SCHOOL FOREST STEWARDSHIP PLAN

Prepared for: **Oak Ridge School Forest**
Independent School District #196

4350 Johnny Cake Road
Eagan, MN 55122
651-683-6970

SW 1/4 NW 1/4
Section 28, Township 27N - Range 23 in Dakota County.

2.83 Stewardship Acres
9.93 Total Parcel Acres

Prepared by:

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April 7th, 2022

Oak Ridge Elementary School's forest stewardship goals for this property are:

- To utilize the School Forest for environmental education and enhance outdoor learning and recreational opportunities.
- To maintain forest and ecological health through proper management.
- To make School Forest more accessible to teachers and students.

Property Description

(See maps)

SCHOOL FOREST PROPERTY

The School Forest portion of this property is located in the south west corner of the school parcel. The topography here is gently rolling throughout the property with a few ridge areas surrounding a lower, flat area in the center of the School Forest. The forest on this parcel is mixed planted conifers and naturally occurring hardwoods. No timber harvest management has occurred in this area though several management actions targeting buckthorn and other invasive species have occurred in recent years. The forested areas have a consistently diverse age class structure. There are very old oak trees dominating the canopy in the majority of the mixed hardwoods area. Underneath these mature trees is a variety of mixed hardwood regeneration. The planted conifer area has a mix of pine and spruce of roughly the same age. It appears that this area has not been managed since being planted. This parcel can be accessed off of Johnny Cake Ridge Road to the west, the High Line Trail from the south, and the school parking lot from the north and east. There are two official entrances to the School Forest on the east side of the School Forest. The primary entrance in the north east corner of the forest is fairly flat while the secondary entrance on the east side of the property is a wooden staircase that leads up to the highest elevation in the parcel. Both of these entrances are marked with appropriate signage.

There are two major complexes and one single soil type found on this property: Kingsley-Mahtomedi complex, Kingsley Mahtomedi-Spencer complex, and Otterholt silt loam. All of these soils are found on upland areas and are well drained to excessively well drained. Otterholt silt loam and Mahtomedi-Spencer complex soils support farming. All of these soils are associated with moraine land formations from past glaciation. Otterholt soils and Spencer soils typically support loamy upland forests. Kingsley soils support loamy upland savannas. Mahtomedi soils typically support sandy upland forests.

A check of the State Archeologist's inventory did not reveal any recorded historical features on your land. Two species were listed as rare in the DNR's Natural Heritage Information System for your property and nearby properties. The species that are listed in the NHIS database as occurring on your property are Blanding's Turtle and Rusty Patched Bumble Bee. Blanding's Turtle is a state threatened species of turtle that has state guidance on actions to avoid damaging populations that include limiting wheeled or tracked equipment usage in forested areas during May 1st to July 14th and August 8th to September 30th. Rusty Patched Bumble Bee is a federal endangered species that is protected by the Endangered Species Act. Your School Forest is located within a High Potential Zone for Rusty Patched Bumble Bee and management actions within your School Forest need to follow U.S. Fish & Wildlife Service guidance.

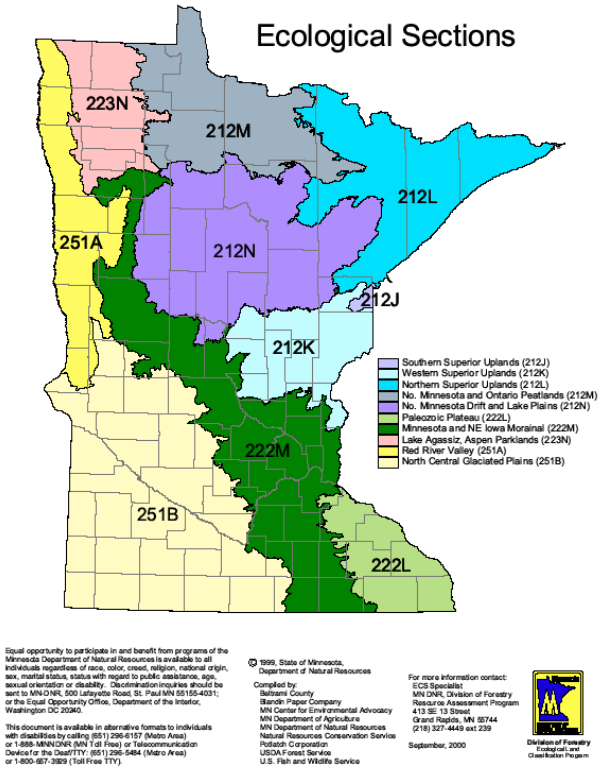
Other rare features may still exist on your property since neither this plan, nor the existing records are based on exhaustive inventories. If you believe your property might have some rare or historical features, please contact me about the process of further survey work.

INTERACTION WITH NEARBY PROPERTIES

This property is surrounded primarily by residential properties with mixed business properties and a few scattered public parcels. Directly to the south and east of the school property is city property that includes a city park and the Highline Trail, a paved pedestrian trail that is moderately trafficked.

LANDSCAPE REGION: Minnesota and Northeast Iowa Morainal Section

The enclosed Minnesota maps show our ecological landscape regions by section and subsections. The actual boundaries are not as sharp as the lines might imply. In fact, islands of one landscape region can exist inside another, but the units have basic ecological differences between them.



The purpose of providing this "landscape region" and the "interaction with nearby properties" information is to help you understand how your School Forest fits into the larger landscape and how land management decisions and activities by you or your neighbors may have an effect on the greater landscape.

St. Paul-Baldwin Plains and Moraines Subsection

DISCUSSION

The northern boundary of this subsection consists of a Superior Lobe end moraine complex (St. Croix Moraine). To the west, terraces associated with the Mississippi River separate the subsection from the Anoka Sand Plain subsection. The southern boundary coincides with the southern edge of the Rosemount Outwash Plain. This subsection is small and continues into Wisconsin. Although it is topographically low in comparison to other areas in the state, the subsection is dominated by a large moraine and areas of outwash plain. The subsection encompasses part of the seven county metropolitan area and as a result is affected by urban development.

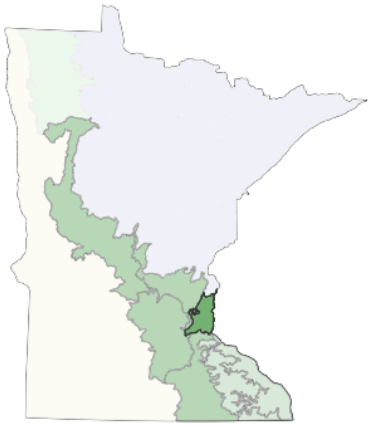
CLIMATE

Annual normal precipitation ranges from 28 inches in the north to 31 inches in the south, and growing season precipitation ranges from 12.5 to 13 inches. The average growing season length ranges from 146 to 156 days. Snowfall is relatively light.

LANDFORMS

This subsection is dominated by a Superior lobe end moraine complex. South of this moraine is a series of outwash plains associated with the Superior lobe. There are some areas of loess plain over bedrock or till in the southeastern portion of the subsection. Topography is rolling to hummocky on the moraine (steep, short complex slopes) and level to rolling on the outwash.

HYDROLOGY



The drainage network is poorly developed throughout most of the subsection. This is due to the nature of the landforms. The Mississippi River cuts through the center of the subsection. There is a well-developed flood plain associated with the Mississippi. The end moraines in the northern third have an undeveloped drainage network. The St. Croix River forms the east boundary (as well as the boundary between Minnesota and Wisconsin). The river flows into the Mississippi southeast of the Twin Cities. There are many lakes in this subsection. Most are present on the moraines.

PRE-SETTLEMENT VEGETATION

A mosaic of vegetation occurred in the subsection. Oak and aspen savanna were the primary communities, but areas of tallgrass prairie and maple-basswood forest were common. Tallgrass prairie was concentrated on level to gently rolling portions of the landscape. Bur oak savanna developed on rolling moraine ridges at the western edge of the subsection and in dissected ravines at the eastern edge. Maple-basswood forest was restricted to the portions of the landscape with the greatest fire protection, either in steep, dissected ravines or where stream orientation reduced fire frequency or severity (Albert 1993).

PRESENT VEGETATION AND LAND USE

Urban development is the primary land use. There are small areas of forest present in the eastern portion of the subsection, although these are becoming scarce as urban development continues. There is significant recreational activity along the Mississippi and St. Croix River corridors.

NATURAL DISTURBANCE

Fire is the most important disturbance within the subsection. Tornados and high wind events also created significant disturbances. Periodic flooding occurs in river and stream valleys.

CONSERVATION CONCERNS

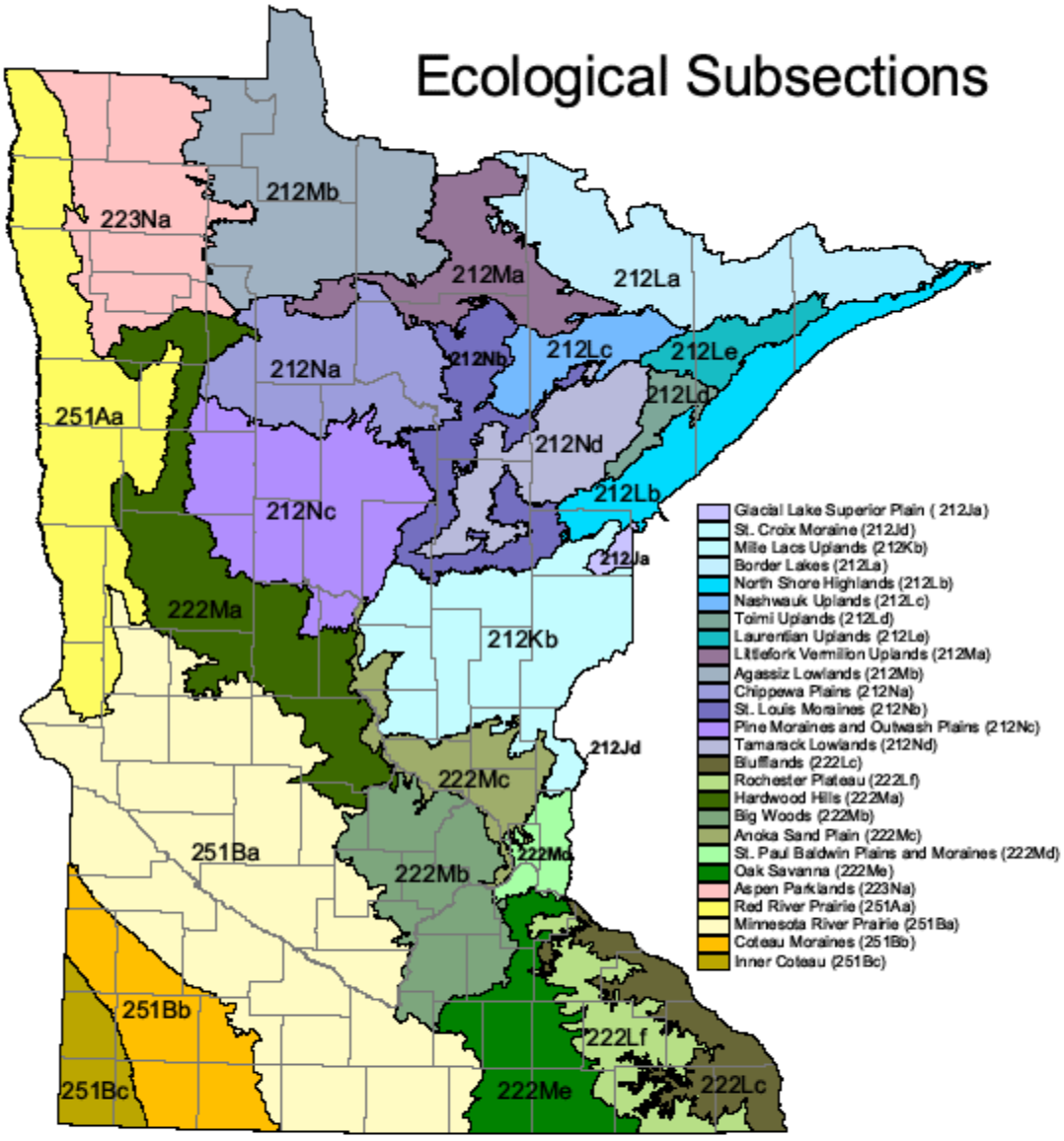
The St. Paul Baldwin Plains and Moraines encompass much of the eastern half of the Twin Cities metropolitan area, including St. Paul and its suburbs. The Mississippi River flows through the center of

this subsection, and the St. Croix River forms the eastern boundary. Both of these rivers have a profoundly vital role for wildlife. Urban land uses dominate this subsection, although small, forested areas remain, especially in parts of northern Washington County.

While there is significant interest in preserving open space, the area continues to expand rapidly, diminishing the opportunities to conserve habitat. Protection of existing wetlands is important for flood control and filtering of storm water runoff, and water quality remains a significant concern throughout the subsection. There are many recreational opportunities, especially along the large rivers and in state parks, scientific and natural areas, regional parks, and nature centers.

149 Species in Greatest Conservation Need (SGCN) are known or predicted to occur within the St. Paul Baldwin Plains and Moraines, the second most of all subsections in Minnesota. These SGCN include 74 species that are federal or state endangered, threatened, or of special concern.

Ecological Subsections



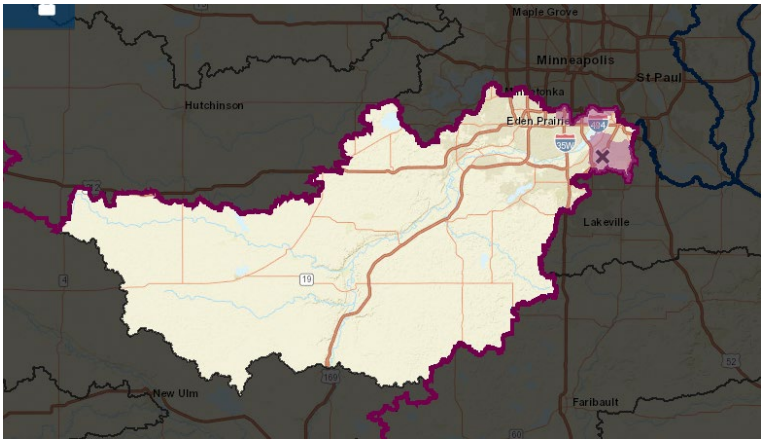
Compiled by:
Beltrami County
Blandin Paper Company
MN Center for Environmental Advocacy
MN Department of Agriculture
MN Department of Natural Resources
Natural Resources Conservation Service
Potlatch Corporation
USDA Forest Service
U.S. Fish and Wildlife Service

For more information contact:
ECS Specialist
MN DNR, Division of Forestry
Resource Assessment Program
413 SE 13 Street
Grand Rapids, MN 55744
(218) 327-4449 ext 239

September, 2000

Division of Forestry
Ecological Land Classification Program

WATERSHED & WATER QUALITY



Your School Forest Property is located in the Lower Minnesota River Watershed. This watershed has a population of 616,832 people according to the 2010 census.

The Lower Minnesota River Watershed includes the lowest reach of the Minnesota River and flows into the Mississippi River at Fort Snelling. This watershed covers 1,835 square miles and includes tributaries such as Bevens Creek, Carver Creek, Sand Creek, Nine Mile Creek, the Credit River and many other smaller tributaries. The western part of this watershed is rural while the eastern section is urban. Major cities include Bloomington, Eagan, Eden Prairie, Burnsville, and Minnetonka.

Land uses in this watershed are predominately agriculture (67%), developed areas (16%), and forest (7%). Current impairments are phosphorus, levels of sediment, bacteria, nutrients and chloride. There are also a lot of streams that have been altered within this watershed that causes water the leave the landscape at an accelerated rate and reduces wetland storage capacities.

WETLANDS

According to the National Wetlands Inventory, a resource of the U.S. Fish and Wildlife Service, your property has no wetland classifications within its boundaries though adjacent properties have wetlands that your property may impact. The adjacent important wetlands are listed below as well as a map of the area surrounding your property. Wetlands are protected by specific laws and rules to minimize their destruction or alteration because of their value to water quality and wildlife.

Wildlife utilize wetlands for a number of purposes, such as cover, forage, and nesting. Examples of wildlife are wetland birds, such as Virginia rail, sora, waterfowl, bitterns; and songbirds like common yellowthroat, sedge wren, yellow warbler, gray catbird, and red-winged blackbird. Small mammals, reptiles, amphibians, and invertebrates also can be found in this cover type and surrounding forests.

The Dakota County Soil and Water Conservation District (SWCD) is a good resource for technical, financial, and education assistance and should be contacted before implementing any management or projects in or around these areas.

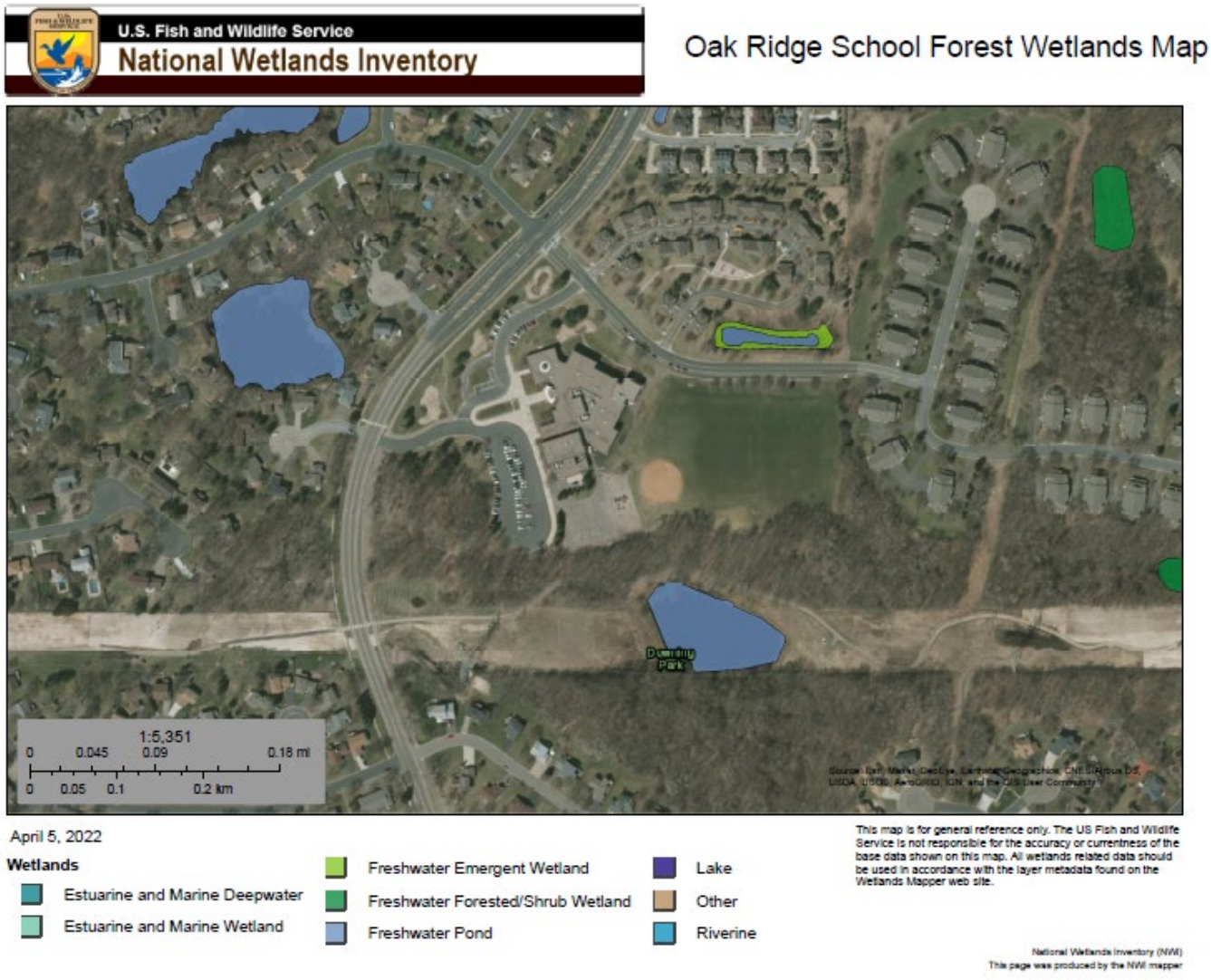
Freshwater Pond – PUBH

This classification code describes a palustrine unconsolidated bottom, permanently flooded wetland. These areas are usually open water, less than 20 acres, lack wave formed or bedrock shoreline features, and are less than 2.5 meters deep at low water levels.

Freshwater Emergent Wetland – PEM1A

This classification code describes a palustrine emergent persistent temporary flooded wetland. These areas are usually dominated by trees, shrubs, persistent emergent, emergent mosses or lichens.

- Soil/Hydrology: Surface water is present for brief periods during the growing season, but the water table usually lies well below the ground surface for most of the season.
- Vegetation: erect, rooted, herbaceous hydrophytes excluding mosses and lichens. These wetlands are usually dominated by perennial plants that are present for most of the growing season in most years.
- Common sites: Occurs in shoreline areas.



Benefits of Wetlands

- Erosion control: Wetland vegetation reduces wave damage along lakes and stream banks.
- Flood control: Wetlands can slow and retain runoff water, reducing the frequency of flooding along streams and rivers.
- Groundwater recharge and discharge: Some wetlands recharge groundwater by holding surface water and allowing it to slowly filter into the groundwater reserves. Some wetlands are discharge

areas; they receive groundwater even during dry periods, and help maintain flows in nearby rivers and streams.

- Water quality: Wetlands protect the water quality of downstream lakes, streams and rivers by removing pollutants.
- Rare species habitat: 43 percent of threatened or endangered species in the U.S. live in or depend on wetlands.
- Recreation and Education: Wetlands area a great place to canoe, hunt, fish, watch wildlife and learn.
- Economic value: Wetlands provide economic commodities such as wild rice and bait fish.

Stewardship Cover Types: Outdoor Classroom

Cover Type Number: 1
Cover Type Acres: 0.21

Cover Type Description

This cover type is primarily an open grass, mowed area that includes a small outdoor classroom gathering space with benches, School Forest signage, and a few open grown trees. This area is the primary access to the School Forest and is mostly flat. There are a few open grown Scotch pine in this area as well as a few smaller green ash and red maple trees. The area behind the benches recently had buckthorn remediation and is now more open like the remainder of this cover type.

Teachers use this space as a rallying point before and after entering the school forest and the infrastructure here is well established. This area is very accessible at all times of the year. Open areas such as this serve an important ecosystem niche for a variety of wildlife species. Maintaining both open areas and forested areas in your School Forest will help provide a variety of ecosystem types for wildlife and organisms to inhabit.

Tree Summary Data	Estimated Volume
Growth Potential .....Good (Site Index[1] 55) Stocking.....Low (Basal Area[2] = 10) Timber Quality..... Fair	Scotch Pine ……0.3 cords/acre Green Ash ……0.1 cords/acre Red Maple ……0.1 cords/acre
Total Timber Volume = 0.5 cords/acre	(Volumes not accurate for sales)

[1] Site index: an expression of forest site quality based on the expected height (feet) of dominant trees at 50 years of age.
[2] Basal area: Of a tree - the cross-sectional area (square feet) of the trunk at breast height (4.5 feet). Of an acre of forest - the sum of basal areas of the individual trees on the acre. Used as a general measure of tree distribution/density (too many/too few).

Cover Type Objectives

- Create a safe and engaging outdoor learning environment.
- Increase native plant species while removing invasive species.
- Increase wildlife habitat for educational viewing purposes.

Recommended Management Activities

- **Infrastructure:** Maintain the current infrastructure here to facilitate future educational opportunities. Periodically inspect benches, signage, and trail entrance for damage. Address maintenance concerns as soon as possible to keep this area safe for students.
- **Pruning for growth, form, safety, and health:** Pruning is done to improve structure, growth rate and form, timber value, aesthetics, tree health, and hazard reduction. Trees currently established within the high use areas in this cover type should be pruned to reduce hazards to students. If a tree limb appears to be compromised (dying twigs, large wounds, etc.), prune limb during an appropriate time of year to prevent damage from the limb falling.

- **Wildlife:** Adding various features to this area could enhance wildlife habitat.
    - Pollinator Gardens can be beneficial to many different species including the endangered Rusty Patch Bumble Bee. Creating native pollinator gardens with a variety of species that bloom throughout spring, summer, and fall can help provide a food source to pollinators, birds, and other small mammals in your area. A native plant selection table is included as an attachment to this plan.
    - Bird habitat is variable depending on the species. Create a variety of bird habitat to increase potential viewing opportunities in this area. Examples of bird habitat can include brush piles or nest boxes. Some species of birds use brush piles to hunt, roost or even nest in. Perching areas Nest boxes are helpful for many cavity nesting species. There are 40 species of birds in Minnesota that nest in tree holes. Nest boxes can be designed for specific species such as bluebirds, wood ducks, and bats. Nest boxes are helpful in areas

that lack large, old hollow trees for nesting. Nest boxes can enhance existing wildlife habitat while adding opportunities for you to see and enjoy wildlife.

- **Invasive species monitor and control:** Survey land periodically for invasive species. If invasive species are observed remove, treat, and manage for the control of those species. For more information about specific invasive species, contact your local forester.

Education

- Discuss the different goals and objectives and the concepts of diversity. Explain how different types of landscapes such as open grassy areas, forested areas, wetlands, etc. can be beneficial to different wildlife. Compare different animals and discuss why they may use different types of areas for habitat, foraging, hunting, or breeding.
- Examine the concept of endangered species through the example of Rusty Patch Bumble Bees. Discuss how habitat loss and degradation can impact species and determine actions that the school can take to make your School Forest better habitat for threatened and endangered species.
- Conduct a wildlife inventory. Discuss what habitat improvements to make to encourage wildlife diversity. Have students create a plan for habitat improvements.

Woodland Stewardship Book Reference

Chapter	Title	Page
Chapter 12	Wildlife and Forest Management	127
Chapter 13	Noise and Visual Quality	169
Chapter 13	Recreational Trail Design	177

Stewardship Cover Types: Conifer Plantation

Cover Type Number: 2
Cover Type Acres: 0.38

Cover Type Description

This is a mature forest comprised of mixed conifers with some northern hardwood species diversity. This area appears to have been planted with a variety of conifers including Scotch Pine, Jack Pine, Red Pine, White Pine, and White Spruce. Scotch Pine is not native to the United States though it was planted widely across the Midwest in the mid 1900's. White Spruce is native to Minnesota but at the very southern extent of its range in the metro area. This cover type could be transitioned to a more typical native plant community over time and serve as a demonstration of forest conversion to students.

The understory and mid-story of this area has a more typical species composition than the over-story. There is seedling to pole sized ash, maple, cherry and aspen throughout this cover type. The topography in this cover type is primarily a north facing slope. The portion of this cover type directly adjacent to the driveway of the school is a mowed strip of grass.

Tree Summary Data	**Estimated Volume**
Age..... 58 years (red pine) Growth Potential..... Fair (Site Index = 45) Stocking.....Adequate (Basal Area = 140) Timber Quality..... Good	Red Pine.....……..... 12.5 cords/acre cotch Pine..... 7.5 cords/acre Jack Pine……..…….... 6 cords/acre White Spruce……2 cords/acre White Pine……1 cords/acre Green Ash …….... 1 cords/acre Black Cherry …… 0.5 cords/acre Red Maple …… 0.5 cords/acre
Total Timber Volume = 31 cords/acre	(Volumes not accurate for sales)

Cover Type Objectives

- Encourage site appropriate tree species regeneration.
- Promote vigorous tree growth and increased species diversity.
- Create a safe and engaging outdoor learning environment.

Recommended Management Activities

- **Invasive species monitor and control:** Survey land periodically for invasive species. If invasives are observed remove, treat, and manage for the control of those species. For more information about specific invasive species, contact your local forester.
- **Timber Harvest:** Start to remove the Scotch Pine and White Spruce to open up the cover type and make room for the mid-story and understory hardwood that have naturally established here. Removing some of the conifers that are not supposed to be in this area will allow a faster transition back to a more site appropriate cover type. This can be done in a very small scale effort with removing a few trees a year.
- **Alternate Timber Option:** Do not harvest this site and allow for the natural progress of succession to proceed on site. Eventually these conifer species will give way to the hardwood regeneration though this process will take decades to occur. Even though forested stands are always moving in these transitions, one or more hardwood species will dominate and demonstrate where the stand is in the successional process once the native plant community is restored in this area.

Education

- Compare Cover Type 2 with Cover Type 3 and discuss the difference in species composition. Why do these cover types look different? How does planting different species change our forests?
- Discuss the different species and age classes within the stand. Why is having a variety of age classes and species important for forest resiliency and health?
- Look at the economic impacts of growing conifers in plantations. What products do different species provide us? Why do we need to grow trees in plantations? How does harvesting in plantations occur and what are the impacts of harvesting on the site, native plants, or wildlife?
- Conduct a “seedling and sapling search” with students to identify and record what tree species are growing in this stand.

- Decide which trees to encourage to grow and why, and monitor the succession of species. Frame this discussion through the lens of succession and how all forests are constantly moving through successional phases.
- Discuss the difference between non-native and invasive species. Think about why we would plant trees in different areas (economic, aesthetic, ecological, etc.).
- Discuss climate change and look at why White Spruce (and other species) may not be suitable in the metro area long term due to climate change. Climate change predicts Minnesota will get warmer and wetter, what does that mean for our native tree species? How much adaptability do trees have as their climate changes around them?
- Discuss invasive species and why it is important to manage for them. What happens when an invasive species moves into an area? How does that impact native plants, animals, people, soils, and water quality? Use buckthorn and Emerald Ash Borer as examples for invasive species that are impacting your School Forest.
- Conduct a tree identification exercise and use tree tags to label the trees.

Woodland Stewardship Book Reference

Chapter	Title	Page
Chapter 2	Conducting a Woodland Inventory	9
Chapter 3	How Trees and Woodlands Grow	25
Chapter 4	Regenerating Woodland Stands	33
Chapter 5	Woodland Improvement Practices	49
Chapter 6	Managing Important Forest Types – Pine	59
Chapter 7	Forest Health	103
Chapter 8	Marketing Timber	117
Chapter 9	Harvesting Timber	127
Chapter 10	Management and Marketing Non-timber Forest Products	137
Chapter 12	Wildlife and Forest Management	155
Chapter 13	Noise and Visual Quality	169
Chapter 14	Recreational Trail Design	177
Chapter 16	Climate Change and Your Woodland: Assessing Risk and Adapting to Change	225

Stewardship Cover Types: Mixed Hardwoods

Cover Type Number: 3
Cover Type Acres: 2.13

Cover Type Description

This cover type is the primary portion of the School Forest and has largely been unmanaged as a woodlot. There is an older cohort of primarily mature, open grown oak trees. There is a variety of mid-story of mixed hardwoods including maple, cherry, ash, aspen, and a few scattered conifers. The mid-story trees range in size from seedlings to medium sized trees. The western edge of this cover type has more aspen than the rest of the stand but is still mixed in composition. The oak trees in this type are providing a valuable food crop (acorns) for wildlife. Some deer and rabbit sign were found in this cover type.

Part of this area is currently participating in the Cover It Up project with the U of M to determine new ways of competing with buckthorn regeneration. Much of this area has buckthorn that has been remediated to different extents. The buckthorn is much more dense and established on the west and south sides of this cover type while the north and east portions have been remediated more effectively.

A light trail system wanders through this cover type though the entire cover type gets foot traffic both on and off the trail system. There are a few stick play structures in this cover type as well as an observation station with a lens to look at flora and fauna. The stair case that serves as a secondary access to the School Forest is on the east side of this cover type. The topography is level closer to the north east corner of the property then slopes upwards to the south and west of the property.


Tree Summary Data	Estimated Volume
Age..... 96 years (Red Oak) Growth Potential.....Good (Site Index = 50) Stocking..... Fair (Basal Area = 120) Timber Quality..... Fair	Red Oak …….....…. 15.5 cords/acre White Oak ……..... 8 cords/acre Quaking Aspen ……..... 4 cords/acre Sugar Maple……. 1 cords/acre Red Maple…… 1 cords/acre Green Ash……. 0.5 cords/acre
Total Timber Volume = 30 cords/acre	(Volumes not accurate for sales)

Cover Type Objectives

- Maintain as a healthy northern hardwood stand.
- Promote vigorous tree growth and increased species diversity.
- Create a safe and engaging outdoor learning environment.

Recommended Management Activities

- **Invasive species monitor and control:** Survey land periodically for invasive species. If invasives are observed remove, treat, and manage for the control of those species. For more information about specific invasive species, contact your local forester.
- **Planting:** This stand is has small areas that are understocked at this time and could benefit from an under-planting. In an under-planting, additional seedlings are planted underneath the existing canopy during the spring time in more open and sparse stands to allow for additional tree growth and higher future stocking levels. As this stand is in a further stage of succession, you could plant shade tolerant, long lived species such as white pine and red maple in order to fill in the understocked areas in an appropriate way. Please contact your local forester if you are interested in doing a planting.
- **Hazard Trees:** Periodically survey for trees that may be a hazard to students and work on mitigating those hazards. If a tree has a dead or broken limb in a high use area, the limb should be removed in a safe way. Other hazard tree issues to watch out for are trees that are leaning after a storm, trees that appear unhealthy, trees that are struck by lightning or have been damaged in other ways. Emerald Ash Borer (EAB) can impact the ash trees in your School Forest. Once a tree has been killed by EAB, it can become very brittle and be prone to snapping off. Ash trees impacted by EAB should be monitored and removed safely to prevent injury or damage.

Education

- Compare Cover Type 3 with Cover Type 2 and discuss the difference in species composition. Why do these cover types look different? How does planting different species change our forests?

- Discuss the different species and age classes within the stand. Why is having a variety of age classes and species important for forest resiliency and health?
- Compare the over story trees to the regeneration in this cover type. Discuss how succession is visible in this stand and what might happen to the stand throughout time moving forward.
- There is evidence with all of the mature open grown oak trees that this site once was more of an open oak savannah than a closed forest. Discuss the role of fire in shaping the landscape and how your School Forest has changed throughout decades of fire suppression.
- Conduct a "seedling and sapling search" with students to identify and record what tree species are growing in this stand.
- Decide which trees to encourage to grow and why, and monitor the succession of species.
- Discuss invasive species and why it is important to manage for them. What happens when an invasive species moves into an area? How does that impact native plants, animals, people, soils, and water quality? Use buckthorn and Emerald Ash Borer as examples for invasive species that are/can impact your School Forest.
- Conduct a tree identification exercise and use tree tags to label the trees.

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Chapter 16	Climate Change and Your Woodland: Assessing Risk and Adapting to Change	225

Stewardship Cover Types: Upland Grass

Cover Type Number: 4
Cover Type Acres: 0.11

Cover Type Description

This cover type is a mowed grass field that appears to be maintained by the city along with adjacent city land. This area is adjacent to the High Line Trail, a paved walking trail that follows a power line right of way in the city of Eagan. The boundary of the School Forest does include a small sliver of this area. Because this area is along Johnny Cake Road and is not necessarily being managed by the school at this time, there are many potential options for enhancing and utilizing the area more.

Cover Type Objectives

- Promote plant diversity to enhance the area for wildlife.
- Utilize this space as a portion of your School Forest.
- Create a safe and engaging learning environment.

Recommended Management Activities

- **Watch for opportunities to promote plant species diversity:** If this area stops being periodically mowed, there will be young stems of woody plant species that could be encouraged. Locate preferred shrubs and or trees to release from competing vegetation, on this site those would likely be seedling sized oak, maple and aspen. Remove competing vegetation within at least a 2 to 3 foot distance, and any other stems that are directly over-topping (shading) the preferred tree. You can use hand tools or power tools to remove the competing vegetation in order to give the desired trees freedom to grow.

- **Wildlife:** Adding various features to this area could enhance wildlife habitat.
    - Pollinator Gardens can be beneficial to many different species including the endangered Rusty Patch Bumble Bee. Creating native pollinator gardens with a variety of species that bloom throughout spring, summer, and fall can help provide a food source to pollinators, birds, and other small mammals in your area. A native plant selection table is included as an attachment to this plan.
    - Bird habitat is variable depending on the species. Create a variety of bird habitat to increase potential viewing opportunities in this area. Examples of bird habitat can include brush piles or nest boxes. Some species of birds use brush piles to hunt, roost or even nest in. Perching areas Nest boxes are helpful for many cavity nesting species. There are 40 species of birds in Minnesota that nest in tree holes. Nest boxes can be designed for specific species such as bluebirds, wood ducks, and bats. Nest boxes are helpful in areas

that lack large, old hollow trees for nesting. Nest boxes can enhance existing wildlife habitat while adding opportunities for you to see and enjoy wildlife.
    - A great option for this area could be to add a nesting platform to encourage a larger bird such as an Osprey to nest in this area. Your School Forest is fairly close to several bodies of water and could serve as a potential nesting spot for a larger bird of prey. Instructions on building a nesting platform can be provided by the DNR at request.
- **Invasive species monitor and control:** Survey land periodically for invasive species. If invasive species are observed remove, treat, and manage for the control of those species. For more information about specific invasive species, contact your local forester.

Education

- Discuss the different goals and objectives and the concepts of diversity. Explain how different types of landscapes such as open grassy areas, forested areas, wetlands, etc. can be beneficial to different wildlife. Compare different animals and discuss why they may use different types of areas for habitat, foraging, hunting, or breeding.
- Discuss why outdoor recreation is important and how urban trails like the High Line Trail offer opportunities for people to engage with the outdoors. Observing levels of use on the trail throughout the year can help students understand the importance of accessible outdoor recreation opportunities.
- Examine the concept of endangered species through the example of Rusty Patch Bumble Bees. Discuss how habitat loss and degradation can impact species and determine actions that the school can take to make your School Forest better habitat for threatened and endangered species.
- Conduct a wildlife inventory. How does the wildlife here differ from the wildlife in the forested areas? Discuss what habitat improvements to make to encourage wildlife diversity. Have students create a plan for habitat improvements.

Woodland Stewardship Book Reference

Chapter	Title	Page
Chapter 12	Wildlife and Forest Management	127
Chapter 13	Noise and Visual Quality	169
Chapter 13	Recreational Trail Design	177

PROPERTY-WIDE PROJECTS

Recommended Management Activities

- **Invasive species monitoring and control:** Be aware and be on the lookout. Invasive species are species that are not native to Minnesota *and* cause economic or environmental harm or harm to human health. Minnesota's natural resources are threatened by a number of invasive species. Go to this website http://www.dnr.state.mn.us/invasives/index.html to learn more and monitor your property for unusual invaders. No invasive species have been observed here yet however, due to the close proximity of your school forest to a state highway, there is increased risk for invasive species establishment.
- **Trail Maintenance:** Maintain the existing trails for management access and educational tours. Trails offer the opportunity for a variety of activities. They allow recreational access on foot, horseback, skis, or recreational vehicles. Multi-purpose recreational trails should have gentle curves to eliminate long views. The native soil base is often adequate. Trails should avoid wetlands and should be seeded to prevent erosion. To help prevent soil erosion on newly constructed or repaired trails, all disturbed areas exposing bare soil should be prepared and seeded with a grass mixture to stabilize the soil. The seedbed preparation may involve disking and/or dragging. The grass mixture should include clover to provide forage for wildlife.

  The quality of a trail will depend largely on the maintenance it receives. The goal of maintenance is to continue to provide a safe and stimulating recreational experience and to prevent degradation of the trail environment. Trail maintenance includes trail bed stabilization, vegetation management, and weed control. Inspections of the trail should be done periodically to check the need for clearing of unwanted vegetation, repairing the trail bed, correcting erosion problems, and mowing.

  These trails will also serve as important habitat for wildlife if properly maintained. Grassy, herbaceous openings are important to many species of wildlife, especially in heavily forested areas. Herb and forb seeding involves improving wildlife habitat through the sowing of perennial and annual grasses and herbs. In most cases, the site should be prepared for the seeding in much the same way that a field is prepared before planting. Debris (such as logging slash) and competing vegetation should be removed and/or controlled. A seed mix that is suitable for the soil type and geographic area of the state should be used. Contact your forester or wildlife manager for details on site preparation and seed mixes.

- **Firebreaks:** Protection of your property from wildfire can be critical in wildfire prone areas. Well-designed and maintained firebreaks can also serve as access roads or hiking paths through the property. To provide adequate protection, firebreaks need to be kept free of vegetation from roughly April 1st to June 1st and August 15th to October 31st each year during wildfire season. Firebreaks should be an integral part of the management plan in areas with higher fire potential.

  There are two categories of firebreaks, perimeter and interior. Perimeter firebreaks surround the management area, while interior breaks divide the property into parcels. Firebreak construction is most important along public roads where ignition sources are not controlled by the landowner. Firebreaks can be either breaks made up of a strip of land with mineral soil exposed, or a "fuel break" where the grass is kept mowed short to provide a disruption in fuel continuity. The fuel and firebreaks can also be incorporated into the road system of the property. Maintenance should include annual disking or mowing. Maintenance of the fuel and firebreaks should occur in the fall to provide the most protection for both fall and the following spring's fire season.

General Wildlife Habitat Recommendations

- Install nest and shelter boxes for bats, terrestrial birds, waterfowl, butterflies and pollinators and/or nesting platforms for larger birds. Maintain them annually.
- Mast-producing (fruits, nuts, seeds) trees and shrubs attract many different species of wildlife. Plant only native species that are locally adapted to the soils and climate (as opposed to exotic, non-native species). Birds particularly favor shrubs and small trees like highbush cranberry (Viburnum trilobum), juneberry (Amelanchier sp.), elderberry (Sambucus canadensis), cherries (Prunus sp.), dogwood (Cornus sp.), hazelnut (Corylus americana), mountain ash (Sorbus americana), American plum (Prunus americana), hawthorn (Crateagus sp.) and nannyberry (Viburnum lentago). Desirable hardwood trees include oaks (Quercus sp.), hickories (Carya sp.), and basswood (Tilia americana). Plant species appropriate for your landscape area.
- A diversity of forest types and age classes benefits a wide variety of species of wildlife. Thinning crowded trees creates more structural diversity (tree heights) by having a variety of ages in the forest. Greater structural diversity provides habitat for more species of wildlife. Retain old/over mature trees (in groups or individuals) that are utilized by certain species of wildlife. Older trees contain cavities that are utilized by a myriad of wildlife. Also preserve younger, brushy areas, especially at the edge of the forest, that provide habitat for a different suite of species, like common yellowthroat, flycatchers, and American woodcock.
- Create brush piles and coarse woody debris (such as logs and large branches) when possible. Logs and rotting material on the forest floor provide important micro-habitat for mosses, lichens, fungi, and insects, as well as cover for small mammals, reptiles, and amphibians. Many species of wildlife utilize brush piles for cover, including rabbits, chipmunks, woodchucks, coyotes, and songbirds. Brush piles can be an easy way to improve a stand's structural diversity.
- Snags and Den Trees - Dead and dying trees are very important for woodpeckers, chickadees, nuthatches, bluebirds, squirrels, bats, wood ducks, furbearers, and many other animals. Leave most dead trees or cavity trees standing in situations where there is no threat to human safety or spread of insects or diseases. Also, consider reserving some live large-diameter trees for future snags (cottonwood, for example). You can create snags by girdling (cutting through the bark all the way around the tree) undesirable trees.

Additional Education

- Learn how invasive species spread and discuss the concepts of the PlayCleanGo.org initiative to prevent spreading them in your School Forest.
- "Adopt a Spot" by classroom, grade or other group to monitor and actively manage invasive species and new tree plantings.
- Discuss the concepts of wildfire and the purpose of firebreaks. Get teacher resources on wildfire prevention from the MN DNR wildfire webpage: https://www.dnr.state.mn.us/education/wildfire/index.html or by contacting your DNR Forester or the School Forest Program.
- With your students, evaluate the trail system to identify where improvements might be needed or new trail established. Have the students help plan the trail system for their learning purposes and for recreation.

Additional Information

Below is additional information for some of the recommendations in your plan. This is not all inclusive but provides some things to consider as you proceed to implement your management plan and outdoor education activities.

ADA Requirements

Consider ADA requirements when developing trails or other areas to be accessed for outdoor learning purposes.

Ash Management

Emerald Ash Borer (EAB)

Emerald ash borer is a fairly new and serious pest to Minnesota's ash trees having been found in St. Paul in 2009 and has been continually spreading since then. Ash is a very common species planted on school grounds and in residential areas and is also common in native habitats and may be found on your School Forest property. Emerald ash borer cannot currently be eradicated and is expected to have a significant impact on our boulevard, backyard, parks and natural ash tree resources, much like Dutch elm disease. Visit the MN DNR EAB webpage at https://www.dnr.state.mn.us/invasives/terrestrialanimals/eab/index.html.

BioBlitz

A BioBlitz is an activity in which teams of volunteer experts, families, students, teachers, and other community members work together to find and identify as many species of plants, animals, microbes, fungi, and other organisms as possible in your School Forest. Consider hosting a BioBlitz to learn more about what is there and record changes over time if you do this on an annual basis. Learn more about the BioBlitz at https://www.nationalgeographic.org/projects/bioblitz/.

Hazard Trees

Reference the USDA Forest Service publication "How to Recognize Hazardous Defects in Trees" at https://www.fs.usda.gov/naspf/publications/how-recognize-hazardous-defects-trees. A "hazard tree" is a tree with structural defects likely to cause failure of all or part of the, which could strike a "target" that can be a **place** where people (students) gather such as an interpretive sign along a trail, designated learning area, garden or a **structure** such as a building, deck or fence for example. Monitor your trees and ask for assistance from your DNR Forester if you have any concerns.

Amur Maple

No Amur Maple was seen on your property but it is a common issue in the south metro. Stay vigilant for this invasive on your School Forest. Amur maple is a small tree up to 20' high with a broad crown. The leaves are opposite, longer than wide and have three shallow lobes and double toothed edges, turning a brilliant red in fall making it easy to identify. It displaces native shrubs and understory trees in open woods, and shades out native grasses and herbaceous plants in savanna habitat. It is a prolific seed producer and resprouts easily from the cut stump.

For more information on Amur maple, reference the MN DNR webpage: http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/amurmaple.html.

Buckthorn

Buckthorn removal projects have occurred in the School Forest and should continue to be implemented as time and resources allow. The first priority is to identify and remove female seed-producing plants. The second priority is to monitor previous removal sites for sprouting and/or seeding and continue to remove any regeneration**.** When removing buckthorn, make sure that no other invasive species are overlooked and left to further invade the area once the buckthorn is removed.

Reference the MN DNR publication "Buckthorn: What You Should Know. What You Should Do" at http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/buckthorn/index.html for more information on best methods to control and manage buckthorn as well as planting native replacement species. Hard copies can be obtained through the DNR School Forest Program.

NOTE: Buckthorn is the only green-leafed deciduous shrub/tree in the forest in November. Late-fall into early winter is an easy time to identify and control.

Garlic Mustard

Garlic mustard is becoming more common throughout Minnesota. Identifying and removing garlic mustard is important to contain its spread. One pathway the tiny seeds take is through soil attached to footwear.

Garlic mustard is a significant ecological threat by spreading into high quality forests and woodlands, upland and floodplain forests, not just into disturbed areas. Invaded sites undergo a decline in native herbaceous cover within 10 years. Garlic mustard alters habitat suitability for native insects and thereby birds and mammals.

For more information on garlic mustard, reference the MN DNR webpage: http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/garlicmustard.html for information on best methods to control and manage garlic mustard as well as planting native replacement species.

Honeysuckles

No exotic honeysuckles were seen on your property however they can be a common problem in the south metro. Stay vigilant for invasives including exotic honeysuckles. Exotic honeysuckles replace native forest shrubs and herbaceous plants by their invasive nature and early leaf-out. They shade out herbaceous ground cover and deplete soil moisture. The seeds are readily dispersed by birds, making them very invasive. Some research suggests that the plant inhibits the growth of other plants in its vicinity. These species were introduced to North America as ornamental shrubs and beneficial to wildlife.

For more information on exotic honeysuckles, reference the MN DNR webpage: http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/exotichoneysuckles.html

Oak Wilt

Oak wilt is an aggressive disease that affects all species of oaks (Quercus spp.) found in Minnesota. It is caused by a nonnative fungus *(Ceratocystis fagacearum)* that invades the water vessels of oak trees and eventually kills most infected trees. In the United States, oak wilt is found in most northeastern states and in Texas. In Minnesota, oak wilt is typically found in the southern half of the state. Avoid damaging oaks between April 1st and July 30th.

For more information on oak wilt in MN, reference the MN DNR webpage: https://www.dnr.state.mn.us/treecare/forest_health/oakwilt/index.html

Poison Ivy (native)

Western Poison Ivy is on the noxious weed list for Minnesota due to its toxic, rash-producing properties, as well as its propensity to form large colonies from underground rhizomes. It is a smallish, nonclimbing shrub usually about knee high, with a single stem and only a few stubby branches or no branches at all. The leaves can be relatively large but always with three leaflets that are shiny and are large-toothed along the edges. The sap contains a toxic oily compound (3-n-pentadecyl-catechol) that is found in the leaves, flowers, stems, and roots. If any portion of the plant is bruised or broken, the poison may exude onto the surface, which is how people typically come in contact with it.

You should not touch or burn poison ivy. For the best control method you should apply herbicide. You can pull plants if wearing gloves and protective arm and leg coverings. Restricting access is another way reduce contact.

For more information on Western poison ivy, reference the MN DNR webpage: http://www.dnr.state.mn.us/trees_shrubs/deciduous/poisonivy.html

School Forest Committee Objectives

The preceding current conditions and management objectives sections of the Woodland Stewardship Plan provide a current picture, as well as a vision for the future, of Finlayson School Forest. This section outlines the steps necessary to bring the School Forest from the current picture to the desired future state of the site.

- Annually appoint a School Forest Management Committee to guide the development and continued visioning of the School Forest.
- Review the goals of the Woodland Stewardship Plan annually to update completed activities, current conditions, redefine goals and objectives, identify new opportunities and activities, and review and update the "Stewardship Projects Summary" timeline table (see below) as needed.
- Using the management timeline, develop an annual plan of work for the School Forest, which outlines the steps that will be taken during the current year to meet one or more of the objectives outlined in this Woodland Stewardship Plan.
- At the completion of the year, submit the requested annual report to the School Forest staff that highlights the activities, the steps taken, and objectives addressed during the year. This report should also document any unexpected outcomes or difficulties in meeting the stated objectives.

RESOURCES AND PARTNERS

The following list is not all inclusive, but lists some of the many resources and partners that may be able to provide technical or financial assistance, volunteer assistance, or information to help you reach your management goals and educational needs.

Primary:

- Minnesota Department of Natural Resources (DNR): www.mndnr.gov
    - DNR School Forest Program
        - Karen Harrison, Karen.Harrison@state.mn.us, 651-259-5903
        - https://www.dnr.state.mn.us/schoolforest/index.html
    - DNR Forester
        - Madisson Masucci, madisson.masucci@state.mn.us, 651-539-3316
        - https://www.dnr.state.mn.us/forestry/index.html
    - DNR Community Forestry: Information on tree care, proper pruning, planting, etc.
        - https://www.dnr.state.mn.us/forestry/urban/index.html

Additional:

Boy and Girl Scouts or other youth programs with a volunteer component to assist with projects
Civic organizations
Conservation Corps of MN and IA
Local businesses
Parents
UMN Master Volunteer Programs: Master Gardener, Master Naturalist, Tree Care Advocate, Master Woodland Owner

STEWARDSHIP PROJECTS SUMMARY

Priority Level	Cover Type	Map Label	Project Prescription	Acres
1	Property-Wide	All	Continuously monitor for invasive species, plan and implement control measures as appropriate.	2.83
2	Mixed Conifers	1	Remove Scotch Pine and White Spruce to encourage succession to suitable tree species	0.38
3	Mixed Hardwoods	3	Planting for species diversity and stocking levels	2.13
4	Upland Grass and Outdoor Classroom	7	Install native wildflowers in pollinator garden areas to create habitat for bees, butterflies, and other pollinators	0.32
5	All	All	Create or install wildlife habitat features such as bird, bat, and butterfly houses as desired	2.83
On-going, Spring and Fall	Property-Wide	All	Evaluate hazard trees along trail system and near facilities. Remove potential hazard trees.	2.83
On-going / Annual	Property-Wide	All	Evaluate trail and learning area needs	2.83
On-going / Annual	Property-Wide	All	Monitor for forest insect and disease problems, contact your DNR Forester with concerns.	2.83
On-going / Annual	Outdoor Learning Areas and Trail System		General monitoring & maintenance of all trails and structures, clearing & leveling: hazard trees, hazardous plants, tree pruning, trail system, etc.	2.83

Oak Ridge School Forest

Oak Ridge School Forest
4350 Johnny Cake Road
Eagan, MN 55122
651-683-6970

Cover Type Map for School Forest
1: Outdoor Classroom (0.21 acres)
2: Mixed Conifers (0.38 acres)
3: Mixed Hardwoods (2.13 acres)
4: Upland Grass (0.11 acres)

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Feet

April 7th, 2022

DEPARTMENT OF NATURAL RESOURCES