

Whitnall Nature Pod School Forest

Forest Management Plan

30 August 2013

Background:

Whitnall High School has expressed an interest in enrolling the wooded area on the school property in Wisconsin's School Forest Program. Part of the process in enrolling a woods in the School Forest Program is to have a forest management plan prepared for the area. On August 5, 2013 the local Wisconsin Department of Natural Resources (DNR) forester visited with representatives from Whitnall High School and examined the site. The following management plan describes the forest and potential management recommendations that could be implemented.

Description of the Area:

This school forest as shown on the attached aerial photo covers 16.8 acres of wooded area along with a small pond and adjacent grassy area. The woods lies in the NE1/4 of the NW1/4 of Section 30 in T6N R21E, the City of Greenfield in Milwaukee County, and specifically lies on the both sides of 116th Street north of the Whitnall high School building and south of Interstate Highway 43 (I-43), with I-43 being the border on the north side. The site is also bordered on the west by a housing subdivision and on the south by school athletic fields. This property is located in western Milwaukee County less than a mile northwest of the Village of Hales Corners. This area is primarily suburban being dominated by homes and with businesses along the main highways.

Soils:

This site is on generally level to gently rolling terrain. Much of this area is low tending to be wet, and includes a small stream and intermittent drainage way. The site has four soil types present, including in order of abundance: Ozaukee silt loam, Mequon silt loam, Ashkum silty clay loam, and a type referred to as Loamy land. The Ashkum soil is only present along the stream areas, the Mequon soil on the west side of the woods, the Ozaukee soil is found in the north and southeast portions of the site, and the loamy land type is found in the pond area and directly around it. The first three of these soils have good fertility and can grow trees well, although the Mequon and Ashkum are not as well drained as the Ozaukee soil and can often be wetter sites. When drained however (such by the stream present) they can remain quite productive. The loamy land soil is generally not a good soil for growing trees.

Endangered and Threatened Species:

When preparing a forest management plan, it is important to check what endangered or threatened species might be known to be in the area, and if so how management should be adjusted to avoid negative effects on these species. A check was done of Wisconsin's Natural Heritage Inventory (NHI) which tracks known occurrences of these species by section. This property lies in Section 30 of T6N R21E, and the NHI check shows 1 species listed as special concern: a plant known as the Hooker's orchid. However the last observation date listed was 1899 and whether it is still present in the area is unknown. It must be remembered that a section is 640 acres. The occurrence that

is listed may or may not be present on this site, but any management must bear that possibility in mind. But it would be worth learning what this plant looks like and keeping an eye out for it when working on the school forest.

Archeological and Historical sites:

The Wisconsin DNR also maintains a listing of known important archeological and historical sites. If these happen to be in the area being managed, then steps must be taken to protect that site from damage. These are listed by occurrence in a legal forty. The map for this area shows no historical or archeological listing. Should the school ever become aware of any occurrence at this site, steps should be taken to protect that area.

Stand Descriptions:

When preparing a forest management plan, foresters will map the forest and divide it into unique stand types for management purposes. A stand is an area of relatively consistent vegetation that varies significantly from adjoining areas of vegetation. For example a young pine plantation might be one stand, while an area of aspen poletimber nearby would be a separate stand. They are separate stands because have separate and distinct characteristics, and management decisions will be developed independently for each. For this site, five stand types have been identified as shown on the map and described below. Normally a stand must be at least one acre in size to be considered a separate stand type, but given the nature of this property as a school forest and for educational purposes, two areas have been identified as separate stands even though they are less than 1 acre. Stands are also typically given a stand symbol that briefly identifies what the stand is like. The descriptions for the stands are as follows:

Stand 1: CH 5 – 11¹ / CH 0 – 5², a 11.6 acre stand area.

This stand type makes up the majority of this forest and is found on both sides of 116th Street in several locations. It consists of a varied mix of trees that are collectively being referred to as central hardwoods (CH). The central hardwood forest type is generally dominated by tree species that are only moderately tolerant of shade to somewhat intolerant of it. Included here are black walnut, which are found through most of the area, green ash, elm, black locust, hickory, cottonwood, and red oak, as well as a few planted conifers including Norway and blue spruce, white cedar and red cedar. The ash and elm can also be found through most of the stand, but the other tree species mentioned are patchy and only found in certain areas. The cottonwood for instance is largely in one area centrally located in the stand and a somewhat wetter site. The planted trees are mainly found along the eastern and northeastern parts of the site.

In general this stand is fairly young, with the majority of the larger trees being poletimber sized (with a diameter at breast height of 5 to 11 inches) with a volume averaging around 5 cords per acre. Mixed with this is a strong volume of sapling sized trees (with diameters less than 5 inches) that again include mainly walnut, ash and elm. The understory of this stand is generally choked with undesirable brush. A few preferable brush species are present, such as dogwood in spots, but the brush layer is strongly dominated by common buckthorn, honeysuckle, hawthorn and some Multiflora

rose. Garlic mustard was not noticed in the site visit, but could easily be present. Despite the heavy invasive brush presence, the young trees present seem healthy and vigorous and generally doing well. There currently is no sign of the Emerald Ash Borer (EAB) or other of the more prominent insect or disease pests.

Stand Objective: The management objective in this stand is to promote a healthy and diverse mix of desirable hardwood trees. Along with this would be to eliminate the exotic and invasive vegetation present, and promoting the growth of native vegetation.

Stand 2: CH 0 – 5¹ / UB, a 2.8 acre stand area.

This stand type is located in two spots on the parcel, as shown on the map. Both of these sites are fairly open with a light stocking of sapling sized hardwood trees, with the majority of the remaining area covered with upland brush, again dominated by buckthorn, honeysuckle and dogwood. The hardwood trees present are, as in stand 1, mainly walnut, ash and elm, plus some of the planted hardwoods and conifers (in the northeastern portion). As in stand 1, the trees present here appear to be doing well.

Stand Objective: As in stand one, to promote a healthy and diverse mix of desirable hardwood trees, and to eliminate undesirable invasive vegetation.

Stand 3: SW 5 – 9², a .6 (6/10) acre stand area.

Located on the east side of 116th Street and lying near and parallel to I-43, this stand is dominated by planted white spruce (SW) but also includes a few white and red pine. These trees average 12 to 15 feet tall and 4 to 6 inches in diameter at breast height. These are pulpwood sized trees (having a diameter at breast height of 5 to 9 inches) also referred to as poletimber. This area is fairly well stocked with trees, although just being 2 to 3 rows of trees. The trees are doing very well, with a healthy, vigorous growth appearance. A mowed path runs through this area. Aside from the mowed path, the understory includes invasive, exotic brush as in the previous stands.

Stand Objective: To promote the growth and development of these conifers for the visual and sound barrier they create, and for the aesthetic benefit that they offer.

Stand 4: GG/GH, a .5 (1/2) acre stand area.

This site lies adjacent to and just east of stand 3 and also generally parallels I-43. This is an open area that is dominated by upland grasses and annual broadleaf ground plants. This is not a mowed area and is a natural grassy opening. The southern edge of this stand includes the creek that flows under 116th Street and into the pond to the east. Currently this stand area is relatively free of invasive exotic brush.

Stand Objective: The objective for this stand can be developed over time, as various options are available. These options are discussed below in recommendations.

Stand 5: LM, a 1.3 acre stand area.

This stand includes the pond and the edge vegetation around it. A weir dam maintains the pond level. The vegetation around the edge is a varied mix of brush with occasional small trees which are mainly box elder. The other vegetation is quite varied but includes buckthorn, honeysuckle, cattails, dogwood and others. This strip around the pond is quite a dense layer although not tall at this point.

Stand Objective: To maintain the healthy condition of this pond and use it for teaching purposes, clearing access points through the edge vegetation to make it possible to get students closer, and possibly considering a boardwalk to enhance viewing ability of the pond ecosystem.

Management Recommendations: Included here will be management recommendations that could be employed to improve each stand. It is not expected that all of these recommendations will be utilized (although they certainly could), but more-so, they are included to describe the options available for management of these stands.

- 1) In all of the stands, the exotic, invasive vegetation could be dealt with to potentially eliminate them from the site at some point. This will be a very large task given the volume of invasive brush present and in stands 1 and 2, with the area being fairly well stocked with young hardwoods. There are several ways of killing unwanted vegetation, which I will describe here, then discuss what I believe is probably the best option.
 - a. Basal bark treatment: This treatment involves using the correct herbicide mixed with oil (we often use diesel fuel for this). Using a backpack sprayer, the applicator sprays the bottom 18 inches of the stem all the way around down to ground line with the herbicide mix. The herbicide penetrates the bark and kills the plant, top and roots, preventing any resprouting. Very effective, although time consuming and the dead plant is still there. For this application we use a 15% solution of Garlon 4 herbicide (or the generic version Element 4) mixed with diesel fuel or bark oil blue.
 - b. Cut stump treatment: This is usually a two-person operation. One person cuts the unwanted brush (or trees) with a brush saw or chainsaw, and the second person sprays the stump with herbicide. For this application we use a 50% solution of Garlon (or Element) 3 mixed with water. Spray the top and sides of the stump to kill the roots and prevent resprouting.
 - c. Foliar treatment: This application involves spraying the leaves with herbicide to kill the plant. This is normally only used on plants no taller than waist high. Larger than that uses too much herbicide and allows too much chance of the spray blowing back in the applicators face. Both Garlon (Element) 3 or 4 can be used for this application, mixed with water in a 5% solution. Some other herbicides are also possibilities for foliar application and will be necessary for some species. Honeysuckle, for instance, is not killed by the Garlon products, but can be killed very effectively using a herbicide with glyphosate as the main ingredient, or Escort herbicide. When applying foliar herbicides, a surfactant is usually included in the tank mix as

well. A surfactant aids in the herbicide's spreading well on the leaves, and adhering to them well.

- d. Brush mowing followed by foliar treatment: In stands heavy with brush but without much desirable vegetation present, it can be very effective to have the site mowed with a heavy brush mower that mulches all the unwanted vegetation. Then when the undesirable vegetation resprouts or new ones grow from seed, the site would be sprayed with a foliar herbicide application. Occasionally a follow-up herbicide treatment is done to be sure the unwanted vegetation is knocked out for the time being.

** While the brush mowing option would be tempting in stands 1 and 2 because of the volume of buckthorn in this woods, I don't see it being the option of choice because the stands have so much young hardwood growth present. The operators of these machines do have the ability to work around desirable young trees, but when there is so much present, then you end up with good trees being mowed off just so the machine can get through which defeats the purpose. I don't see foliar treatment being a strong option either since most of the buckthorn present is too large. There may be a few spots where smaller buckthorn are present in a patch that could be foliar sprayed, but most often this is not the case. I would not make the basal bark treatment my choice either given the volume of buckthorn present and the nature of this parcel. The buckthorn needs to be gone to allow for other follow-up management to occur, and to aid in the educational aspect showing a dramatic visual difference.

So my recommendation would be to primarily use cutting and stump treating to kill the undesirable brush. But because this will be creating a whole lot of cut-off stems, I think a chipper should be on site to chip up the cut stems. The chips could be stockpiled for use on the trails, just blown onto the site, or hauled away. Be aware that state law requires that any person applying a pesticide (herbicide in this case) for hire must be certified and licensed as a pesticide applicator. I will include a list of contractors that you could hire for this work, and all are licensed applicators. But if you have someone else do the work, be sure they meet the state qualifications.

A good place to purchase herbicide is through Crop Production Services (CPS). Their local representative is Rick Schulte who can be reached on his cell phone at (608) 770-4041. You can order from him with a credit card and have it shipped over in just a couple days, and Rick is a wealth of knowledge on herbicide and herbicide applications if you ever have questions.

As mentioned there may be spots with a dense growth of smaller buckthorn present. When the soil is moist, these could actually be pulled from the ground relatively easily, which would make a project for kids if desired. Just be sure the roots are coming out of the ground, not just

tearing the tops off. Otherwise these spots could be foliar herbicided as mentioned earlier.

No matter which method is utilized, be prepared to do follow-up work in the stand, as once it is opened up, new growth will certainly come on. There are many seeds on the forest floor just waiting for the opportunity to grow once they get enough sunlight. So a few follow-up herbicide treatments can make sure they unwanted brush doesn't take over again.

- 2) In stand 1, as mentioned the trees are fairly young at this point and harvesting is a long way off. However it would be possible to remove less-desirable trees to allow for the growth of more-desirable tree species. Trees that could be considered for removal would include black locust, box elder and elm. The black locust and box elder can be very invasive, have very little wildlife benefit, and have very little forest product value. The elm can be a quality hardwood, but because they die so readily from Dutch elm disease, we usually recommend cutting them from a stand to give the growing space to other desirable hardwoods that are more reliable. Both the locust and box elder would need to be treated with herbicide to prevent resprouting, but in the locust's case to also prevent suckering. Suckering is when new shoots grow from the root system of an existing tree. With locust, when a tree is cut, the roots put up a host of new suckers. So we usually kill the roots right away to prevent that. This can be done in two ways: one is the cut stump method as described earlier. The other involves girdling the tree with a chainsaw one to two inches deep to cut through the cambium layer located just under the bark. Then herbicide is sprayed into the girdle. This application uses the same herbicide mix as the cut stump mix. We usually kill the locust several months before we plan on having them harvested to make sure no suckering occurs.

This wood can be used for firewood or pulpwood. There probably isn't enough present to interest a commercial logger, but the locust makes excellent firewood and it may be possible to find someone who would be interested in cutting and purchasing the wood for burning at home.

Once the trees are cut, follow-up herbicide work will still be necessary as new locust will appear from seed, and it will take some follow-up work to keep the locust from making a strong come-back. Foliar treatment as described above would be used on the locust new growth.

- 3) Tree planting could be done in the stand 1 and 2 areas if desired, as well as the open stand 4. In stands 1 and 2 this would have to be preceded by brush removal, and in stand 1 this could follow the locust removal. In stand 4, if the decision is made to plant trees here, the grass and weeds near the new trees should be controlled for the first few years until the trees are established. This can be done using tree mats or herbicide. The local forester can discuss both of these with you if planting is planned here. Several tree species could be included in each location, such as red and white oak, black cherry, shagbark hickory, sugar or red maple, or conifers such as white pine and white or

Norway spruce. Plant the tree seedlings at least 8 feet apart, no more than 10 feet apart. Tree seedlings are typically ordered in the fall for planting the following spring. As a school forest, you can get free tree seedlings from the state nursery. These are shipped in April each spring. If the decision is made to plant trees, discuss the planting with your local Wisconsin DNR forester for specific planting recommendations.

- 4) The conifers of stand 3 do not need a great deal of care at this point, other than cutting any undesirable trees or brush that might crowd or overtop them. Giving the trees plenty of growing space will allow them to grow to their fullest potential and also be better able to withstand insect and disease attacks.
- 5) Stand 4 as mentioned above has varied directions that could be taken. One option could be to simply leave it as it is, just killing invasive vegetation that might try growing into the site. A second option was mentioned above, the possibility of planting trees in all or a portion of this area. A third possibility would be to plant and encourage a mix of prairie plants through this site. Although a small area, it could be a demonstration of prairie conditions. Prairies do need maintenance and often controlled burning is performed for this purpose. Burning may not work in this situation, but periodic mowing can serve the same purpose.
- 6) As mentioned in the stand 5 objective, some clearing of the edge vegetation can make it easier for students to access the pond and do studies of the site. This should not be too extensive as it would take away from the ponds natural appearance and function. The development of a boardwalk could also enhance the ability to study the ecosystem.
- 7) Currently there are maintained trails through this area. It would be desirable to keep maintaining these trails for ease of use for educational visits. Additional trails may be considered for added benefit.
- 8) If the decision is made to keep the stand 2 areas as more open, bird nest boxes could be put up in spots. The style would depend on the type of bird being targeted. Other wildlife practices could also be employed, such as constructing brush piles for use by small animals and birds, or maintaining a few snags in the forest for use as den trees. Currently the trees are younger and not large enough to serve well as den trees, but even leaving a few of the smaller dead trees offers habitat for woodpeckers. Leaving a few dead trees through the stand is a desirable thing.

There may well be other management practices that could be performed on this site. Feel free to discuss these with your local Wisconsin DNR forester for assistance or with questions.

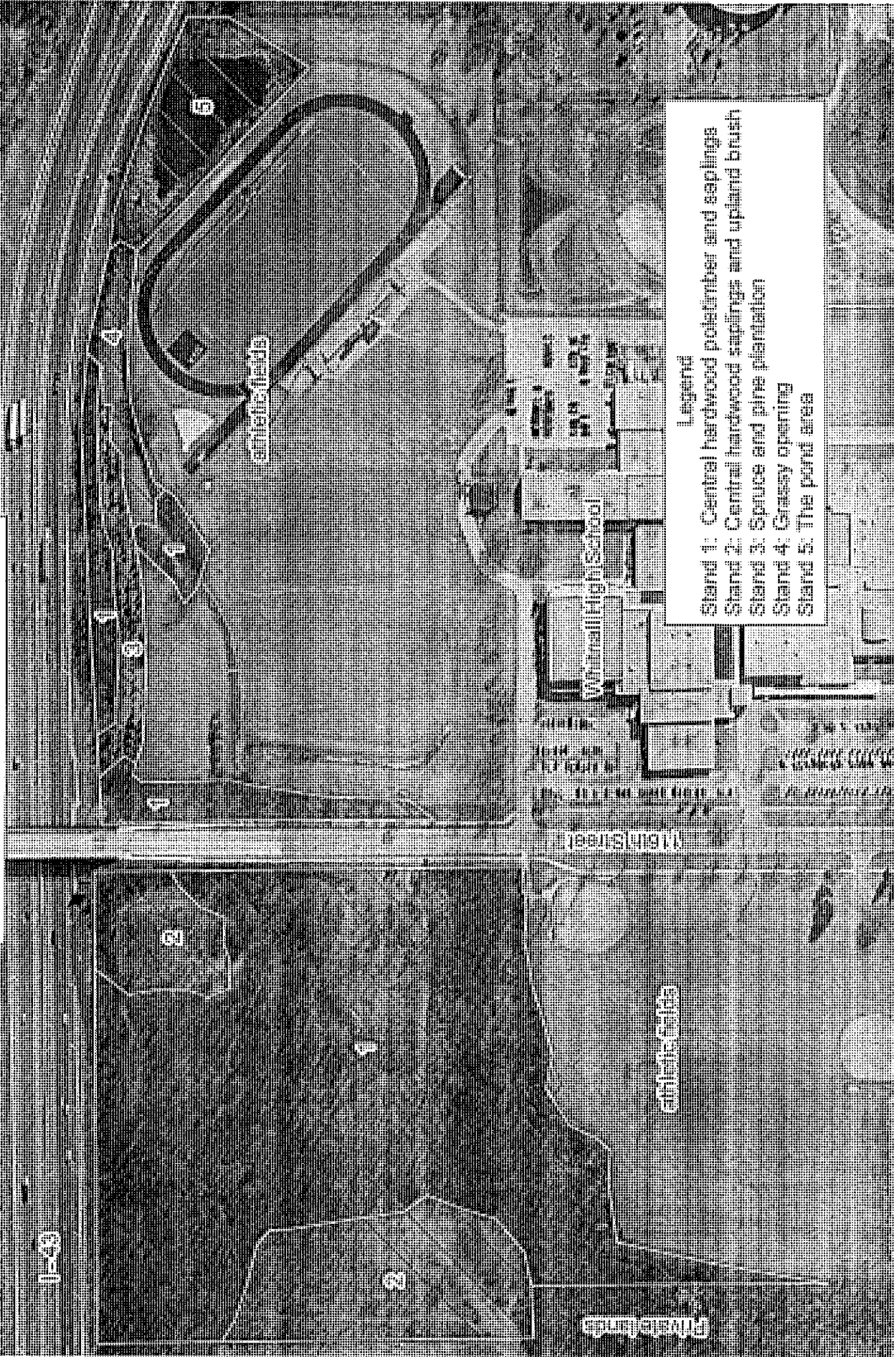
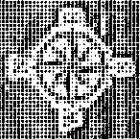
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Whitnall Nature Pod School Forest

Scale: 13 inches = 1/2 mile (1:2,437)

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Legend

- Stand 1: Central hardwood poletimber and saplings
- Stand 2: Central hardwood saplings and upland brush
- Stand 3: Spruce and pine plantation
- Stand 4: Grassy opening
- Stand 5: The point area