4.15 MA 15 – Hiawatha Moraine Management Area

Summary of Use and Management

Management in the Hiawatha Moraine management area (MA) (Figure 4.15.1) will emphasize both timber and wildlife management; protecting unique areas and threatened, endangered and special concern species; and providing for forest based recreational uses. The area is intensively managed for timber production and objectives include improving the age class distribution of red pine, jack pine and aspen. This management area contains the High Rollways, which is part of an extensive open-land complex. Management of this site is focused on providing springtime break-out habitat for deer, which also benefits open-land wildlife species such as sharp-tailed grouse and upland sandpiper. Vegetative management here will emphasize maintaining these large opening complexes. Expected issues in this 10-year planning period include increased illegal use of off-road vehicles, introduced pests and diseases and introduction and spread of invasive species.

Introduction

The Hiawatha Moraine management area is located in the west part of the eastern Upper Peninsula, north of the city of Manistique, in Schoolcraft County. It has 13,651 acres of state-owned land. The primary attributes are timber production and wildlife habitat management in the large open-land complex. Additional attributes which were important in identifying this management area include:

- The management area falls within the Luce subsection VIII.2 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- The dominant landforms consist of lacustrine sand and gravel.
- Special features including a special conservation area deer wintering area.
- Recreational opportunities include snowmobiling and berry picking.
- This management area contains one of the eastern Upper Peninsula Grouse Enhanced Management Systems (GEMS) areas. This area plan will emphasize balanced age classes of aspen for timber production which will have habitat benefits for a number of the featured species including ruffed grouse and deer. The boundaries of Grouse Enhanced Management Systems areas will be delineated and an operational plan will be developed during this planning period by the local biologist in collaboration with the Forest Resources Division unit manager and integrated into the plan through the revision process.

This is a productive upland area, almost completely surrounded by the Seney Manistique Swamp management area. The High Rollways, a historic pine logging area along the Manistique River and the Smith Lake Civilian Conservation Core camp are within the management area.

The state land in this management area is fairly concentrated, though surrounded by private ownerships. The Hiawatha Moraine management area falls within the Shingleton Forest Management Unit. The predominant cover types, acreages and projected harvest acres for the management area are shown in Table 4.15.1.

Table 4.15.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Hiawatha Moraine 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
Aspen	23%	3,096	5	3,091	223	0	3,096	515	0
Red Pine	18%	2,432	34	2,398	29	1,172	2,432	266	1,200
Northern Hardwood	15%	2,112	21	2,091	0	1,019	2,112	0	1,019
Upland Open/Semi-Open Lands	10%	1,345	0	1,345	0	0	1,345	0	0
Cedar	6%	867	0	867	0	0	867	54	0
White Pine	6%	753	17	736	67	270	753	67	270
Lowland Open/Semi-Open Lands	5%	730	0	730	0	0	730	0	0
Jack Pine	5%	667	16	651	24	0	667	93	0
Lowland Conifers	4%	482	0	482	0	0	482	54	0
Misc Other (Water, Local, Urban)	1%	131	0	131	0	0	131	0	0
Others	8%	1,036	131	905	142	50	1,036	102	70
Total	100%	13,651	224	13,427	485	2,511	13,651	1,151	2,559

Others include: lowland spruce/fir, oak, tamarack, upland spruce/fir, lowland deciduous, upland conifers, hemlock, paper birch, lowland aspen/balsam poplar, upland mixed forest, and lowland mixed forest.

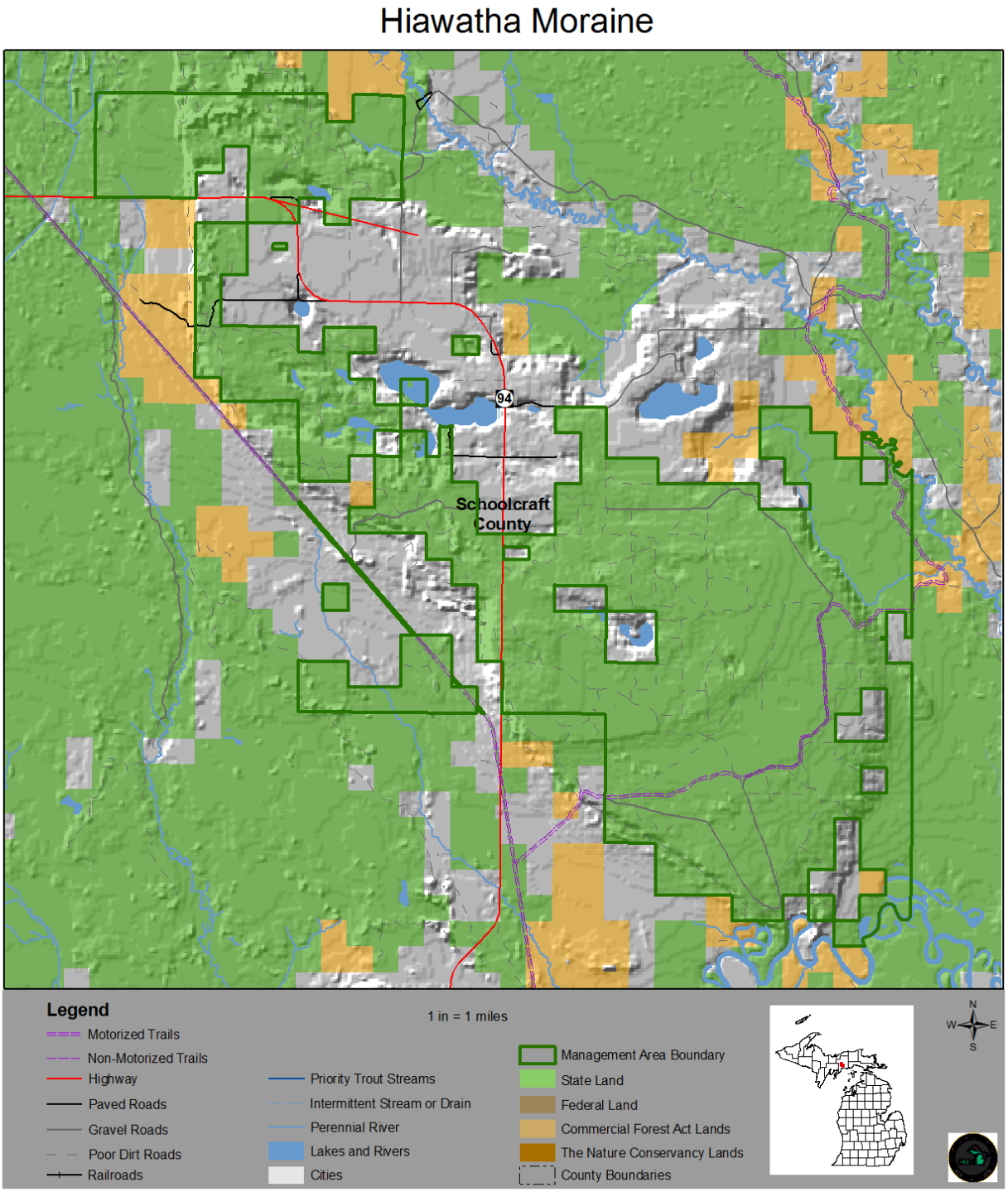

Figure 4.15.1. Location of Hiawatha Moraine management area (dark green boundary) in relation to surrounding state forest lands, and other ownerships in Schoolcraft County.

4.15.1 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 Issues 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.

4.15.1.1 Forest Cover Type Management - Aspen

Current Condition

Aspen occurs on 3,096 acres (23%) of the management area (Table 4.15.1). Aspen stands are distributed throughout the management area on sandy soils of outwash plains, dunes, disintegration moraines and kame terraces. These are generally dry to mesic, poor- to medium-nutrient sites with Kotar habitat types of PArVAa and ATFD. Aspen stands have been successfully harvested and regenerated in recent years resulting in the majority of the aspen acres being in the 0-39 year age classes (Figure 4.15.2). Aspen within the Mint Farm Grouse Enhanced Management System area may be managed slightly different than the rest of the aspen within the management area through shorter rotation ages and smaller harvest areas.

There are currently 129 acres of aspen prescribed for final harvest. Some stands of aspen are prescribed to be returned to herbaceous open land after harvest. These acres have already been removed from the manageable acres for aspen. There are five acres of aspen 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 aspen will eventually succeed to late successional species.

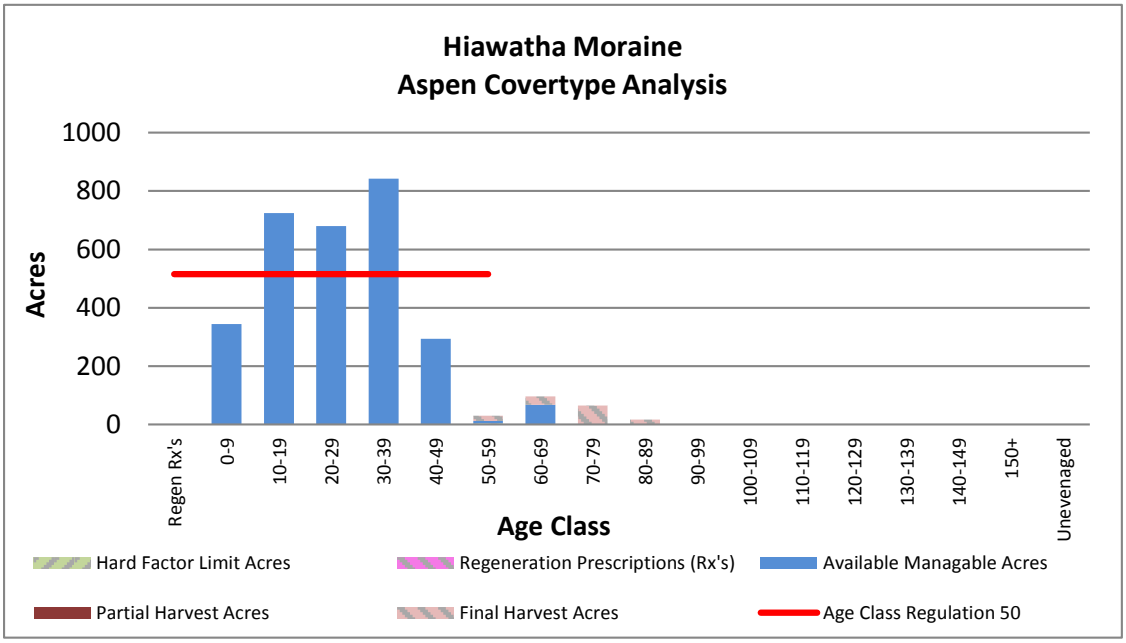

Figure 4.15.2. Age-class distribution of aspen in the Hiawatha Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Aspen stands 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 projected 10-year harvest is approximately 223 acres which is significantly lower than the regulated amount due to the current age-class structure where the majority of stands are less than 40 years of age.
- Aspen within the identified Grouse Enhanced Management Systems area may be managed differently than the rest of the aspen within the management area, with a shorter rotation age**,** small patch cuts and carefully considered stand adjacency.

Long-Term Management Objectives

- Balance the age classes of accessible aspen providing for a regulated harvest of approximately 515 acres per decade (red line in Figure 4.15.2).

4.15.1.2 Forest Cover Type Management – Red Pine

Current Condition

Red pine stands are found on 2,432 acres (18%) of the management area (Table 4.15.1). Red pine is distributed throughout the management area mainly on Rubicon and Kalkaska sands of outwash plains with Kotar habitat types of PArV and PArVAa (see Appendix E). The majority of the red pine stands are of planted origin. These stands have been thinned approximately every 10 years since products became available. Over the last 20 years some of the red pine stands have had stand replacement harvests followed by re-planting, thus diversifying the age-class structure (Figure 4.15.3). Prescribed burning or the use of herbicide may be necessary to control competing vegetation thus ensuring successful regeneration. Red pine stands in older age classes are generally of natural origin and are often mixed with white pine, aspen and jack pine. Shelterwood harvests in these stands have resulted in mixed regeneration.

Some of these planted red pine stands are 10, 20 or 40 acre blocks with jack pine in between. It is desirable to consolidate the planted stands for ease of management and to provide larger acreages of contiguous habitat. The total acreage of red pine is expected to remain similar to the current amount, though the actual location of the stands may be moved to reflect site conditions.

Currently, there are 54 acres prescribed with a final harvest, and 392 acres of red pine prescribed for partial harvest or thinning. There are some acres prescribed for harvest in a different cover type that are expected to convert to red pine after harvest and some acres of red pine that are prescribed to convert to other types. These acres are shown in Figure 4.15.3 in the regeneration prescriptions column. There are 34 acres of red pine 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.

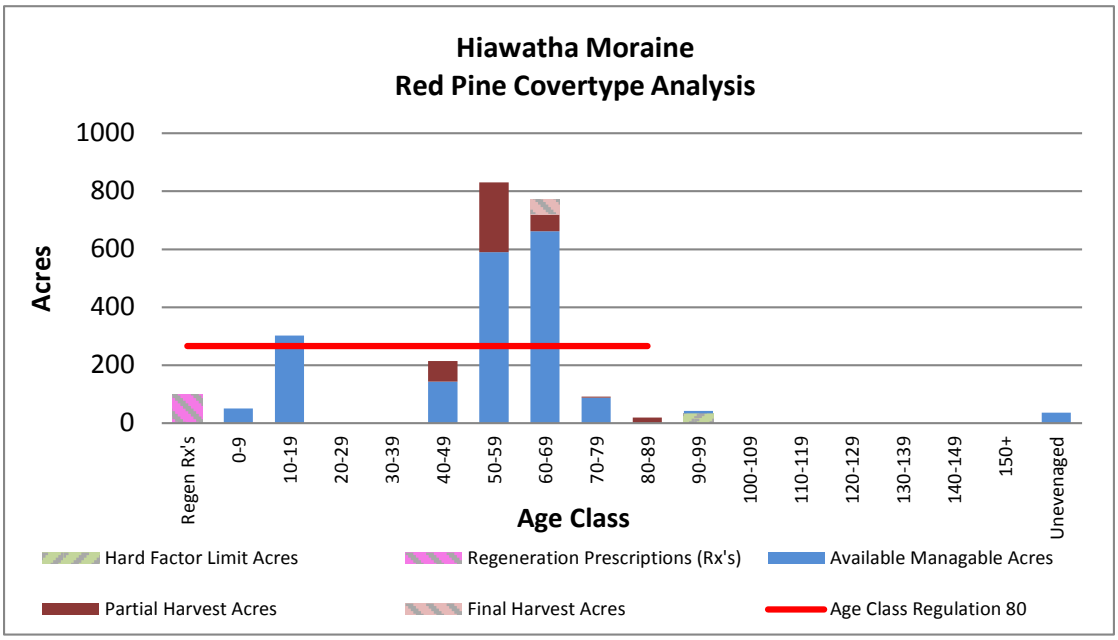

Figure 4.15.3. Age-class distribution of red pine in the Hiawatha Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Red pine stands will be maintained and managed through thinning until stand replacement harvest at economic maturity. Acres will be balanced between 0-89 years of age to provide for continual harvest, wildlife habitat and recreational opportunity. Red pine found in riparian buffers or other sensitive sites may remain until biological maturity.

10-Year Management Objectives

- The 10-year projected final harvest is 29 acres to work toward balancing the acres of red pine. This is less than the regulated amount due to the current age-class structure, where most stands are 50-70 years old and are available for thinning.
- The projected 10-year partial harvest is 1,155 acres of thinning of red pine stands 40-79 years old.

Long-Term Management Objectives

- Balance the age-class structure of red pine to provide a regulated harvest of approximately 266 acres per decade.
- Stands will be periodically thinned until they meet silvicultural criteria.

4.15.1.3 Forest Cover Type Management – Northern Hardwood

Current Condition

Northern hardwood occurs on 2,112 acres (15%) of the management area (Table 4.15.1). Over 80% of the stands have been managed as uneven-aged, thereby having trees of varying ages and sizes. Stand density, described as basal area per acre, is used to measure stand condition. Figure 4.15.4 shows the basal area distribution of the stands. Northern hardwoods are distributed throughout the management area on moraines, ground moraines, outwash plains, disintegration moraines and kame terraces with Kotar habitat types of ATFD and AFPo. High quality hardwood stands can be found in the southeast and east portions of the management area and by lake moraines. In most stands, conduct individual tree selection harvests where basal area is over 120 square feet per acre, usually about every 20 years. Where site quality is poor shelterwood and other even-aged harvesting systems will be considered. Stands that have been recently harvested using even-aged management are shown in the immature column in Figure 4.15.4.

Beech Bark Disease is prevalent in this management area and many stands have had or will have salvage harvests due to beech bark disease. 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, 693 acres have a partial harvest or selection harvest prescription assigned. There are 21 acres of northern hardwood that have site conditions limiting their harvest this entry cycle. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

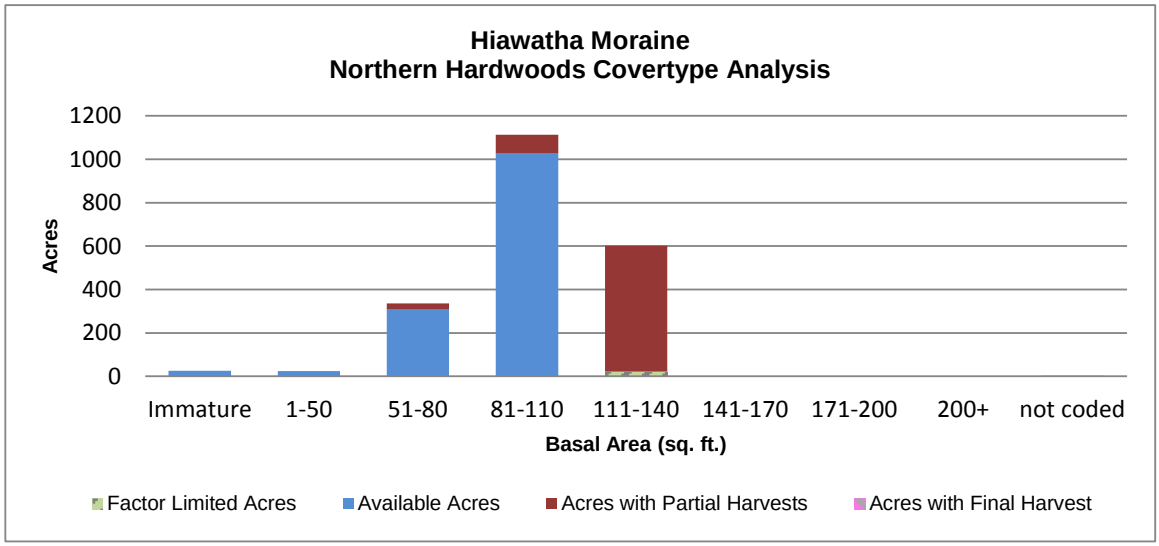

Figure 4.15.4. Basal area distribution of northern hardwoods in the Hiawatha Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Northern hardwood stands will be maintained on operable sites 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 harvest is 1,019 acres of partial or selection harvest.
- Evaluate beech dominated forests to determine the impact of beech bark disease on regeneration.
- Track beech regeneration in these stands and consider herbicide application on beech regeneration to promote regeneration of other species.
- In areas that are losing beech to beech bark disease, consider planting disease resistant beech or oak after harvesting to increase the availability of hard mast.

Long-Term Management Objectives

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

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

Current Condition

Upland open/semi-open lands are found on 1,345 acres (10%) of this management area (Table 4.15.1). This category is a combination of the following non-forested land cover types: herbaceous openland (1,228 acres), bare/sparsely vegetated (110 acres), upland shrub (seven acres) and low-density trees (zero acres). These cover types are valued ecologically as sources of open land habitat for numerous species of wildlife. The High Rollways area is part of an extensive open-land complex in the eastern Upper Peninsula. Some of the large openings have been filling in with aspen and other species. Prescribed burning throughout much of the area has reduced this woody vegetation providing food for deer as they leave the yards in early spring. This also benefits open-land species such as sharp-tailed grouse and upland sandpiper that use the area in the summer. The acreage of upland open/semi-open lands is expected to slightly increase this decade as opening maintenance returns some stands back to their open state.

Desired Future Condition

- Maintain the large openings in the area to provide wildlife habitat and recreational opportunities.

Long-Term Management Objectives

- Continue to maintain large openings for wildlife using effective methods including timber harvesting, chipping and prescribed burning.

4.15.1.5 Forest Cover Type Management – Cedar

Current Condition

Cedar occurs on 867 acres (6%) of the management area (Table 4.15.1). Cedar stands in this management area are generally found near the border of the management area in association with streams and creeks flowing into the Manistique River. Many of the stands are within a deer wintering area special conservation area. There has not been any recent harvesting and regeneration of this cover type in this management area (Figure 4.15.5).

Currently, there are no cedar stands scheduled for harvest. At this time there are no acres of cedar with site conditions limiting harvest. Cedar stands in inaccessible areas will be subject to natural processes resulting in a range of successional stages.

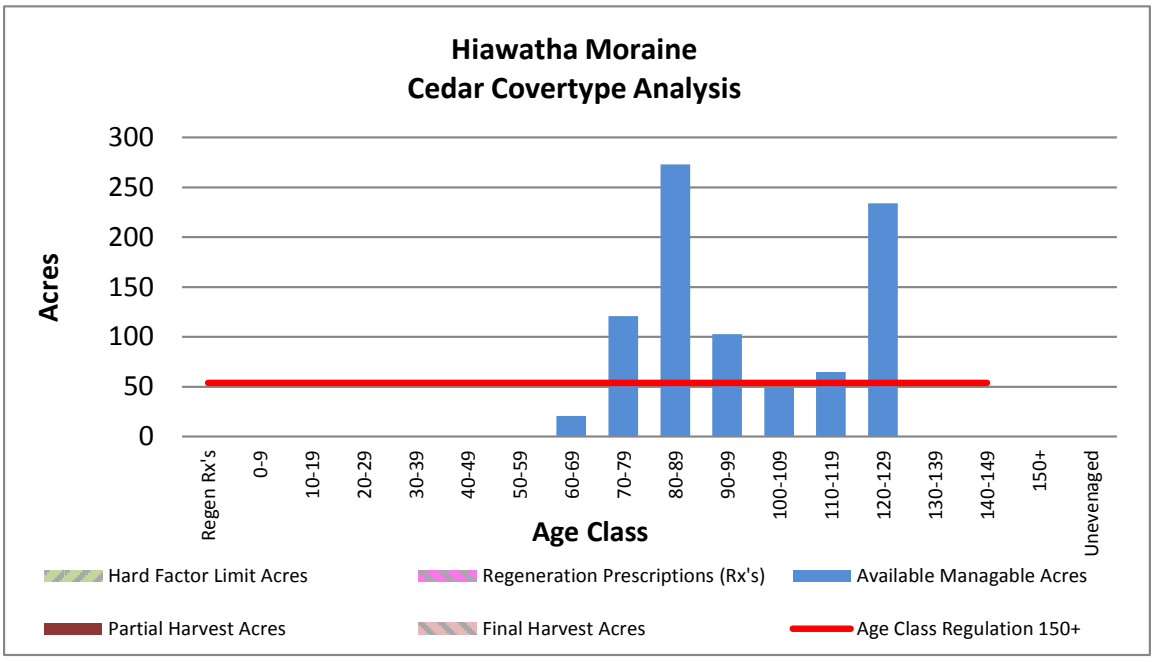

Figure 4.15.5. Age-class distribution of cedar in the Hiawatha Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Outside the deer wintering areas, cedar stands will be maintained on operable sites through even-aged management, using a 150-year rotation age providing for a regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected harvest for cedar in this management area is zero acres due to the deer wintering complexes.

Long-Term Management Objectives

- In accessible areas outside the deer wintering areas, balance the age-class structure providing for a regulated harvest of approximately 54 acres per decade.
- When resources allow, attempt to purchase more critical wildlife habitat such as the recent purchase within the Sturgeon Hole Deer Yard.

4.15.1.6 Forest Cover Type Management – White Pine

Current Condition

White pine occurs on 753 acres (6%) of the management area (Table 4.15.1). White pine is distributed throughout the management area on sandy outwash plains with Kotar habitat types of PArV and PArVAa. While most of the white pine stands are of planted origin, natural stands are also present. White pine regeneration grows well here and stands that have been thinned may have several ages of white pine. As recent shelterwood regeneration harvests have resulted in uneven-aged stands; no acres are shown in the 0-9 and 10-19 year-old age classes. Figure 4.15.6 shows the age-class distribution of the white pine stands in the management area. Following general white pine management guidelines, periodically thin stands with high basal area and conduct regeneration harvests in stands that are economically mature. Use shelterwood or seed tree harvests to promote natural regeneration where possible.

Currently there are 17 acres of white pine 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. Some of the older aged white pine stands are riparian buffers for lakes and creeks and may never be harvested.

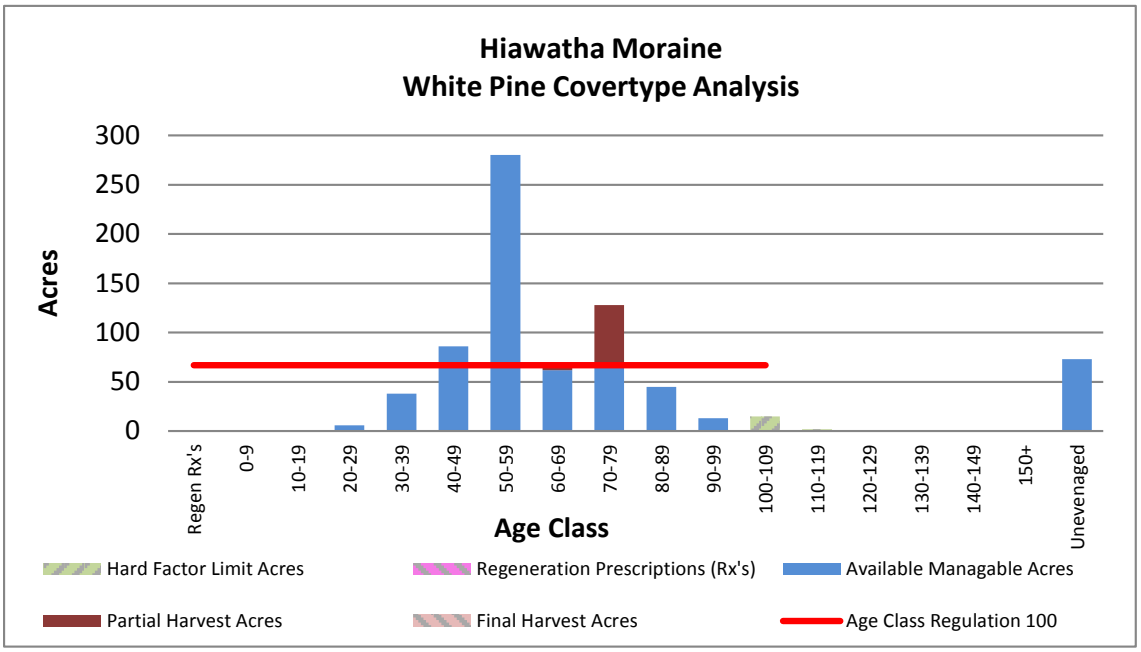

Figure 4.15.6. Age class distribution of white pine in the Hiawatha Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- White pine will be maintained on operable sites with acres balanced between 0-109 years of age to provide for continual harvesting, wildlife habitat and recreational opportunities.
- White pine stands will be managed through thinning, up until rotation age, followed by shelterwood or seed tree regeneration harvests.

10-Year Management Objectives

- The 10-year projected final harvest is 67 acres of white pine, generally using seed tree harvesting.
- The 10-year projected partial harvest is 270 acres of thinning in stands with high basal area.

Long-Term Management Objectives

- Balance the age classes of available white pine providing for a regulated harvest of approximately 67 acres per decade.

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

Current Condition

Lowland open/semi-open lands cover 730 acres (5%) (Table 4.3.1). This category is a combination of lowland shrub (636 acres), marsh (67 acres), treed bog (three acres) and bog (24 acres). These cover types function ecologically as sources of habitat for numerous species of wildlife.

Desired Future Condition

- Lowland open/semi-open lands will be retained in their large, roadless state to ensure an adequate level of wildlife habitat and recreational opportunity.

Long-Term Management Objectives

- In general, these stands will be maintained without active management to protect their ecological values.
- Lowland shrub stands may be managed for wildlife habitat and/or for biomass if markets materialize.

4.15.1.8 Forest Cover Type Management – Jack Pine

Current Condition

Jack pine occurs on 667 acres (5%) of the management area (Table 4.15.1). Jack pine is distributed throughout the management area on outwash plains and in wetland areas. While some of the jack pine acres are in planted stands in the south near the planted red pine, the majority of the jack pine is in natural stands in the north portion of the management area. Scarification is generally used to regenerate jack pine though other methods such as trenching and planting and prescribed burning may be used.

There are currently 83 acres of jack pine with a final harvest prescribed (Figure 4.15.7). There are some acres prescribed for harvest in a different cover type that are prescribed to convert to jack pine after harvest and some acres of jack pine that will convert to other cover types. These acres are shown in figure 4.15.7 in the regeneration prescriptions column. There are 16 acres of jack pine 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. Jack pine stands that are unavailable for harvest will remain until biological maturity before succeeding to late successional species.

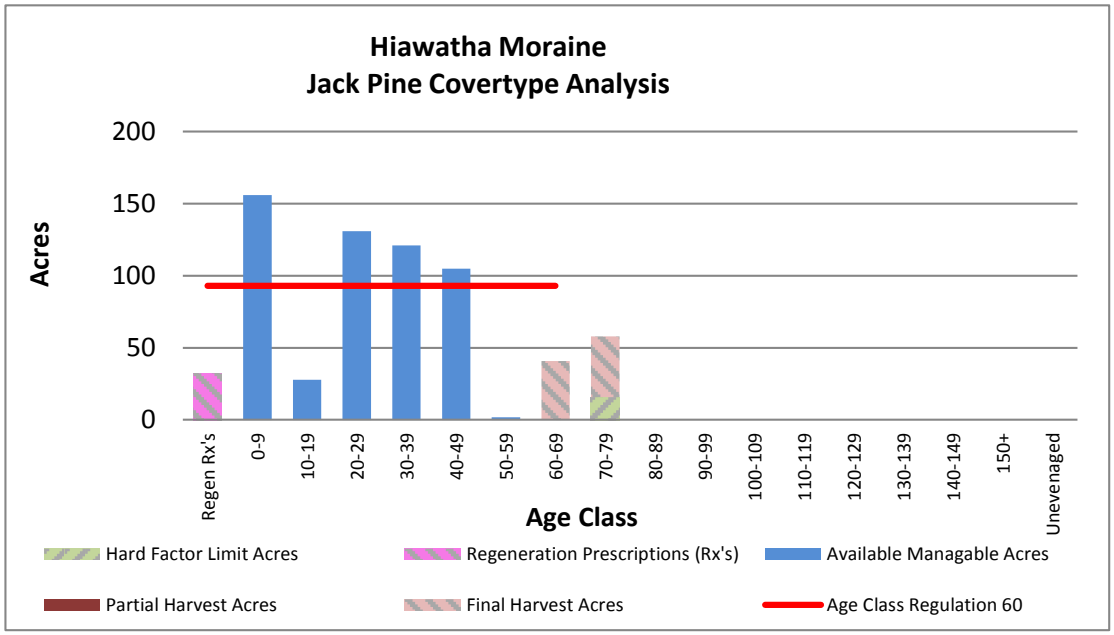

Figure 4.15.7. Age-class distribution of jack pine in the Hiawatha Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Jack pine will be maintained on operable sites through even-aged management with acres balanced between 0-69 years of age to provide for continual harvesting, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected final harvest is 24 acres of jack pine which is a reduction from the regulated amount due to the current age-class structure of jack pine, where the majority of stands are not yet at rotation age.

Long-Term Management Objectives

- Balance the age classes of jack pine providing for a regulated harvest of approximately 93 acres per decade.
- Maintain a lower acreage of over-mature stands to lessen the prevalence and severity of jack pine budworm outbreaks.

4.15.1.9 Forest Cover Type Management – Other Types

Current Condition

There are many cover types spread across the management area that occur on less than 5% of the total management area acres (Table 4.15.1). Lowland conifers occur on 482 acres (4%) of the management area. The “other types” category with 1,036 acres (8%) includes the following cover types, each with 3% or less of the total management area acres: lowland spruce/fir (344 acres), oak (215 acres), tamarack (129 acres), upland spruce/fir (117 acres), lowland deciduous (70 acres), upland conifers (61 acres), hemlock (45 acres), paper birch (23 acres), lowland aspen/balsam poplar (13 acres) and upland mixed forest (nine acres). The “miscellaneous other” category with 131 acres (1%) includes non-forested stands such as of roads, water and sand/soil.

Most of these cover types will be managed as even-aged stands using natural regeneration after harvest. Mixed cover types with high basal area may be thinned prior to final harvest depending on the species composition.

There are 131 acres of these other minor cover types 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 minor cover types may be managed on operable sites through even-aged management systems. Harvesting and regenerating these cover types will contribute to the diversity of the landscape while providing for continual harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The projected 10-year final harvest is 142 acres of other types.
- The projected 10-year partial harvest is 50 acres of other types.

Long-Term Management Objectives

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

4.15.2 Featured Wildlife Species

Wildlife priorities in this management area include the maintenance of early successional aspen habitat, maintaining vegetative and structural diversity within stands, the management of deer wintering complexes and associated breakout areas and maintaining the High Rollaways as part of an extensive opening complex that stretches across the eastern Upper Peninsula.

This management area will include one of the eastern Upper Peninsula Grouse Enhanced Management System areas. The boundaries will be delineated during this planning period by the local biologist in collaboration with the Forest

Resources Division unit manager. Aspen stands that fall within the boundary may be managed to enhance habitat and hunting opportunities for ruffed grouse, woodcock and deer. Habitat treatments may include managing aspen on a shortened rotation with multiple age classes and smaller stand sizes.

American Woodcock

The eastern Upper Peninsula goal for woodcock 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.

Ruffed Grouse

The goal for ruffed grouse in the eastern Upper Peninsula is to maintain or improve habitat. Management should focus on maintaining and balancing the age-class distribution for aspen in priority landscapes.

Wildlife habitat specifications:

- Maintain and balance the aspen cover type and increase the aspen component in mixed stands within the management area.
- Move to balance the age class distribution of aspen and birch cover types to maintain young forests across the management area.
- Ideal grouse habitat will include large blocks of aspen with several age classes.
- Manage the aspen cover type for smaller patch size, a shorter rotation and a more deliberate habitat configuration within the designated Grouse Enhanced Management Systems areas where appropriate.
- Larger harvest units should have irregular boundaries and retention patches are preferred.
- Promote a conifer component in aspen stands. Leave conifer under four-inch diameter at breast height in mixed stands and aspen types as immediate residual escape cover and to promote corridors.
- Maintain cherry production for soft mast.

Sharp-tailed Grouse

The goal for sharp-tailed grouse in the eastern Upper Peninsula is to maintain or improve suitable habitat. Management should focus on enhancing large opening complexes so there is an increase of available habitat.

Wildlife habitat specifications:

- Maintain or expand herbaceous open-lands where existing leks occur.
- Manage adjacent forest to maintain young regenerating forest adjacent to permanent openings to maximize use by sharp-tailed grouse.
- Use prescribed fire where appropriate to maintain openings and manage pine types.
- Within open-land complexes maintain connectivity across the landscape.

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.

4.15.3 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, 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 three listed species and no natural communities of note occurring in the management area as listed in Table 4.15.2. 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 4.15.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Hiawatha Moraine 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	*Gavia immer*	T/G5/S3-4	Confirmed	HV	Very High	Emergent Marsh	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
Sharp-tailed grouse	*Tympanuchus phasianellus*	SC/G5/S4	Confirmed	PS	Moderate	Pine barrens	Jack Pine	Early
						Oak-pine barrens	Oak	Mid
						Dry sand prairie	Upland open/semi-open	N/A
						Wet-mesic sand prairie	Upland open/semi-open	N/A
						Northern shrub thicket	Upland open/semi-open	N/A
Reptile								
Wood turtle	*Glyptemys insculpta*	SC/G4/S2S3	Confirmed	MV	Moderate	Northern wet meadow	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
						Rich conifer swamp	Tamarack	Late
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern shrub thicket	Upland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late

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

The following special conservation areas are found within the management area: deer wintering area, potential old growth, cold water streams and lakes (Figure 4.15.8). Concentrated recreation area special conservation areas (boat access sites) are listed in the Recreation section 4.15.7 below.

There have been no high conservation value areas or ecological reference areas identified in this management area as illustrated in Figure 4.15.8.

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.

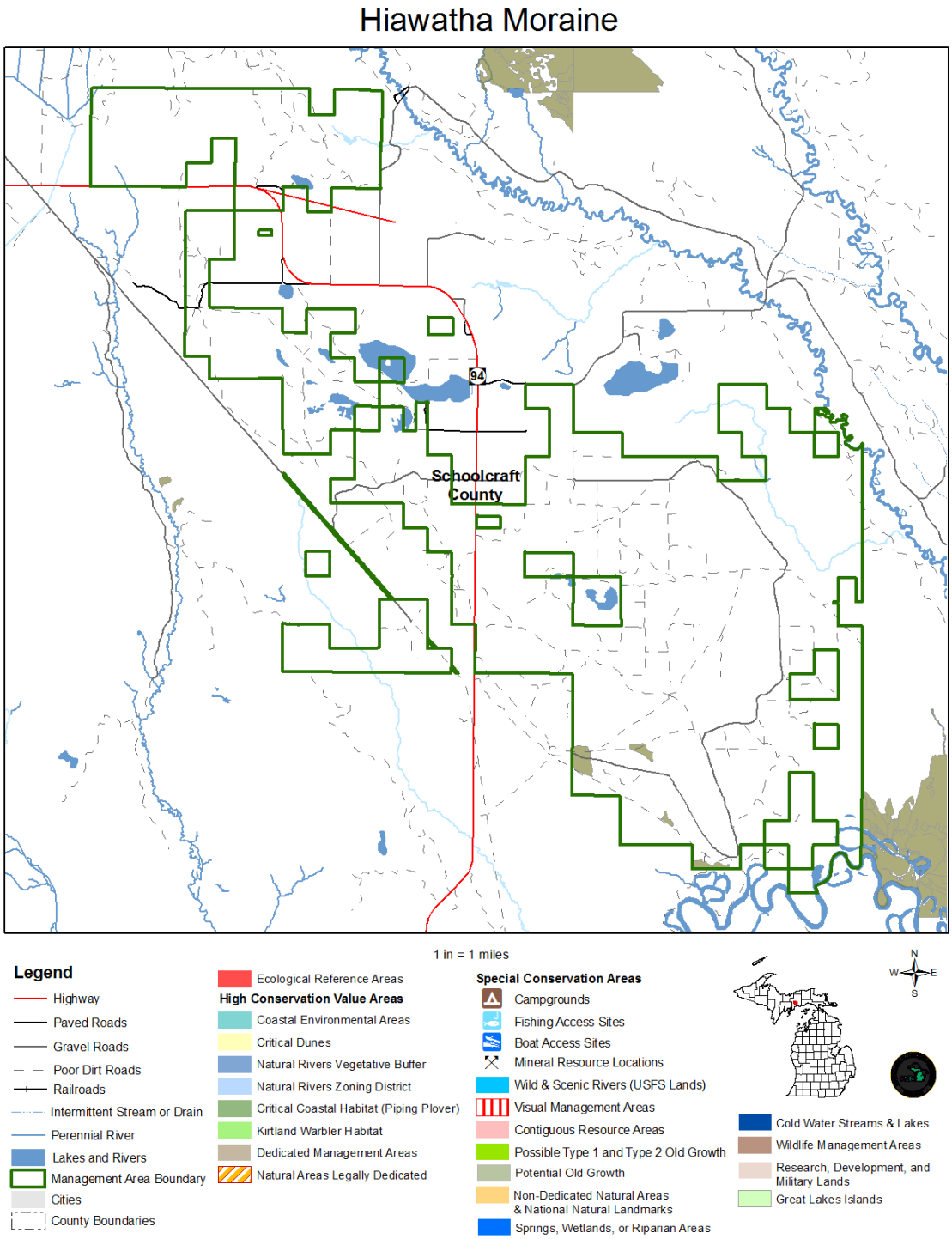

Figure 4.15.8. A map of the Hiawatha Moraine management area showing the special resource areas.

4.15.4 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:

- Northern hardwoods: beech bark disease
- Aspen: white trunk rot and *Hypoxylon* canker
- White pine: white pine blister rust
- Lowland conifers: spruce budworm, eastern larch beetle and larch casebearer
- Red pine and jack pine: jack pine budworm, red-headed pine sawfly and pine engraver

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. The statewide database of invasive plant species does not yet document any known species or locations within or surrounding the management area. Absence of data is likely due to lack of surveys and it should not be assumed there are no species present. Monitoring efforts should specifically look for new populations of the 10 priority invasive plant species identified in Section 3 of this plan. Prescribe eradication treatments to any new populations of priority invasive plant species found in the management area.

4.15.5 Fire Management

Much of this area is on dry, sandy soils that once supported a mix of barrens and dry to dry-mesic northern forests. These systems were probably maintained by periodic high intensity stand replacement fires, perhaps as often as every 75-100 years. Large openings in this management area have been burned three times since prescribed burn records have been kept. In the spring of 1977 450 acres were burned, 330 acres were burned in the spring of 1983 and 896 acres were burned in the spring of 2000.

- Current plans call for prescribed fire use in the maintenance of these openings. Other burns may be proposed to reduce slash and prepare seedbeds for natural regeneration.
- Public use of the area is largely dispersed recreation. Public access at Dodge Lake and Ashford Lake provide contact points for fire prevention messages.
- This management area falls entirely within the DNR Thompson protection area. In the past, there was a Zone Dispatch plan for this area. It was discontinued in 1998.

4.15.6 Public Access and Recreation

M-94 runs through the management area providing transportation to mills. Gravel and dirt roads provide good access to most of the area.

Recreational facilities include the Haywire Grade off-road vehicle route and two snowmobile trails (Figure 4.15.1). There are also two public boat access sites at Dodge Lake and Ashford Lake.

The area is also used for hunting and berry picking.

Specific hunting recreation improvements such as parking lots, gates, trail planting and trail establishment, as well as the preparation and dissemination of specific promotional material, may be made as a result of Grouse Enhanced Management Systems areas planning in this management area.

4.15.7 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 in this management area.

4.15.8 Minerals

Surface sediments consist primarily of coarse-textured till with minor peat and muck and lacustrine (lake) sand and gravel. The glacial drift thickness varies up to 200 feet. Sand and gravel pits are located in the management area and potential for additional pits is excellent on the uplands.

The Silurian Cabothead Shale, Manitoulin Dolomite and Ordovician Queenston Shale, Big Hill Dolomite and Stonington Formation subcrop below the glacial drift. The Manitoulin Dolomite formation could be quarried for stone.

Exploration and development for oil and gas has been limited to a few wells drilled in the Upper Peninsula (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.