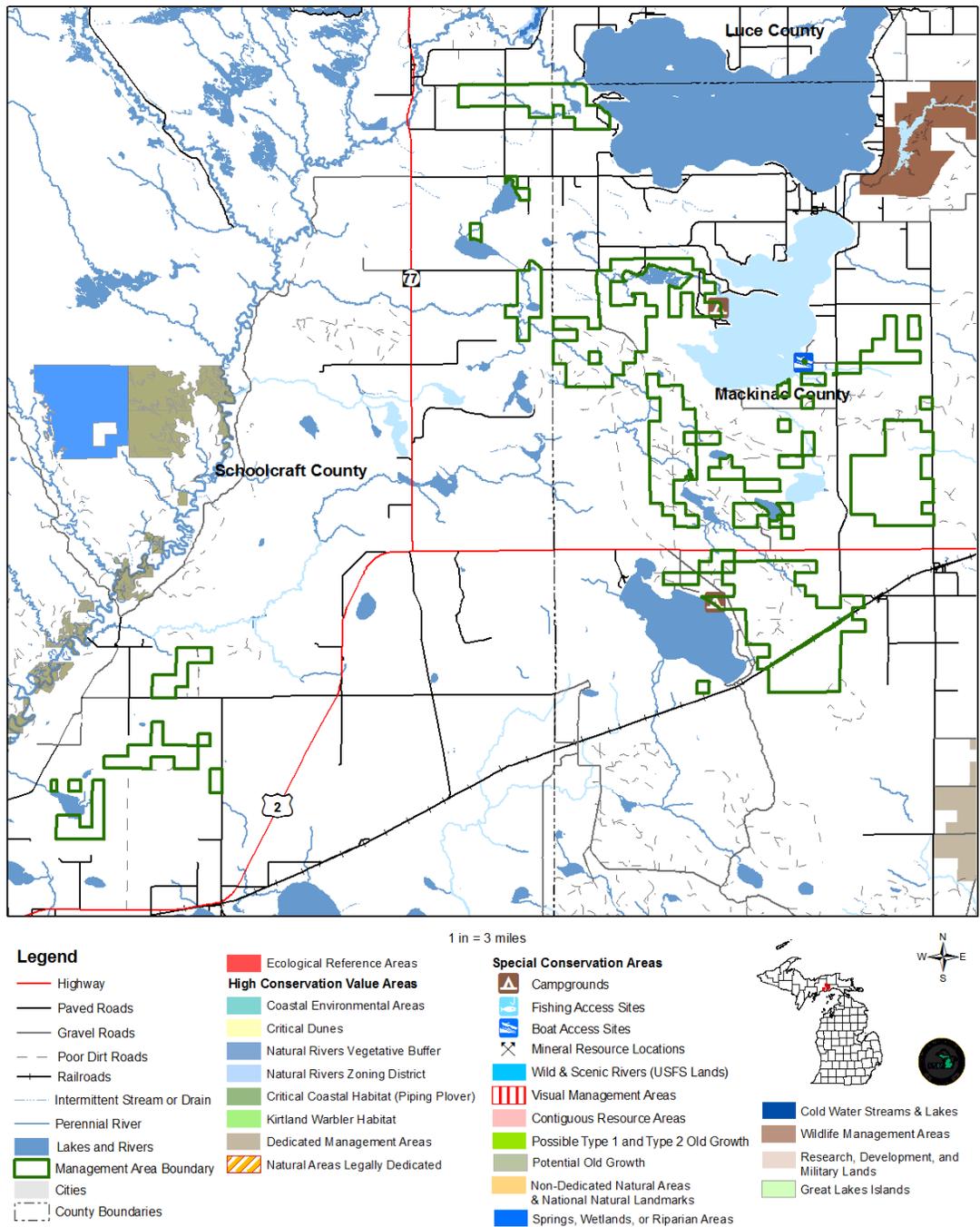


Figure 4.22.8. A map of the Milakokia Lake management area showing the special resource areas.

4.22.4 – 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 by major cover type include:

- Aspen and lowland aspen/balsam poplar: white trunk rot and *Hypoxylon* canker;
- Northern hardwood: beech bark disease;
- Lowland conifers: spruce budworm, eastern larch beetle and larch casebearer; and
- Other types: emerald ash borer.

For further information on forest health refer to Section 3.

Invasive Species

Invasive exotic species, specifically plants, may pose a significant forest health threat to forested and non-forested areas throughout the management area. Garlic mustard has been documented within the management area. Glossy buckthorn, leafy spurge and purple loosestrife have been documented within a five-mile buffer of the management area (Table 4.22.3). Monitoring efforts should specifically look for new populations of these species. Prescribe eradication treatments to any new populations of invasive plant species found in the management area. Evaluate eradication treatments of any new populations of invasive plant species found in the management area. Invasive species 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. Garlic mustard was found at Milakokia Lake State Forest Campground. Prescribed burning, mowing, hand pulling and herbicide are being used to control and eradicate it.

Table 4.22.3. Invasive plant species within or near the Milakokia Lake management area (Data from the Michigan Invasive Plant Identification Network database).

Milakokia Lake - FRD Management Areas	Cases within FRD Areas	Cases within 5 Mile Buffer	Total number of cases	Total number of different Invasive Species
	4	14	18	4
Invasive Species within FRD Areas	Occurrences	Invasive Species within 5 Mile Buffer	Occurrences	
Garlic Mustard <i>Alliaria petiolata</i>	4	Glossy Buckthorn <i>Rhamnus frangula</i>	12	
-	-	Leafy Spurge <i>Euphorbia esula</i>	1	
-	-	Purple Loosestrife <i>Lythrum salicaria</i>	1	

4.22.5 – Fire Management

This management area is dominated by mesic forest and lowland communities. Fire probably played a small disturbance role in this management area.

- Little to no prescribed fire activity has occurred in this management area historically, largely due to access difficulties.
- Prescribed fire may be used to control invasive species, as appropriate.

4.22.6 – Public Access and Recreation

State land within the management area is fragmented. There are many small parcels of state owned land surrounded by private land. This has caused access to state forest land to be a problem in some parts of the management area.

Trail facilities are limited to a few snowmobile trails (Figure 4.22.1). There are also boat access sites at Big Manistique Lake, South Manistique Lake (Figure 4.22.8), Milakokia Lake and Kennedy Lake. South Manistique Lake and Milakokia Lake state forest campgrounds are the only two state forest campground facilities in the area (Figure 4.22.8).

There are a significant number of private campgrounds and resorts around the lakes in this management area that contribute to the use of recreational facilities and support the local economy year around.

Hunting, snowmobiling and fishing are popular activities here. Snowmobile trails have been re-routed several times in this management area due to private property concerns/permissions.

4.22.7 - 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. There are no designated high priority trout streams identified in this management area.

4.22.8 - Minerals

Surface sediments consist of coarse-textured till, lacustrine (lake) sand and gravel, and peat and muck sometimes thin to discontinuous over bedrock. The glacial drift thickness varies between 10 and 100 feet. Sand and gravel pits are located in this area and there is good potential on the uplands for additional pits.

The Silurian Manistique and Burnt Bluff Groups, Cabothead Shale and Manitoulin Formation subcrop below the glacial drift. The Burnt Bluff is quarried for stone in the Upper Peninsula.

Exploration and development for oil and gas has been limited to a few wells drilled in the Upper Peninsula (four in Mackinac and five in Schoolcraft). No economic oil and gas production has been found in the Upper Peninsula.

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

There is a state gravel pit off N. Gould City Road (N. Gould City pit) and several small sand pits are located near Milakokia Lake as well as an active limestone quarry on the west side of Milakokia Lake, none of which are on state forest land.