The

Nara Property

Located in

Sec. 5 of T.54N. – R.33W.

Houghton County, Mi.

Prepared by:
The FERM (Forest Environmental Resource Management) Team of:

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Michigan Technological University
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**Executive Summary**

The Annexation of the Nara Property to the City of Houghton will provide further recreational opportunities for visitors to the Nara Nature Park. This property was graciously donated by Dr. Robert O. Nara and his wife Ruth, in memory of his Grandfather, Father, and Brothers for the public to use and enjoy. The development of the Nara Property is the third phase of the Nara Nature Park project, which is separated from phases one and two by U.S. 41 and the Houghton Chassell trail.

This write-up presents the findings of the Spring 2005, Undergraduate FERM Team’s assessment of existing trails and forest cover types present on the property, as well as some location options for the establishment of a sledding hill(s) and river access / canoe launch sites along the Pilgrim River. The majority of the fieldwork for this project was done during the winter months, so finding corners and line evidence was difficult. For this reason it is recommended that the lines be established prior to any major activities near property lines, which would include a river access site along the south line. Recreational enthusiasts currently frequent the trails throughout the Nara Property. For this reason some hazards should be reduced as soon as possible to reduce liability of the City of Houghton. These hazards include: dead and dying trees along the hiking trails, a collapsed old building, an old outhouse, scattered iron debris, and a standing old shack with no restriction on entry. The aforementioned should be first priority in the development of the Nara Property, and much of this could be achieved through organized volunteer efforts.

This reports constitutes the initial assessment conducted on the Nara Property. There is also a vast amount of spatial data obtained from this assessment, which is stored with the Michigan Technological Universities FERM Team. This spatial information can be used in further advancement of phase three in the development of the Nara Nature Park, hopefully along with the efforts of future FERM teams.
Introduction

The Nara property is 58 acres situated in part of Government Lots 2 & 3 within Section 5, Township 54 North, Range 33 West, Portage Township, Houghton County, Michigan. The property lies approximately 1 mile south of the M.T.U. campus on U.S. 41. The property borders the west side of the highway with access and parking shared with the (old) Copper Country Humane Society building. A portion of this tract has been subtracted for the location of the (old) C.C.H.S. building, as well as a 1.17 acre parcel that contains the new C.C.H.S. building and facilities. This parcel used to be owned by renowned former Houghton County Dentist, Dr. Robert O. Nara, and was graciously donated to the City of Houghton in memory of his grandfather, father, and brothers. The parcel was officially annexed to the City of Houghton in spring 2005, and holds a multitude of recreational possibilities for residents and tourists alike.

The Pilgrim River meanders across the whole length of the southern boundary of the tract, which provides opportunities for angling, canoeing, or just viewing. There are a network of hiking, skiing, and snowshoe trails currently in place, and being frequently
used by recreational enthusiasts. Many of these trails tie in to the M.T.U. trail system, but due to private land-holding issues, these trails cannot be classified as official. Other features of interest within the Nara Property include Peepsock Creek, two dilapidated old shacks, as well as an array of forest cover types and landform features which provide for many plants and animals.

Another valuable asset of the Nara Property is its proximity to the Nara Nature Park. The Nara Nature Park is host to walking trails, boardwalks, and fishing access sites to the Pilgrim River and Portage Lake. The City of Houghton is planning to include the Nara Property as part of the nature park in the third phase of the Nara Nature Park development. This assessment will present the findings of the Michigan Technological Universities’ FERM team in regards to the resources present on site, as well as developmental possibilities and recommendations for incorporating the Nara Property into the City of Houghton’s Nara Nature Park.

Pictures of Signage at the Nara Nature Park located across the highway (east) of the Nara Property
Overview

The FERM Team conducted most of the fieldwork for the Nara Property during the winter months. For this reason certain criteria could not be assessed due to the depth of snow present, the most important of which being established property corners and ground cover vegetation. The following are some of the general land conditions that the FERM Team was able to assess, despite the presence of snow at the time of this assessment.

Property Lines & Corners

It was made aware to the team that a survey had been conducted on the Nara Property by the local business of U.P. Engineers & Architects. The team was able to acquire the “Nara Land Master Plan” map (see Appendix A). This map gives good topographic and site plan information, but makes no mention of established corners. The crew was however able to locate an old post at the southwest corner of the parcel, but this is not a registered corner. The team also located two corner lathes, in close proximity to one another, marking the corners of the Copper Country Humane Society and Ferrel Gas.

Because the team found little corner evidence in the field, the exact location of the property lines could not be marked on the ground. The (approximate) west line of the property was marked with pink ribbon starting from the southwest corner and running north. The majority of the north line (western portion) is described as the “Southerly right-of-way line of the former Isle Royal Copper Company’s Stamp Mill Railroad” by
the deed to the property, which suggests the line is 33 feet from the center of the grade. Evidence of this old grade still exists, but is growing over in several spots. It should also be noted that the old grade is fenced across where Peepsock Creek crosses it. This grade is not part of the Nara Property, but hikers do use it as a means of crossing the creek. There is also a residence not far beyond (northwest) this fence, and the owner made mention to the team of his displeasure with wandering hikers.

The Pilgrim River meanders across the southern boundary of the property, which is not well marked. The western portion of this south line is marked by scattered old iron fence posts to about the center of the line, and evidence of this old fence line could not be found on the eastern portion due to the heavy snow. This line should be firmly established prior to the establishment of a canoe launch / river access site. The east line of the property is bounded by the highway right of way for U.S. 41, and it is unclear as to the placement of lines and corners around the old & new C.C.H.S. building sites, as well as the residence located in close proximity to them. The Team recommends these lines be accurately established prior to any major work within close proximity to them.

**Safety and Aesthetics**

The Team noted several items on the property that could present unsafe conditions to recreational users, and are somewhat of an eyesore to the beauty of the property. These items include: the collapsed old shack.
(pictured), the ruins of an old outhouse behind the standing shack, and several scattered old iron objects that must have been discarded by the shacks former occupants. The Team recommends that these objects be removed from the property to eliminate some element of risk. This removal could be accomplished through volunteer efforts or some kind of cooperative project. The standing shack may also be a safety concern, but it is also a standing object reminiscent of the past, that may want to be retained. At the very least, the windows and doors of this shack should be boarded up to prevent people from entering it, which is now unrestricted. Dead and dying trees within falling distance of the trails are also a safety concern, and will be further addressed in the Trails portion of this report.
**Trails**

The majority of the trail system is best suited to hiking and biking in the summer and snowshoeing in the winter rather than cross-country skiing. As the trails are now the average width is approximately 6 feet. There are considerable portions of the trail that are only wide enough for one person to walk along.

**Description**

The existing trails can be broken into four different trails, each with different terrain and different trail widths. Trail 1 runs from the trail head, at the Humane Society, west into the property. This trail is relatively flat and between six and nine feet wide.

Trail 2 is located to the south of trail 1 and runs down a hill and along the Pilgrim River before going back up a hill and rejoining trail 1. Trail 2 is quite wide, never narrower than eight feet, allowing room for two people to easily walk side by side. Along with a nice view of the river this trail also passes by the small shack and other historical structures that are located on the property.

Trail 3 continues west where trail 1 stops in the center of the property. Trail 3 is the most scenic of the trails. It runs on top of the a ridge that runs between Peepsock creek drainage to the north and the lowlands around the Pilgrim River to the south. The trail runs into a dense balsam fir stand where it comes to the property line. The trail continues for several yards after crossing the property line and connects with the pipeline that runs parallel to the west property line. Trail 3 covers some difficult terrain with steep ascents and descents as it runs along the top of the ridge. It is also a narrow trail that is only wide enough for one person to walk.
The final trail we mapped out is trail 4, which is located in the northwest section of the property. Trail 4 is a footpath much like trail 3, except trail 4 winds through the trees over relatively flat terrain.

There is also a seasonal trail located in the southwest corner of the property. This trail runs over a marshy area in the spring and summer time and is only accessible by snowshoe in the winter.

These trail locations can be viewed in the map appendix.

**Signage**

We found that there are some existing signs on the trails but they are few in number and somewhat confusing. The signs are arrows nailed to trees here and there, with no indication as to where they lead. There is another sign near the trailhead that says snowshoeing ahead but the arrow does not seem to point anywhere.

*Example of existing trail signs*
Snowshoe trail ahead sign near trail head

We think the existing signage should be improved upon and modeled after the signing on the tech trails, especially if there may be a connection in the future. Otherwise a good system for signing would be color coding by difficulty. This could be advantageous if there will be a diverse group of people who will be using the trails.

**Hazard Trees**

All sections of the trail have hazard trees. A hazard tree is any tree that has some defect that could cause it to fall onto the trail or someone using the trail. Some examples of hazard trees are trees that are dead or have dead limbs or trees with fungus damage that could weaken the stem. Trail 1 is has the most hazard trees with the most hanging
tops adjacent to trails and dead trees leaning over the trail, followed by trail 4 which also has a number of leaning trees and large dead aspen trees adjacent to the trail.

Example of hazard tree: A dead birch leaning over a trail.

We think hazard trees within falling distance of any trails should be removed, to make navigation easier and safer.

**Accessibility**

Trail 4 is somewhat isolated from the rest of the property by the Peepsock. The trail is cutoff by the Peepsock floodplain, which is the large open area that the creek runs through. Each spring this area floods completely cutting it off. The only access to trail 4 is via the railroad grade adjacent to the north property line. The railroad grade is on private property and the owner did not seem very cooperative to having trails near his
house. An alternate route to trail 4 is along the pipeline from trail 3. The problem with this route is that where Peepsock creek crosses the pipeline there is a bridge that is made of two logs laid across the stream.
A map we received from UP Engineers shows what could be a possible location for a bridge across the Peepsock drainage but this would have to be approximately 160 feet long to avoid the flooding in the spring. A possible solution to the problem of access to trail 4 would be to find the cause of the spring flooding in the area. There is a culvert that runs under the railroad grade which may be either inadequate to drain the large amount of water from the snow melt or it could be clogged. With the flooding problem solved a smaller bridge could be constructed over the creek to give greater access to the north section of the property.

**Future Development**

The trail in the northwest corner of the property, Trail 4, is the best site for a possible connection to the tech trails because it is the closest to the tech trails and there are some existing connections to it. The connections currently cross over private property, so some type of property purchase or access easement would have to be made in order to make any future connections. Also while removing hazard trees that are along this trail more trees could be removed to widen the trail so that it could accommodate a groomer from the Tech trails if a connection will be made in the future.
**Possible Sledding Hill Locations**

Upon the request of the City of Houghton, the assessment team was assigned to locate possible sites for the establishment of a sledding hill. Sites were chosen using criteria, which included: close proximity to established trail, relatively short walk from parking area, least amount of trees as possible needed to be removed, and relative size and steepness of runs. Using the aforementioned criteria, the team located and mapped three possible sites that most accommodated these criteria. These sites can be viewed on the “Possible Sled Hill / Canoe Launch Locations” map in Appendix A.

**Sled Hill 1**

The run labeled as “Sled Hill 1”, is the largest of the possible hill locations, and has potential for the steepest and longest run. The run measures approximately 300 feet long by 180 feet wide, and slopes generally to the south. This hill has somewhat of a funnel shape with the slopes converging towards the southern end of the run. There is a moderate amount of trees (averaging 8” – 12” in diameter) growing on the upper potions of the slopes that would have to be removed, but there is minimal vegetation (mostly < 4” in diameter) in need of removal towards the end of the run where the slopes begin to converge. The top (north) of this run is within 60 feet of an
established trail, and would require minimal site preparations to extend a trail to this point of access.

**Sled Hill 2**

The run labeled as “Sled Hill 2” borders hill 1 on the east side, and slopes to the southwest. The run measures approximately 180 feet long by 70 feet wide, with a moderate slope. This hill also has a fair amount of trees (averaging 6” to 10” in diameter) towards the top of the run, and would require some tree removal. The vegetation begins to thin towards the bottom of this run, which is just to the west of the dilapidated old shack. The collapsed ruins of the old outhouse, as well as some other scattered debris are present at the end of this run. Due to the amount of snow, the extent of the debris could not be assessed, but it is recommended that this debris be re-assessed after the snow melts to evaluate the safety of this site, even if it is not to be considered as a sled hill. The top (north) of this run is within 80 feet of an established trail, and the bottom of the run is within 150 feet of an established trail.

**Sled Hill 3**

The run labeled as “Sled Hill 3”, lies just to the east of the dilapidated old shack, and is the furthest east of the three sites. This run is also the shortest and least steep of the
hills considered, and is also located closest to the parking area. This run measures approximately 150 feet long by 90 feet wide, and slopes to the southeast. There are a fair amount of trees (6” – 12” in diameter) that would need to be removed throughout the entire length of this run. The top (north) of this run is approximately 65 feet from an established trail, and the bottom of the run ends right on a currently established trail.

**Possible Canoe Launch Locations**

Another request of the City of Houghton was for the assessment team to locate possible sites for the establishment of a canoe launch / access site to the Pilgrim River. The Pilgrim River flows in an easterly direction through the Nara Property, across U.S. 41, and through the Nara Nature Park out to Portage Lake. The park is host to several fishing / access sites, with the closest one to the property being the bridge on the Houghton Chassell Trail. The criteria used for the consideration of these sites included: close proximity to an established trail, the distance from the parking area a person would have to carry a canoe, as well as the influence of seasonal high water during spring run-off. Using the aforementioned criteria, the team located and plotted two possible sites that most accommodated these criteria. These sites can be viewed on the “Possible Sled

Picture taken from the bottom of Sled Hill 3 (on established trail) looking northwest to the top of the run.
Hill / Canoe Launch Locations” map in Appendix A. For the discussion these sites will be referred to as the Eastern Site and the Western Site.

**Eastern Site**

![Picture of the Eastern Site for a possible Canoe Launch / River Access site](image)

This site is located on a slight rise above the flood plain of the river very near to the south line of the property. This site would require the removal of some trees and vegetation, as well as a trail extension of approximately 300 feet to reach this area. This site, as the river flows, is approximately 1120 feet (<1/4 mile) upstream from the U.S. 41 bridge.
Western Site

This site is located near a rise above the river, and lies approximately in the center of the south property line. A currently established trail runs right next to this site, so relatively no trail construction would be required to access it. There is also relatively little vegetation present to be removed (mostly small diameter alder brush) so site preparation would be minimal. This site, as the river flows, is approximately 2430 feet (1/2 mile) upstream from the U.S. 41 bridge.

As previously mentioned, the Pilgrim River meanders back and forth across the south line of the Nara property. For this reason it is important that this line be confidently established before final decisions are made on the exact location of an access site. The crew was able to locate the southwest corner of the property on the ground, which consisted of an iron post marking its approximate location. From this corner the crew observed a meandering line running east which consisted of scattered old iron fence posts running to approximately the center of the property. No reliable evidence of this line, or the corner could be located on the eastern half of this line due to heavy snow conditions.
**Social Dimensions**

**Houghton – Chassell Trail**

With the possible motorization of the Houghton – Chassell trail there would be major ramifications for the Nara property. The amount of people who use the trail could possibly increase with ATV users stopping and enjoying the trails. But there would be a need for extra signage if the trails were to be off limits to the ATV’s. There is also the possibility of a need for gates to discourage ATV use on the trails if a problem does occur. Another possibility would be allowing use of the trails by ATVs. Although ATV use could be contradictory to the goals of a nature trail.

**Laws and Regulations**

There are many areas in the recreation area where development could require a permit or may require compliance with some environmental laws. Several parts of the NREPA or natural resources and environmental protection act, will be pertinent to projects on the property. The parts are regarding floodplains, soil erosion and sedimentation control, inland lakes and streams and wetlands protection. Projects like the sled hill, canoe launch and a connection to the northern end of the property could all require permits according to these regulations. For information about flood plains, which relates to activities along larger rivers contact the Ishpeming DEQ office, which serves the whole UP. Soil erosion and sedimentation control, relates to activities that would disturb one or more acres of land or activities that are within 500 feet of a lake or stream. The contact for information is the Houghton/Keweenaw Co. Conservation District in Houghton. Inland lakes and streams come into effect if activities would affect surface
water bodies (including intermittent creeks) or wetlands of one or more acres. The contact would be the Crystal Falls DEQ office. Finally wetlands protection deals with activities that are in wetlands, for information contact the Crystal Fall DEQ office.
Vegetation

The Nara Property is comprised mainly of aspen, paper birch, soft maple and hard maple. Understory vegetation data was not collected due to the snow pack while cruising. The goal of this assessment was to gather data on the overstory vegetation. The data collected on the overstory vegetation includes species, diameter at breast height (dbh), sawlogs (8ft), and pulp sticks (8ft). Eight different covertypes were found using aerial photos and ground truthing (see Appendix A for cover type map). Three different habitat types (Appendix D) were found by using the USDA Soil Survey of Houghton County; Acer-Tsuga-Dryopteris (ATD), Acer-Tsuga-Dryopteris/Dryopteris phase (ATD-D), and Acer-Viola-Osmorhiza/Circaea-Impatiens phase (AVO-CI). While the team was conducting forest inventory wildlife sightings and forest health problems were noted but not quantitatively measured.

Thirty-Four points were established before going out into the field. A systematic point sampling grid was used. The grid was adjusted so that at least two points fell into each cover type. The point coordinates were then found using ArcView GIS, and then downloaded into a GPS unit. The team navigated to these points using GPS then measured the “in” trees using a BAF 10 factor prism. If the tree was borderline the distance and dbh were measured to see if the tree was either in or out. At each point the overstory cover was noted so the covertype map could be ground truthed. The data collected was then inserted into a program to get board feet/ac, cords/ac, trees per acre, and basal area per acre.

The following are totals for the tract as a whole. Stand totals are in Appendix E. The tract has a total trees per acre (TPA) of 192.2. Hard maple has the highest (TPA) at
72 TPA on the Nara property. Even though a majority of the cover is aspen which comes in second at 35 TPA. Soft maple has 33.2 TPA, and red oak has 10.2 TPA. Figure 1 shows the trees per acre for the Nara property.

![Figure 1 Trees per Acre by Species](chart1)

The basal area (BA) followed the same pattern as TPA. There is a total BA of 94.2 ft²/ac on this tract. Hard maple has a BA of 24.7 ft²/ac, while aspen is 22.5 ft²/ac, and soft maple comes in third with 13.4 ft²/ac as shown in Figure 2.

![Figure 2 Basal Area (ft²/ac) by species](chart2)
The tract total volumes on the Nara property are 1103.1 board ft/ac, and 20 cords/ac. Due to large diameter white pine, this species may be underestimated Figure 3, and cords/ac Figure 4 show the board feet/ac and cords/ac respectively. White pine has a tract total of 359.0 board feet/ac, and 1.9 cords/ac. Hard maple had 70.7 bd ft/ac (Figure 3), and 4.6 cords/ac (Figure 4). A majority of the saw timber comes from red oak, which has 437.8 bd ft/ac, and 1.4 cords/ac. Aspen was cruised as pulp but 25%-30% of the pulp volume can go for bolts, it has the highest cords/ac at 6.6.

Figure 3 Board feet/ac Summary by Species

![Scribner Volume (bd ft/ac) by Species](image)

Figure 4 Pulp Volume Summary by Species

![Pulp Volume (cords/ac) by Species](image)
Wildlife and Forest Health

Wildlife species known to inhabit the property include: deer, bear, grouse, squirrels, bald eagle, osprey, and other unidentified bird species. Tracks of coyote, mink, muskrat, deer, rabbit, and bobcat were observed during fieldwork. Both the bald eagle and the osprey are listed as threatened in the state of Michigan. Ospreys take advantage of anything tall with a view of water to build their nests. The large white pine on the property may provide nesting sites for either of these bird species. Red oak is another important tree species to wildlife. It is considered a hard mast tree species, which means it produces a hard fruit (acorns) for wildlife to eat. Further assessment of wildlife is suggested to see if any threaten and endangered (T&E) species are using the Nara property as a home range. As habitation by T&E species could affect management activities on the property. This could also include any fish species which may live in the Pilgrim River or Peepsock Creek.

The aspen is becoming over mature and subject to many different pests and pathogens. Conks were observed on a number of trees, which was producing dieback in the affected trees. Trees far enough back from the trail that do not pose a hazard can form nice wildlife trees once they die. These dead trees or snags are important to cavity nesters; they also provide a habitat for insects for some insect eating wildlife species. But by leaving pockets infected trees there is a possibility of opening up the stand to further damaging agents.
Soils

The soil composition of the Nara property is comprised of four different soils types. These are the 96B Liminga fine sand complex, 130D,F Munising-Alcona-Liminga complex, 132F Kalkaska-Alcona complex, 137A Sturgeon-Arnheim-Pelkie complex, and 147B Kalkaska-Halfday sands (USDA Soil Survey Houghton County, MI, 1991). It is important to consider the soil type when determining how to manage a property. The soil complexes found on a tract of land can help determine drainage, equipment limitations, erosion hazards and other management limitations. The Liminga fine sand is a well-drained soil, but runoff is slow. The 130D Munising-Alcona-Liminga complex has slopes of 8-35%. The slopes are well drained with ravine bottoms being poorly drained, seasonal streams may also appear. The 130F Munising-Alcona-Liminga complex has well drained soils, slopes ranging from 15-70%, the ravine bottoms can be poorly drained. On these soils “erosion is a severe hazard” (USDA Soil Survey Houghton County, MI, 1991). 132F Kalkaska-Alcona complex has slopes ranging from 15 to 70%. The soils on these slopes are excessively to well drained, while again the ravine bottoms are poorly drained. The 137A Sturgeon-Arnheim-Pelkie complex has slopes no greater than 3%. These soils are usually found on flood planes, and are poorly drained. Equipment should only be used in these areas when dry or with adequate snow cover. The last soil complex is 145B Kalkaska-Halfday sands, which have slopes of 0 to 8%. These soils are found on broad plains and are excessively to well drained. Surface runoff is slow on this complex. Each soil complex is listed in the table below (Table 1) along with a brief description. Further descriptions of these soils can be found in Appendix C.
Table 1 Soils found on the Nara Property.

<table>
<thead>
<tr>
<th>Soil Name and Map Symbol</th>
<th>Camp Areas</th>
<th>Picnic Areas</th>
<th>Paths and Trails</th>
<th>Percent Slope</th>
<th>Drainage Class</th>
<th>Erosion Hazard</th>
<th>Equipment Limitations</th>
<th>Widthrow Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>96B Liminga</td>
<td>Severe: too sandy</td>
<td>Severe: too sandy</td>
<td>Severe: too sandy</td>
<td>0-8</td>
<td>Well Drained</td>
<td>Slight</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>130D Munising-Alcona-Liminga</td>
<td>Severe*</td>
<td>Severe*</td>
<td>Moderate to Severe*</td>
<td>8-35</td>
<td>Well Drained</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>130F Munising-Alcona-Liminga</td>
<td>Severe*</td>
<td>Severe*</td>
<td>Severe*</td>
<td>15-70</td>
<td>Well Drained</td>
<td>Severe</td>
<td>Severe</td>
<td>Slight</td>
</tr>
<tr>
<td>132F Kalkaska-Alcona</td>
<td>Severe*</td>
<td>Severe*</td>
<td>Severe*</td>
<td>15-70</td>
<td>Excessively to Well Drained*</td>
<td>Severe</td>
<td>Severe</td>
<td>Slight</td>
</tr>
<tr>
<td>137A Sturgeon-Arnheim-Pelkie</td>
<td>Severe: flooding, wetness</td>
<td>Severe: wetness</td>
<td>Severe to slight wetness</td>
<td>0-3</td>
<td>Poorly Drained</td>
<td>Slight</td>
<td>Severe</td>
<td>Severe</td>
</tr>
<tr>
<td>145B Kalkaska-Halfaday sands</td>
<td>Severe: too sandy</td>
<td>Severe: too sandy</td>
<td>Severe: too sandy</td>
<td>0-8</td>
<td>Excessively to Well Drained*</td>
<td>Slight</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
</tbody>
</table>

*Dependant on slopes and soil texture
Possible Sled Hill / Canoe Launch Locations

Legend

- Property Lines
- Established Trails
- Canoe Launch Site
- Sledhill Locations
  - Sled Hill 1
  - Sled Hill 2
  - Sled Hill 3

Prepared by: FERM (Spring 2005)
Data from: Michigan DNR
Map date: February 14, 2005
Forest Cover Types

Legend
- Property Lines
- Sample Point Locations

Covertype.shp
- Aspen over Hardwoods
- Aspen over PaperBirch
- Field
- Hardwoods over Balsam
- Hardwoods White Pine Mix
- Lowland Hardwoods
- Marsh
- Mixed Hardwoods
- Paper Birch
- Peepsock Creek Corridor
- Pilgrim River
- White Pine

Prepared by: FERM (Spring 2005)
Data from: Michigan DNR
Map date: February 14, 2005
Topographic Property Lines

Legend

N

0 1000 2000 Feet

Prepared by: FERM (Spring 2005)
Data from: Michigan DNR
Map date: February 14, 2005
**Stand Summary Tables**

**Aspen Over Hardwoods Cover Type**

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft(^2)/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>33.3</td>
<td>89.9</td>
<td>63.8</td>
<td>6.1</td>
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<tr>
<td>Soft Maple</td>
<td>11.7</td>
<td>33.5</td>
<td>111.4</td>
<td>2</td>
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<tr>
<td>Paper Birch</td>
<td>1.7</td>
<td>1.6</td>
<td>62.4</td>
<td>0.3</td>
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<tr>
<td>Red Oak</td>
<td>5</td>
<td>14.8</td>
<td>0</td>
<td>0.8</td>
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<tr>
<td>Aspen</td>
<td>40</td>
<td>59.7</td>
<td>0</td>
<td>11.3</td>
</tr>
<tr>
<td>White Pine</td>
<td>3.3</td>
<td>2.3</td>
<td>166.3</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>95</strong></td>
<td><strong>201.8</strong></td>
<td><strong>403.9</strong></td>
<td><strong>21.1</strong></td>
</tr>
</tbody>
</table>

**Aspen Over Paper Birch Cover Type**

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft(^2)/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>70</td>
<td>312</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Aspen</td>
<td>80</td>
<td>99.6</td>
<td>0</td>
<td>27.2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>150</strong></td>
<td><strong>411.6</strong></td>
<td><strong>0</strong></td>
<td><strong>40.2</strong></td>
</tr>
</tbody>
</table>

*Paper Birch was common in this stand but was not an “in” tree for this point*

**Hardwoods over Balsam cover type**

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft(^2)/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>30</td>
<td>65.5</td>
<td>286.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Soft Maple</td>
<td>26.7</td>
<td>54.1</td>
<td>0</td>
<td>6.2</td>
</tr>
<tr>
<td>Red Oak</td>
<td>3.3</td>
<td>1.9</td>
<td>313.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Aspen</td>
<td>23.3</td>
<td>28.3</td>
<td>0</td>
<td>7.9</td>
</tr>
<tr>
<td>Basswood</td>
<td>3.3</td>
<td>3.1</td>
<td>286.9</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>86.6</strong></td>
<td><strong>152.9</strong></td>
<td><strong>886.9</strong></td>
<td><strong>20.8</strong></td>
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</tbody>
</table>
### Hardwoods White Pine Cover Type

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft²/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>15</td>
<td>56.6</td>
<td>46.8</td>
<td>2.4</td>
</tr>
<tr>
<td>Soft Maple</td>
<td>2.5</td>
<td>5.2</td>
<td>0</td>
<td>0.6</td>
</tr>
<tr>
<td>Paper Birch</td>
<td>17.5</td>
<td>30.1</td>
<td>143.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Red Oak</td>
<td>8.8</td>
<td>6</td>
<td>366.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Aspen</td>
<td>25</td>
<td>52.4</td>
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<td>5.7</td>
</tr>
<tr>
<td>White Pine</td>
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<td>28.9</td>
<td>1053.4</td>
<td>6.3</td>
</tr>
<tr>
<td>Yellow Birch</td>
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<td>1.6</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>Basswood</td>
<td>3.8</td>
<td>8.7</td>
<td>0</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>105.2</strong></td>
<td><strong>189.5</strong></td>
<td><strong>1653.7</strong></td>
<td><strong>21.1</strong></td>
</tr>
</tbody>
</table>

### Lowland Hardwoods Cover Type

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft²/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>10</td>
<td>14.6</td>
<td>0</td>
<td>2.1</td>
</tr>
<tr>
<td>Soft Maple</td>
<td>20</td>
<td>30.6</td>
<td>184.4</td>
<td>3.6</td>
</tr>
<tr>
<td>Ironwood</td>
<td>5</td>
<td>36.7</td>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>Red Oak</td>
<td>10</td>
<td>4</td>
<td>1000</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>45</strong></td>
<td><strong>85.9</strong></td>
<td><strong>1184.4</strong></td>
<td><strong>7.1</strong></td>
</tr>
</tbody>
</table>

### Mixed Hardwoods Cover Type

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft²/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>24.4</td>
<td>56.1</td>
<td>71.7</td>
<td>5</td>
</tr>
<tr>
<td>Soft Maple</td>
<td>21.1</td>
<td>57.7</td>
<td>79.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Ironwood</td>
<td>1.1</td>
<td>8.7</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>Paper Birch</td>
<td>7.8</td>
<td>8.2</td>
<td>339.9</td>
<td>1.5</td>
</tr>
<tr>
<td>Red Oak</td>
<td>16.7</td>
<td>15.3</td>
<td>1192.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Aspen</td>
<td>13.3</td>
<td>11.6</td>
<td>0</td>
<td>4.6</td>
</tr>
<tr>
<td>Black Ash</td>
<td>4.4</td>
<td>9.1</td>
<td>41</td>
<td>0.9</td>
</tr>
<tr>
<td>Yellow Birch</td>
<td>1.1</td>
<td>0.8</td>
<td>0</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>89.9</strong></td>
<td><strong>167.5</strong></td>
<td><strong>1724.1</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>
### Paper Birch Cover Type

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft²/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>7.5</td>
<td>30</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>Soft Maple</td>
<td>15</td>
<td>40.4</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Paper Birch</td>
<td>40</td>
<td>121.9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Red Oak</td>
<td>7.5</td>
<td>14.5</td>
<td>85.9</td>
<td>1.5</td>
</tr>
<tr>
<td>Aspen</td>
<td>12.5</td>
<td>27.5</td>
<td>0</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>82.5</strong></td>
<td><strong>234.3</strong></td>
<td><strong>85.9</strong></td>
<td><strong>17.2</strong></td>
</tr>
</tbody>
</table>

### White Pine Cover Type

<table>
<thead>
<tr>
<th>Species</th>
<th>BA (ft²/ac)</th>
<th>TPA</th>
<th>Saw Logs (bd ft/ac)</th>
<th>Pulp (cords/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Maple</td>
<td>70</td>
<td>198</td>
<td>0</td>
<td>13.3</td>
</tr>
<tr>
<td>Soft Maple</td>
<td>10</td>
<td>6.3</td>
<td>0</td>
<td>2.2</td>
</tr>
<tr>
<td>White Pine</td>
<td>40</td>
<td>21.7</td>
<td>2062.3</td>
<td>8.1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>120</strong></td>
<td><strong>226</strong></td>
<td><strong>2062.3</strong></td>
<td><strong>23.6</strong></td>
</tr>
</tbody>
</table>
Implementation report
Nara Tract

Fall 2005
Rachel Jarvenpaa
Adam Gahagan
Mario Scafone
Joe Plowe
Rachel Tarpey

Activities conducted on the tract:

Preliminary site visit:
Early in the semester many different people traversed the tract at many different times. The goal of these visits was to flag a core loop for cross-country skiing, flag/mark hazard trees, and flag a sled hill boundary. After walking the site many times it was determined that it was also feasible to have a portion of the tract harvested along with removal of hazard trees and clearing areas for a ski hill.

Prescription:
The tract to be harvested is approximately 12 acres.
It was broken up into three main stands (Figure 1):
1. Oak/aspen/birch has pockets of aspen and birch with larger red oaks in the canopy.
2. Aspen/birch is nearly 100% aspen and birch in the overstory in most places, with a few scattered red oak, red maple, and sugar maple.
3. White pine is dominated by white pine in the overstory with a few red maples and red oak with a small aspen patch.

The goal of all the areas is to retain a component of white pine and red oak where present and to spread the component of these two species across the tract. The third area will serve as a model for future conditions because it is already dominated by large white pine and red oak. The reason for breaking the rest of the stand into two components is the lack of red oak in the overstory in stand 1. Stand 1 will receive a treatment that focuses on restoring white pine and stand 2’s treatment will focus more on red oak. While the focus may be different between the two stands the harvesting treatments for both are nearly identical.
See Prescription under Nara folder for full coverage of the treatments.
Implementation

**Trail:** A core loop was designated, flagged in red, and all hazard trees were marked. **Flagging leave trees:** It was decided that instead of marking all the trees to be harvested that only the leave trees would be flagged. Nearly 100% of the stems being removed are aspen and birch. The goal was to leave a residual density of aspen at approximately 15-20 ft²/acre. Over the course of one rainy day, Jim Schmierer, Adam Gahagan, Rachel Tarpey, and Joe Plowe, flagged the majority of leave trees. The trees that were left were the superior specimens. One of the major concerns of the aspen shelter is that it would blow over after the harvest. Also, trees nearest the trail were not left. **Flagging the sled hill:** Two sled hills were flagged in orange. The hill that is furthest east was flagged and every tree was marked. This was done to lessen confusion for the logger. This hill is smaller and less steep than the other. The second sled hill was only flagged because of the high number of trees that would need to be marked. The main concern for this sled hill was the steepness of the hill and a black ash swamp that was at the bottom. The hill was moved to avoid the swamp and so the end of the run was going toward an opening. For both sled hills it was decided that the stumps would be cut low by hand instead of using a bulldozer. A tracked machine will be able to reach all the trees on the first sled hill and most of the trees on the second sled hill, but some may need to cut by hand if the machine cannot reach it.
Cruise: The area within the harvest boundary was cruised to get an idea of how much volume would be harvested. This was important to a potential bidder of the sale because the acreage/volume is low. The bid price may be lower if only 100 cords were coming off the property as compared to 200 cords. The cruise data suggested that approximately 200 cords would be removed.

Flagging harvest/property boundary: The harvest boundary was flagged in blue. On the south end it followed the top of a crest before the terrain dropped off toward the Pilgrim River. Where the trail appears to cross the property boundary (Figure 1, south end) the harvest boundary became the property boundary. There were some old fence posts and barbed wired that appeared accurate of where the true property boundary is. There were also other fence posts and barbed wire along the eastern and southern harvest boundary that did not appear to be a property boundary and are a hazard for future users.

Harvesting: At the time of writing this report harvesting has not yet begun. The expected start date is December 14, 2005. The contract states that the harvest must be completed by January 1, 2006. The “woods boss” in charge of the crew is Rich Dehahn.

Daily Mining Gazette: The hope of the FERM class and the instructors is that this project will be a good tool for public education and promote more partnerships between the SFRES and other landowners. The Daily Mining Gazette was informed of the project, but has not responded as to whether or not they are interested in covering it.

Educational and harvesting signs: A sign explaining the project was made and will be posted at the main entrance to the site (See Naraharvestposter in Nara/presentation folder). Also, no entry signs will be posted around the perimeter to dissuade the public and humane society dog walkers from entering the harvest area.