# WIKLUND WILDLIFE PRESERVE

## Natural Area Management Plan

*Prepared for*:

Aina Wiklund
12110 Bacardi Ave
Rosemount, MN 55068
T115N, R19W, NWNE Section 16
Rosemount, Dakota County, Minnesota
&
Metro Greenways Program
Minnesota Department of Natural Resources
1200 Warner Road
St. Paul, MN 55106
&
Rosemount Parks and Recreation
13885 South Robert Trail
Rosemount, MN 55068-3438
&
Dakota County Farmland and Natural Area Program
Office of Planning
14955 Galaxie Avenue
Apple Valley, MN 55124

*Prepared by*:
Tom Lewanski and Karen Schik
Friends of the Mississippi River
46 East Fourth St, Suite 606
St. Paul, MN 55101
Ph: 651-222-2193

February 14, 2007

This Natural Area Management Plan has been reviewed and approved by:

Ms. Aina Wiklund_____ date_____

Dan Schultz, City of Rosemount _____date_____

Kate Drewry, DNR _____date_____

Al Singer, Dakota County _____date_____

**Table of Contents**


*Note: All acreage and distances referred to in this document are approximate.*

# EXECUTIVE SUMMARY

In 2000, Ms. Aina Wiklund attended public meetings held as part of the planning phase of Dakota County's Farmland and Natural Areas Project. Based what she heard at these meetings, Ms. Wiklund thought the program might be a good way for her to achieve her goal of permanently protecting her property. Thus began a series of meetings between Ms. Wiklund, her attorney, and the other project partners.

The Wiklund property provides important wildlife habitat. It is part of a larger wildlife corridor as described in the Northern Dakota County Greenway and is also part of the Metro Wildlife Corridors Project. In addition, the Dakota County Farmland and Natural Area Program identified the property as containing important natural areas, and the City of Rosemount has included in its comprehensive plan a nature-based park near the Wiklund property.

The project, which will be referred to as "the property," consists of 26 acres located in the northern part of the City of Rosemount. The entire property is protected by a conservation easement held by the Department of Natural Resources. The southern 16 acres of the property will be owned by the City of Rosemount and will be referred to as the "City Wildlife Preserve" while Ms. Wiklund will own the northern 10 acres, which will be referred to as the "Home Site."

This Natural Area Management Plan focuses on the following two aspects of managing the entire property:

- A plan for restoring, enhancing, and managing the existing natural areas;
- Guidelines for land use.

Prior to European settlement of the Rosemount area, the property was likely covered by oak savanna and at least one wetland. About a third of the property was converted to agricultural use and a home site was established. Today, the property contains 16.3 acres of oak woodland-brushland, 7 acres of hayfield, and 2.7 acres of buildings, lawn, and gardens. This document describes the plan for enhancing the ecological health of the oak woodland-brushland and restoring the hayfield to prairie. In addition, the document describes what activities are allowable on the City Wildlife Preserve and Home Site portions of the property.

**Landowners**: Aina Wiklund
12110 Bacardi Ave
Rosemount, MN 55068
651-423-2762

and

City of Rosemount
c/o Dan Schultz
13885 South Robert Trail
Rosemount, MN 55068-3438
651-332-6012

**Conservation Easement held by:** MNDNR, Metro Greenways Program c/o Kate Drewry, 1200 Warner Road, St. Paul, MN 55106, with a protection clause for Dakota County.

**Property location**: T115N, R19W, NWNE Section 16
Rosemount, Dakota County, Minnesota

**Parcel size**: 26 acres

| Existing and Proposed Land Cover Changes at Wiklund Property | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Existing Land Cover** | **Total Acres** | **Proposed Land Cover** | **Home site ac** | **City Wildlife Preserve ac** | **Total ac** |
| Hayfield | 7 | Mesic Prairie | 2 | 5 | **7** |
| | | | | | |
| Oak Woodland-brushland (includes wetlands) | 16.3 | Oak Woodland-brushland | 4.6 | 7.5 | **12.1** |
| | | Oak savanna | 0.7 | 3.5 | **4.2** |
| | | | | | |
| Buildings/lawn area | 2.7 | Buildings/lawn area | 1.2 | | **1.2** |
| | | Oak Woodland-brushland | 1.5 | | **1.5** |
| **Total** | **26** | | **10** | **16** | **26** |

# ACKNOWLEDGEMENTS

Many people and several organizations worked closely to permanently protect the Wiklund property. This project is a shining example of how a strong partnership of state, county, and local governments, private landowners, and non-profits can work together toward the common goal of protecting important natural areas for current and future generations.

We extend a special thank you to Ms. Aina Wiklund for her vision and commitment to protecting and improving the natural qualities of her property. Her faith and trust in the partners was important to the success of the project. Ms. Wiklund's strong land ethic makes her a role model for other landowners. Her actions will benefit the plants, wildlife, and area citizens for many, many years. Mr. Barry Fernald, Ms. Wiklund's attorney, also played an important part in the project. His guidance and vision were crucial to keeping the project headed in the right direction. His sage advice reminds us that a private citizen landowner can "do well while doing good."

We are especially grateful to Ross Sublett and Kate Drewry of the Metro Greenways Program at the Minnesota Department of Natural Resources, Al Singer of Dakota County's Farmland and Natural Areas Program, and Dan Schultz and Tom Schuster of the City of Rosemount, all of whom have added their considerable talents to our work at Friends of the Mississippi River. Each person's expertise and experience made the project not only possible but enjoyable as well. We also greatly appreciate the finely honed editing skills of Connie Lanphear.

Funding for this project was provided by the Metro Greenways Program at the Minnesota Department of Natural Resources, the Dakota County Farmland and Natural Area Program, the City of Rosemount, and Ms. Aina Wiklund. Thank you to the SKB Foundation for providing funding for the development of this management plan.

Tom Lewanski and Karen Schik
*Friends of the Mississippi River*

# INTRODUCTION

This Natural Areas Management Plan presents the site analysis and management plan for the Wiklund Property within the City of Rosemount. At this writing, the property constitutes 16.3 acres of oak woodland-brushland that includes a wetland and 7 acres of hayfield, while the remaining 2.7 acres contain buildings, manicured lawn, and gardens.

The property has two components: the City Wildlife Preserve and the Home Site. The Wildlife Preserve will be owned by the City of Rosemount and will be managed as a natural area. The Home Site will be owned by Ms. Aina Wiklund and consist of two tracts. The residence tract will contain the home and corresponding yard, gardens, and outbuildings. The natural area tract will be managed as a natural area.

The Minnesota DNR holds a conservation easement over the entire property. Dakota County is a written party to the easement.

This Natural Areas Management Plan details management and restoration activities for the oak woodland-brushland and for the hayfield. This document and its management plan can be changed only by written agreement by both the landowners and easement holders.

This plan was developed to:

- Identify the existing condition of natural communities on the property;
- Identify management and restoration goals and target natural communities;
- Enhance the wildlife habitat value of the property;
- Document allowable uses and activities of the property.

**Management Goals for the Property:**

- Improve its wildlife habitat value;
- Improve its ecological health and role in the Northern Dakota County Greenway/Wildlife Corridor that links Lebanon Hills Regional Park with the Mississippi River at the Pine Bend Bluffs Natural Area;
- Restore the 7-acre hayfield to native prairie;
- Maintain and enhance the quality of the wetlands;
- Improve the health of the existing 16.3-acre oak woodland-brushland;
- Create a model for responsible land stewardship;
- Provide educational opportunities for area residents that are compatible with sustaining natural community function and integrity;
- Provide safety and privacy for the resident of the Home Site;
- Utilize this property to guide construction and surface water management activities on adjacent land (if developed) in a manner that protects and fosters natural community establishment;
- Utilize this property to guide the City of Rosemount in future park acquisition and dedication associated with development on adjacent land, to enhance and expand the ecological functions of the property and of the corresponding wildlife corridor/greenway.

**Public Use Of The Property**
The City Wildlife Preserve will provide restricted nature observation for public educational purposes, but is not meant for recreational activities. There will be no developed trails, restrooms, or other constructed facilities. Pets will not be permitted. Any activity that degrades or damages the resources – air, water, soil, plants, animals, and rocks – will not be allowed.

The Home Site will be privately owned and there will be no public access or use except by permission of the owner.

# SITE DESCRIPTION AND HISTORY

## Location and Local Context

The 26-acre Wiklund property is located 13 miles south of St. Paul in the northwest corner of the City of Rosemount (Figure 1). The area is primarily agricultural, but the rural character around the Wiklund property is quickly converting from farmland to housing developments. It is now juxtaposed with high-density residential developments in two suburban communities. An Eagan neighborhood is located less than 1/8th mile northwest, and another residential development is taking shape within a mile north of the property. Apple Valley communities lie three miles to the west. In addition to these developments, the 40-acre farm directly west of Wiklund's property was recently sold and is slated for high-density residential development. Large lot homes also occupy the adjacent land to the north.

The property directly to the east, however, retains 80 acres of oak woodland and wetland and the adjacent 20 acres to the south is part wooded and part hayfield. These and other nearby areas, including the Wiklund property, are part of a natural greenway corridor identified in the Northern Dakota County Greenway (Figure 1) (Dakota County SWCD 2002). Most of the woodland adjoining the property has been identified as having high biodiversity significance by the Department of Natural Resources (DNR). We hope to permanently protect these other remaining properties as part of a continuous greenway corridor across the county.

## Geology and Soils

Glaciers were the primary force that shaped the present-day landscape of the Twin Cities metropolitan area. They determined the existing soil types, which, in turn, affected the types of plant communities that developed. Glacial activity carved the landscape of the region, worked and re-worked the land surface, and deposited tremendous amounts of till and outwash. Soils at the Wiklund property formed primarily on glacial deposits left by the Superior lobe, which advanced and retreated several times in the late Wisconsin period, 30,000 to 14,000 years ago (Hobbs, Aronow and Patterson 1990). Outwash from the glaciers consisted of gravel and sand. This was overlain by till, made up of sandy loam with cobbles and boulders.

The loamy soils that formed on the Wiklund property reflect the character of the glacial deposits (Figure 2). Kingsley sandy loam, soil type 342B (3% to 8% slope) covers most of the site (Soil Conservation Service 1983). About a quarter of the existing hayfield is 279B Otterholt silt loam (1% to 6% slope). A small area of the woodland is classified as 1824 Quam silt loam, ponded.

Kingsley sandy loam typically has about eight inches of black sandy loam at the surface, four inches of sand in the subsurface, and 26 inches of sandy loam in the subsoil. It has moderate permeability, moderate available water capacity, and medium runoff. Organic matter content is moderate. Erosion is a concern on cultivated soils, but can be controlled by minimum tillage. The soil can be droughty.

Otterholt soils are found on side slopes and broad hillcrests on end moraines. The surface, subsurface, and subsoil are all sandy loam, to a depth of about 35 inches. The soil has moderate permeability, high available water capacity, and medium runoff. Organic matter content is moderate. The soil is very susceptible to erosion when cultivated.

The topography at the Wiklund property is mostly gently sloping from northwest to southeast. The elevation drops 50 feet from 970 feet above sea level to 920 feet. The lowest areas in the east/southeast are ponded.

## Historic Plant Communities

Minnesota can be divided into three major biomes or ecological regions, which correspond to major climate zones in North America: prairie in the west and southwest part of the state, deciduous forest extending northwest to southeast, and coniferous forest in the northeast. While these eco-regions still exist, they have been greatly altered since the time of European settlement in the mid-1800's. Land surveyors working in the state between 1847 and 1907 recorded the plants they encountered at each section corner. These records now provide an image of the pre-settlement vegetation.

The metropolitan region falls within the deciduous forest zone, but includes multiple plant communities. Dakota County was primarily tallgrass (also known as mesic) prairie (Figure 3), which was concentrated on level to gently rolling portions of the landscape. Oak savanna was also very abundant, especially on rolling moraine ridges. Oak forest and maple-basswood forest were 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 (DNR 2000).

The Wiklund property falls within the "Oak Openings and Barrens" pre-settlement plant community (Figure 3). Today this is often referred to as oak savanna, though it also includes areas that were more densely vegetated with shrubby oaks. Oak savanna is commonly described as prairie grassland with scattered oak trees or small clusters of oaks. Today we can recognize historic savanna communities, even if they now appear to be woodland, by the presence of old oak trees with wide, spreading branches – evidence of their establishment in a very open habitat. Such trees (bur oaks) can be found in the woodland at the property. Some are quite large, about 24 inches in diameter.

Figure 3 also shows prairie and big woods communities located near the Wiklund property. Since the map is a generalization, it is likely that these plant community types existed on the Wiklund property as well.

Mesic prairie occurs on moderately well-drained to well-drained fine sandy loams with abundant organic matter. Typical mesic prairie grasses are big bluestem, Indiangrass, and prairie dropseed, with little bluestem, side-oats grama, and porcupine grass occurring on drier sites. Typical forbs (flowering plants) include purple prairie clover, rough blazing star, stiff goldenrod, Canada goldenrod, smooth aster, heath aster, flowering spurge, stiff sunflower, white sage, heart-leaved alexander, alum-root, northern bedstraw, and bergamot.

Fire was historically the most important natural process in the region to influence plant community patterns. Prairie persisted in part because regular fires prevented woody species from becoming established. Likewise, oak savanna communities were maintained because mature oak trees are fire-resistant, but the seedlings and other woody plants are not. Tornadoes and high wind events also created significant disturbances in plant communities, and periodic flooding influenced changes in river and stream valleys. These disturbances were a dynamic part of the landscape, influencing the formation and persistence of particular plant communities.

Most of the Twin Cities metropolitan region was developed for agricultural use, which dominated the landscape after European settlement in the mid-1850's. Natural areas that remained, especially prairie and savanna, have been significantly altered by fire suppression since the time of European settlement. Most of those areas have now grown into woodlands, and most are invaded by exotic shrubs. Trees and shrubs continually encroach upon the few remaining prairies, particularly those that are unmanaged.

According to the Department of Natural Resources County Biological Survey, only about 2.6 percent of high quality, native plant communities remained in Dakota County in 1997. Urban development in the county has increased rapidly in recent years and the growth rate is expected to continue at a very high pace. This growth will continue its expansion into farmland and natural areas, making natural resource preservation and restoration immediately important.

## Historic and Current Land Use of the Wiklund Property

Ms. Wiklund has owned the property for about 45 years. The existing 7-acre hayfield (which is currently being restored to native prairie) was formerly planted in corn or soybeans. A small area northeast of the house was formerly used as a sheep pasture. Otherwise, the property has not been grazed or cultivated in the last 30 years. The woodland and possibly other parts of the property were likely grazed in the past, as indicated by remaining barbed wire fence. The general character of the woods also indicates historic grazing, with an abundance of gooseberry, currant, raspberry, and prickly ash, which increase with grazing.

Current land use activities at the property are minimal. The landowner continues some maintenance activities such as mowing around the house. The site is otherwise left alone for wildlife use.

# SITE INVENTORY

## Methodology

In 2003, a prairie stewardship plan was developed for the Wiklund property, which included an assessment and a vegetation survey of the woodland. Information from that survey, conducted in May and June 2003, provided some of the vegetation data for this document. Additional survey work was completed in April 2004 to further define the extent of exotic shrub coverage.

All inventory work was based upon the Minnesota Land Cover Classification System (MLCCS), developed by a partnership headed by the Minnesota Department of Natural Resources (2001). The land cover classification was modified slightly based on the field surveys.

## Community Descriptions

The 26-acre property is located in what was once primarily oak woodland-brushland, commonly referred to as savanna today. Some of the land was cleared long ago for agriculture and the remaining savanna has grown in and succeeded to woodland. The property now has three primary land cover types, shown in Figure 4 and summarized below.

| Land cover | Acres |
|---|---|
| Oak woodland-brushland (includes wetland) | 16.3 |
| Hayfield | 7 |
| Buildings and lawn | 2.7 |
| Total | 26 |

**Oak Woodland-brushland**
*MLCCS 42120*
The oak woodland occupies the eastern half and southern edge of the property. The terrain slopes gently to the southeast (10% slope) and terminates in ponded areas at the lowest part. The woodland is dominated by bur and white oak, some of which are about 24 inches in diameter (Table 1). Quaking aspen, boxelder, American elm, green ash, and black cherry are also present. None of these species are as large as the oaks and range from about 8 inches to 12 inches in diameter. The oaks, therefore, likely matured in a more open habitat. In the absence of fire or other disturbance, other tree species became established over time. Today the canopy cover is about 70 percent. The shrub layer is fairly dense, with about 50 to 70 percent canopy coverage. Common buckthorn is the most abundant shrub species. It is fairly dense throughout the site and consists of either closely spaced, small diameter saplings (less than 1 inch diameter) or larger diameter (2 to 6 inches), more widely spaced shrubs. On average, the stems are 1 to 2 inches. Density is high (on a scale of very high, high, moderate, and low) throughout the site, though there are small areas of lower density.

Gooseberry is the most common native shrub species, forming dense stands in some areas, especially where the canopy is more open. Few other native shrub species can be observed.

Tartarian honeysuckle, a non-native invasive species, is present though not abundant. Sapling trees of ironwood, hackberry, and black walnut are also present in the shrub layer. The ground cover is fairly low diversity, with Pennsylvania sedge, false lily of the valley, rue anemone, and wild geranium most common. The large number of fallen trees and abundance of gooseberry shrubs impeded travel throughout the woodland.

**TABLE 1. Woodland Vegetation at Wiklund Property.**
Plant species recorded by FMR in May 2003.

| Exotic | Family | Scientific name | Common Name | Abundance | Comments |
|---|---|---|---|---|---|
| | **Ground layer** | | | | |
| | *Forbs* | | | | |
| | Ranunculaceae | *Anemone quinquefolia* | wood anemone | P | |
| | Ranunculaceae | *Anemonella thalictroides* | rue anemone | P | |
| E | Asteraceae | *Arctium minus* | common burdock | R | |
| | Araceae | *Arisaema triphyllum* | Jack-in-the-pulpit | P | |
| | Polypodiaceae | *Athryrium filix-femina* | lady fern | P | |
| | Rubiaceae | *Galium aparine* | cleavers | P | |
| | Geraniaceae | *Geranium maculatum* | wild geranium | C | |
| | Ranunculaceae | *Isopyrum biternatum* | false rue anemone | C | |
| | Liliaceae | *Maianthemum* | false lily of the valley | C | |
| | Violaceae | *Viola sp.* | yellow violet | P | |
| | Violaceae | *Viola sp.* | blue violet | P | |
| | Liliaceae | *Uvularia grandiflora* | large flowered bellwort | R | |
| | Liliaceae | *Uvularia sessilifolia* | sessile bellwort | P | |
| | Balsaminaceae | *Impatiens capensis* | touch-me-not | P | |
| | *Graminoids* | | | | |
| | Cyperaceae | *Carex pensylvanica* | Pennsylvania sedge | C | |
| E | Graminaceae | *Phalaris arundinaceae* | reed canary grass | P | Large patch by pond. |
| | *Trees and shrubs* | | | | |
| | Aceraceae | *Acer negundo* | boxelder | P | |
| | Ulumaceae | *Celtis occidentalis* | hackberry | R | |
| | Vitaceae | *Parthenocissus inserta* | Virginia creeper | P | |
| | Roseaceae | *Prunus serotina* | black cherry | P | |
| | Caprifoliaceae | *Sambucus pubens* | red-berried elder | R | |
| | | | | | |
| | **Shrub-Midstory Layer – 70% cover** | | | | |
| | Ulumaceae | *Celtis occidentalis* | hackberry | P | 5" diam. |
| | Betulaceae | *Corylus americana* | American hazelnut | P | |
| | Juglandaceae | *Juglans nigra* | black walnut | R | Small trees by pond. |
| E | Caprifoliaceae | *Lonicera tartarica* | Tartarian honeysuckle | P | |
| | Betulaceae | *Ostrya virginiana* | ironwood | R | |
| E | Rhamnaceae | *Rhamnus cathartica* | common buckthorn | A-D | 1/2-6" diam. Scattered-dense. |
| | Saxifragaceae | *Ribes cynosbati* | gooseberry | C-A | |
| | | | | | |
| | **Canopy – 75% cover** | | | | |
| | Aceraceae | *Acer negundo* | boxelder | P | 8" diameter |
| | Oleaceae | *Fraxinus pennsylvanica* | green ash | P | 12" (by pond) |
| | Salicaceae | *Populus tremuloides* | quaking aspen | | 8" |
| | Roseaceae | *Prunus serotina* | black cherry | P | 8-12" |
| | Fagaceae | *Quercus alba* | white oak | C | 18" |
| | Fagaceae | *Quercus macrocarpa* | bur oak | C-D | 18-24" |
| | Fagaceae | *Quercus rubra* | red oak | C | 8-24" (24" by pond) |
| | Ulmaceae | *Ulmus americana* | American elm | P | 10" |

**Hayfield**
*MLCCS: 23212 Long grasses on upland soils*
The hayfield is located on the western part of the property, along Bacardi Avenue. This is also the highest part of the property, and it slopes gently (5 percent) to the east. It is dominated by non-native grasses, such as smooth brome and Kentucky bluegrass, with various other species like white clover and dandelion. At the eastern end there is a patch of small to mid-size oaks and brush. The field has been hayed for about ten years. The entire area was restored to native mesic prairie in 2004. A copy of the prairie stewardship plan developed for the hayfield can be viewed at Friends of the Mississippi River and the Department of Natural Resources, and is incorporated herein by reference.

**Buildings and Lawn**
*MLCCS: 13134 Short grasses and mixed trees with 26-50% impervious cover*
Three buildings are located on the property – a house, a pump house, and a large garage. An area around the buildings is maintained as lawn and garden with scattered trees. There is a small grove of trees west of the house that is dominated by very large and dense buckthorn in the understory. Buckthorn is also present in the area behind (north) of the garage.

## Ecological concerns

The primary ecological concern on the property is exotic invasive shrub species – especially common buckthorn and, to a much lesser extent, Tartarian honeysuckle. Exotic invasive species are considered by many ecologists to be the single greatest threat to the integrity of our natural areas. These species are very aggressive and impede the growth of native species. They eventually form dense, impenetrable thickets, replacing native species that are more valuable for wildlife and for ecosystem diversity. Buckthorn berries actually have a laxative effect, negatively affecting the birds that eat them. Some bird species try to nest in the shrubs, but the location is not ideal. Studies have shown that fewer fledglings are produced than in native shrub species.

# MANAGEMENT PLAN

## Home Site

The Home Site is defined as the northerly ten acres of the property. There is no expectation of public access or use other than by permission from the landowner. The Home Site is subdivided, for management purposes, into the residence tract and the natural area tract. The residence tract of the Home Site (1.2 acres) contains the home and corresponding commons area, while the natural area tract (8.8 acres) makes up the rest.

**Management Goals**

- Allow everyday activities normally associated with the enjoyment and maintenance of the home and its corresponding yard;
- Prevent potential negative impacts to the natural areas on the Home Site and the City Wildlife Preserve which result from the pursuit of the normal everyday activities associated with the enjoyment and maintenance of the home and its corresponding yard;
- Improve the ecological health of the natural community (oak woodland-brushland, prairie);
- Protect the native trees on the Home Site.

**Management Activities - Residence Tract of the Home Site**

The residence tract of the Home Site contains the home, garage, outbuildings, and the surrounding commons area. This tract is defined as the rectangle of land immediately surrounding the home and outbuildings with dimensions of 264 feet wide by 156 feet long, including the 420-foot long by 25 feet wide driveway (1.2 acres. See Figure 5). Generally, the landowner will be able to use and manage this tract as it has been in the past. The following section outlines allowable and prohibited activities for specific issues related to the use and management of this area.

Existing buildings. The existing buildings and structures as described and identified in Appendix C can receive normal maintenance and upgrades. No additional buildings or construction, outside of the existing building footprints as detailed in Appendix C, will be allowed. Furthermore, existing buildings must not exceed the gross floor square feet existing at the time the conservation easement was acquired and recorded. The existing access and driveway must remain a pervious-surface roadway and the landowner may use normal methods to maintain it (snow plowing, grading, addition of supplemental gravel, etc.). The well and septic systems may be upgraded, maintained, reconstructed, and/or relocated as needed within the residence tract.

Gardening and landscaping. All normal yard maintenance and grass mowing is allowed. Gardening and landscaping are allowed. No cutting of native trees greater than 3" DBH, without written consent of the DNR, is allowed. However, if all or a portion of a tree is threatening an existing building or the safety of the landowner or visitors, the tree or a portion thereof may be removed to alleviate threatening conditions or ensure safety. Non-native trees, regardless of size, may be removed. The landowner may plant only native trees and shrubs in the residence tract of the Home Site. Any herbaceous plant used in landscaping and/or gardening must be non-invasive. The landowner will be encouraged to contact Friends of the Mississippi River or the

Department of Natural Resources for guidance with these issues. The landowner may erect signs designating that the Home Site is private property.

**Management Activities - Natural Area Tract of the Home Site**

The natural area tract surrounds the residence tract within the Home Site and comprises three distinct management areas:

- Oak Woodland-brushland. This natural community, designated with the color brown on Figure 5, makes up 6.1 acres of the site.
- Prairie. This management area, designated with the color yellow on Figure 5, makes up 2 acres of the site. In 2004 it was restored to native prairie
- Oak savanna. This natural community, designated with the color orange on figure 5, covers 0.7 acres. It is currently oak woodland-brushland.

The management activities for the natural area tract are identical to those recommended for the City Wildlife Preserve portion of the property. Refer to the section on the City of Rosemount's Wildlife Preserve in this document for details. The management of the natural areas on the Home Site is the responsibility of the landowner. However, the landowner will coordinate with the DNR and City of Rosemount, which are responsible for management activities on the City Wildlife Preserve portion of the property. An economy of scale can be gained if the property is managed as one unit.

*Special management and use exceptions*

The 1.8 acres on the western edge of the eastern natural area tract (the area immediately north, south, and east of the residence tract) has historically been used by the landowner for a garden(s) and mowed grass walking paths. This land will be managed in the same manner as the rest of the oak woodland-brushland in the tract, with the following exceptions:

- The landowner will be allowed to maintain a vegetable/flower garden on a quarter acre of land that is directly east of the house. The landowner should use the same precautions described for gardening and landscaping in the residence tract.
- The landowner will be allowed to mow the path(s) that have previously been mowed. The paths will remain grass and no other surface (examples: gravel, asphalt, cement) will be allowed.

## City Of Rosemount Wildlife Preserve

The City Wildlife Preserve portion of the property will comprise 16 acres and be owned by the City of Rosemount. It will allow restricted nature observation for educational purposes and will be managed as a natural area.

### Management Goals

- Restore ecological functions to natural areas;
- Improve the value of the wildlife habitat;
- Restore portions of the site to pre-settlement plant communities.

### Management Activities - Oak Woodland-Brushland: 11 acres

Target Plant Communities – Oak Woodland-brushland and Dry Oak Savanna
Most likely, the woodland was historically a savanna community. While the woodland could be restored to savanna by fairly intensive tree removal, burning, and seeding, it would be quite expensive. It would take many years of concerted effort followed by many more years of sustained management. It would likely best serve the landowner to manage and maintain the area as woodland and restore some smaller areas to savanna (Figure 5). This approach would also maximize overall site biodiversity.

The target plant community, therefore, for most of the 8-acre oak woodland-brushland will be oak woodland-brushland. This plant community is typically associated with dry oak forest, dry oak savanna, and dry prairie. It is structurally and floristically intermediate between oak forest and oak savanna (DNR 2000). The canopy is patchy and the understory is dominated by tree saplings and shrubs. Forests with open-grown oaks surrounded by younger trees are also included in this classification.

Bur oak, northern pin oak, white oak, and red oak are typical canopy dominants. Aspen, however, may comprise up to 70 percent of the cover. The shrub layer may be sparse or dense and is often patchy. It tends to be very diverse, with hazelnuts, blackberries, raspberries, gooseberries, dogwoods, cherries, and prickly ash. The ground layer is poor except in open areas, where prairie and savanna species dominate.

This plant community is maintained by fire and was probably once the dominant community type in the Twin Cities metropolitan area. In the absence of fire it succeeds to dense, scrubby oak forest. Few oak woodland-brushlands remain in the region. Most are overgrown with scattered large bur oaks surrounded by pin oaks, as well as paper birch, basswood, black cherry, and quaking aspen, with a scrubby understory.

At the Wiklund property, simply removing exotic species and allowing the woodland to follow a natural succession to oak forest is the most economical management track. Prescribed burning would aid in the effort to restore the native plant species composition.

Three and a half acres of the oak woodland, located in the southwest corner of the property, could be restored to oak savanna. Dry oak savanna, hill subtype, occurs on glacial till on fine to medium textured loams. The MN DNR (1993) describes dry (hill) oak savanna as follows: "Occurrences are concentrated along the ecotone between prairie and deciduous forest-woodland zones and tend to be small. Bur oak and northern pin oak are the major oak species. The most common shrubs are chokecherries, wolfberries, and smooth sumacs. Leadplant is always present. The density of the shrub layer is highly variable. The herbaceous vegetation of open areas between trees is essentially the same as that of the hill subtype of dry prairie. The subtype succeeds to woodland almost as rapidly as mesic oak savanna except on the steepest, droughtiest slopes. Therefore, few examples remain."

Restoration methods for woodland and savanna are described in the next section of this document.

Control exotic plant species

Controlling exotic shrubs is the imperative first step toward improving the oak woodland habitat. Common buckthorn is pervasive throughout the site and will require intensive effort for several years. The first year of management should focus on removing the largest plants (anything over 1.5 inches) which are producing fruit. Smaller plants can be removed simultaneously, if time and budget permit, or in subsequent years, but before plants reach maturity. Honeysuckle, though not abundant, should also be removed. Removal and disposal methods are described in the next section of this document.

Re-establish native woodland plant species

After buckthorn is removed from the woodland, there is likely to be a flush of buckthorn seedlings in the following years. While the long-term goal is to establish a groundcover and shrub layer of native species, it will be necessary to control exotic seedlings before seeding or planting native plants. A seedbank of native plants may also persist in the soil, so monitoring the site condition will be necessary in the first few years after removing buckthorn.

Once the exotic species are under control, the site can be seeded, preferably in the fall, with native woodland species (Appendix A). Native woodland shrubs, such as hazelnut, gray dogwood, American plum, musclewood, and nannyberry, will establish most effectively by installing plants, rather than seed. Bare-root plants are most economical.

Restore dry oak savanna

An excellent opportunity for savanna restoration is the wooded area on the west side of the property, south of the prairie restoration. The restoration area could go as far east as the existing 3.5-acre sumac stand. The area has large scattered oaks, about 18 to 24-inch size, surrounded by an abundance of small aspen, oaks, and other trees. Restoring these areas would provide a nice transition from prairie to savanna to woodland, while providing a wonderful example of these three plant communities in one location. As a rare community, it is important to retain some examples of oak savanna in the landscape.

Savanna restoration would require removing small trees and brush to create a canopy primarily consisting of oak trees with coverage of 10 to 30 percent. A groundcover of savanna species (Appendix A) would be re-established by seeding. The cut trees could likely be harvested for firewood or fuel (e.g., District Energy in St. Paul). The woodland area north of the prairie on the Home Site could be restored to savanna at the same time for efficiency.

The small woodland island within the prairie itself should also be removed and restored to prairie, leaving a few oak trees. Likewise, all of the woodland edge should be thinned out to create a more natural transition between prairie and woodland. That edge and all savanna areas should be included as part of the prescribed burns that will be conducted on the prairie.

Maintenance and Monitoring

On-going, long-term maintenance should involve annual monitoring of the site, removing exotic species and recording other ecological concerns. Once the existing exotic plants are gone, maintenance should become less intensive. Of primary importance is removal of exotic plants before they set seed. Most of the woody species take several years to produce fruit. The site should also be monitored annually for other exotic species not currently found there. Garlic mustard, for example, is a very aggressive biennial plant commonly found in woodlands in the metropolitan area. The site should be surveyed in May for garlic mustard and any plants should be promptly removed before they flower and set seed in June.

The recovery of the site should also be evaluated to determine if a good complement of native species are being established. In addition, since oak woodlands historically experienced occasional fires, it would be beneficial to conduct prescribed burning of the woodland. Fire would be especially beneficial for removing buckthorn seedlings, which are difficult to control because they are so small and numerous. Factors that may limit burning are: inadequate fuel, inadequate burn breaks (since the adjacent properties are also wooded), and the proximity to future high-density housing. Nevertheless, as a valuable management tool, prescribed burning should be considered. The development of firebreaks is allowed.

**Management Activities - Hayfield: 5.0 acres**

Restore to mesic prairie

A prairie restoration plan is already underway for the entire 7-acre hayfield, the prairie having been seeded in fall 2004.

Maintenance

Planned maintenance for the prairie will involve periodic mowing the first year (2005) and mowing or burning in the second year (2006). After that, landowners will assume maintenance. Historically, tallgrass prairie in this part of the state burned as frequently as every year. Typically, however, prairies are now managed by burning every two years. Regular burning will control shrubs and weeds while restoring nutrients to the soils and invigorating native plants.

## Restoration and Management Techniques

### Brush and Tree Removal

The most efficient way to remove buckthorn, honeysuckle, and other woody plants is to cut the stems close to the ground and treat the cut stumps immediately with a 10% glyphosate solution (e.g. Roundup). Rodeo, a glyphosate herbicide suitable for aquatic habitats, should not be used within 50 feet of ponded areas. Failure to treat the stumps will result in resprouting, creating much greater removal difficulty. Late fall or winter is the best time for removal because buckthorn retains its leaves longer than other species and is easily identified. At that time of year, buckthorn is also moving resources from the leaves to the roots, so when chemicals are applied to the cut stumps they are taken deep into the roots and produce a more effective kill. Most other woody plants are also most effectively cut and treated in fall or winter. If cut in winter, the snow around each stem must be pushed away so the stems. can be cut low to the ground. High stems should be avoided because herbicide treatment is less effective and they create a physical tripping hazard.

Other woody plant removal methods are hand-pulling (only useful on seedlings) and weed-wrenching (using a weed wrench tool to pull stems of two inches or more in diameter). Both methods can be done any time of year as long as the soil is moist and not frozen. The disadvantage to both methods is that they are somewhat time-consuming as the dirt from each stem should be shaken off. Weed-wrenching also creates a great deal of soil disturbance. Existing desirable plants may be removed in the process and the soil disturbance creates opportunities for weed germination. This method is probably best used in areas that have very little desirable native plant cover.

Brush can be disposed of in several ways. Some relatively small brush piles can be left in the woods as wildlife cover. In areas of low density, small stems can be scattered on the ground to decompose. However, the vast majority of the brush at this site should be removed or burned, since there is so much. It could either be stacked into piles in open areas and burned in the winter, or taken out of the woods, chipped up, and hauled away.

The year after buckthorn is cut there will be a flush of new growth as the seeds in the soil germinate. This will produce a crop of seedlings that are much too small to cut. The easiest way to deal with these is to burn the site. If that is not possible, seedlings can be sprayed with a 10% glyphosate solution. It is imperative that herbicide is only applied in late fall when other plant species are dormant. Treating seedlings is probably the easiest means of control, but they could also be left for several years until they are large enough to be pulled or cut more easily. The plants will thin themselves out over time and must be controlled before they start producing seed, generally within five years.

### Planting and Seeding

All seed and plant material used at the Wiklund property should be of Minnesota origin, ideally within 50 miles of the site, but no more than 175 miles. Nurseries can provide seed/plant origin information.

Seeding herbaceous woodland plants should not be done until the buckthorn (including new seedlings that germinate after shrub removal) has been adequately controlled. Buckthorn control may take two full seasons or more. The ideal time to seed the woodland areas is in the fall. The cold and damp conditions of winter will naturally break the seed dormancy.

Seed can be hand-broadcast in the woodland, since the seeding areas will be fairly small and scattered and not conducive to using equipment. Seed germination is generally improved by raking it into the soil though this is not absolutely necessary. If seed is broadcast in late fall, just before snowfall, the freeze/thaw cycles of winter will effectively work the seed into the ground. Existing vegetation will likely make raking unfeasible at this site.

Normal seeding rates for a woodland restoration are about 8 lbs. of seed per acre. Because there is existing vegetation at this site, a seeding rate of about 4 lbs. per acre would likely be adequate. Actual rates should be evaluated when seeding areas are determined.

Tree and shrub material is most cost effective when purchased bare root. Bare root material also has good survivorship. One disadvantage to bare root is that there is a small window of time in which to plant it. Plants are generally shipped at the end of April and should be planted within a week or two. Planting can be done fairly quickly by using tree planting bars rather than by digging. Volunteers could be recruited to create community involvement. Potted plants are significantly more expensive and time-consuming to install, but can be planted throughout the growing season (though it is best to avoid the hottest months). If some plant material is not available as bare root, potted plants could be considered.

If groundcover species are seeded in the fall, trees and shrubs can be installed the following spring or in subsequent years, as budget permits. The amount of plant material needed will depend on the planting space available. Generally shrubs can be planted about five feet apart. The target shrub coverage in the woodland is 40 to 60 percent.

**Prescribed Burning (Rx Burns)**

Native plant communities such as savanna, prairie, and oak woodland are adapted to fire. Regular use of Rx burns provides important ecological functions, such as recycling nutrients, improving plant vigor, and improving flowering and seed production. Simultaneously, fire is an excellent way to control exotic and woody species.

The timing of Rx burns depends on the desired outcomes. Most burning is conducted in the spring because burn conditions are generally safest and late spring burns are good for controlling non-native grasses. Fall burns tend to increase flowering plant species, but leave a site susceptible to erosion and devoid of winter wildlife cover.

All Rx burns should be conducted by an experienced, professional burn crew. A burn plan should be developed and burn permits must be obtained for all burning, including brush piles. Neighbors should be notified of the burn event at least a day or two prior.

**Monitoring**
Monitoring is a vital component of any habitat restoration project. Monitoring typically involves conducting simple surveys to document pertinent features, such as exotic shrub coverage. Basic measurements are recorded, mapped, and photographed from established locations. Survey results provide quantitative information on changes over time, and help identify if management is achieving its intended goals. Adaptive management, the corollary to monitoring, incorporates monitoring results into future management.

Monitoring should be done annually, preferably at the same time each year. It need not be intensive or time-consuming, but should minimally include a walk-through vegetation survey and photo monitoring. The vegetation survey should identify and map locations of exotic herbaceous plants. For pervasive species, such as buckthorn, observational notes should be made on whether there has been any increase or decrease of target plant species, and whether any management action is needed. It is important to map locations of exotics (GPS), even if they will be removed, because a seed bank likely exists and new plants may emerge.

Photo monitoring is simply taking annual photographs from established locations to create visual documentation of changes over time. Photo points should be mapped and numbered on an aerial photograph. It helps to mark photo points in the field (e.g. with surveyor flagging) and it is recommended that at least one permanent point be established and marked with a metal post. Each photograph should be labeled to indicate the direction from which it was taken and important observations. Photos should be taken at approximately the same time each year, keeping in mind the characteristics of the plant species being monitored. Garlic mustard, for example, is best photographed when it blooms in May, whereas buckthorn is most visible in fall, when it is one of the few plants to still have its leaves.

It is important to develop a plan for controlling exotics as they are discovered. Garlic mustard can reproduce explosively within just two years. Buckthorn plants do not produce seed for several years, and up to ten years in the shade, but seed can remain viable in the soil for five years and new seed is continuously introduced into an area.

Besides plants, other commonly measured biota are bird, insect, and amphibian populations. At the Wiklund site, notes should be made of animals or animal signs observed during each site visit.

The City of Rosemount is responsible for monitoring the Wildlife Preserve portion of the property and will assist the DNR in enforcing the terms of the easement and management plan. The management monitoring could be coordinated with DNR easement monitoring.

**Mosquito Control**
Generally, routine control of nuisance mosquitoes is not allowed on lands subject to the conservation easement. However, with prior approval the DNR will allow control operations for disease vectoring mosquito in cases where the Department of Health determines that such mosquitoes pose human health risks. The DNR must approve mosquito control plans or make

modifications as deemed necessary for the protection of natural resources before control operations begin.

## Management Activities

Rough estimates for management activities are provided below, based on similar work conducted in other areas. Actual costs will depend on bids received from contractors.

| Priority | Season, Year | Activity | Estimated cost |
|---|---|---|---|
| A | Fall/Winter, Year 2 | Cut and treat exotic shrubs (19 ac), haul, chip/burn. All areas except grassland. | $600 to $1100 per acre |
| A | Fall (Oct) Year 2 | Apply herbicide by foliar to buckthorn seedlings, small saplings. May need to spray in Fall, Yr 3, too. (19 ac) | |
| A | Fall Year 2 or 3 | Seed open areas of woodland with native seed (portions of 12 ac) after buckthorn and seedlings have been controlled. | $2,000 to $2,500 per acre |
| A | Spring Year 3 or 4 | Plant native shrubs and trees (approximately $100-$200/ac) to replace buckthorn on ~12 acres. | $4,000 to $6,000 (whole site) |
| A | Spring Year 3 | Conduct Rx burn on restored prairie. | $1,500 to $2,000 |
| A | Spring Year 5 | Conduct Rx burn on restored prairie. | $2,500 to $3,000 |
| A | Spring Year 7 | Conduct Rx burn on restored prairie (Rx burns should be conducted every 2 to 4 years beyond this schedule, depending on needs of prairie.) | $3,000 to $3,500 |
| B | Fall/Winter Year 3 | Remove undesirable trees from two savanna areas north and south of prairie. Remove small patch of trees from within prairie. | $2,400 to $3,000 per acre |
| B | Year 4 | Prepare soil in savanna areas (8.2 ac) and re-seed with savanna species. | $4,000 to $4,500 |
| B | Year 6 | Conduct Rx burn on restored savanna. | $2,500 to $3,000 |
| C | Fall/Winter Year 3 | Thin trees along entire woodland edge to create better transition between prairie and woodland. | $400 to $700 per acre |
| C | Spring Year 2 or 3 | Conduct Rx burn of woodland (13.2 ac). | $6,000 to $10,000 |

# CONTRACTORS AND CONSULTANTS

Friends of the Mississippi River offers its services to provide on-going management of the project – coordinating restoration and management work, follow-up site visits and evaluation, and contractor negotiations.

The following is a short list of consultants and contractors to consider for implementing the management plans. This is not a complete list, but does include ecologists who are familiar with natural resource management. Unless otherwise noted, all firms do prescribed burning. Those marked with an * may also do buckthorn/brush removal. Many other brush removal companies are listed in the yellow pages under tree care.

Applied Ecological Services, Inc.
Doug Mensing
Edina, MN
952-925-3359

*Great River Greening
35 West Water St, Suite 201
St. Paul, MN 55107
651-665-9500

*Natural Resources Restoration Inc.
Craig Andresen
2013 Walnut St. NW
New Brighton, MN 55112
651-636-3462

North American Prairies Company
111754 Jarvis Ave NW
Annandale, MN 55302
320-274-5316

Outback Nursery, Inc.
Erik Olsen
Hastings, MN
651-438-2771

Prairie Restorations, Inc.
John Pauly
Cannon Falls, MN
507-663-1091

# INFORMATION SOURCES

Hobbs, H.C., S. Aronow, and C.J. Patterson. 1990. Surficial Geology *in:* Geologic Atlas Dakota County, Minnesota. University of Minnesota, St. Paul.

Marschner, F.J., 1974. The Original Vegetation of Minnesota. Map compiled from U.S. General Land Office survey notes. U.S. Forest Service, North Central Forest Experiment Station, St. Paul.

Minnesota Department of Natural Resources. 1997. Natural communities and rare species of Dakota County. Minnesota County Biological Survey Map Series No. 1.

_____. 1993. Minnesota Native Vegetation: A key to natural communities. Version 1.5 Natural Heritage Program. St. Paul, MN.

_____. 2000. Ecological Classification System: Oak Savannah. http://www.dnr.state.mn.us/ebm/ecs

_____. 2001. Minnesota Land Cover Classification System.

Minnesota Department of Natural Resources, Section of Ecological Services, Scientific and Natural Areas Program. 2000. Going Native: a prairie restoration handbook for Minnesota landowners. St. Paul, MN.

Mossler, J.H. 1990. Bedrock Geology *in:* Geologic Atlas Dakota County, Minnesota. University of Minnesota, St. Paul.

NatureServe: An online encyclopedia of life [web application]. 2001. Version 1.5 . Arlington, Virginia, USA: Association for Biodiversity Information. Available: http://www.natureserve.org/. (Accessed: September 17, 2001.)

Packard, S. and C.F. Mutel, editors. 1997. The tallgrass restoration handbook: for prairies, savannas, and woodlands. Society for Ecological Restoration. Island Press, Washington, D.C.

Prairie Moon Nursery. 2002. 2002 Catalog and Cultural Guide: Native plants and seed for wetland, prairie, savanna and woodland. Winona, MN.

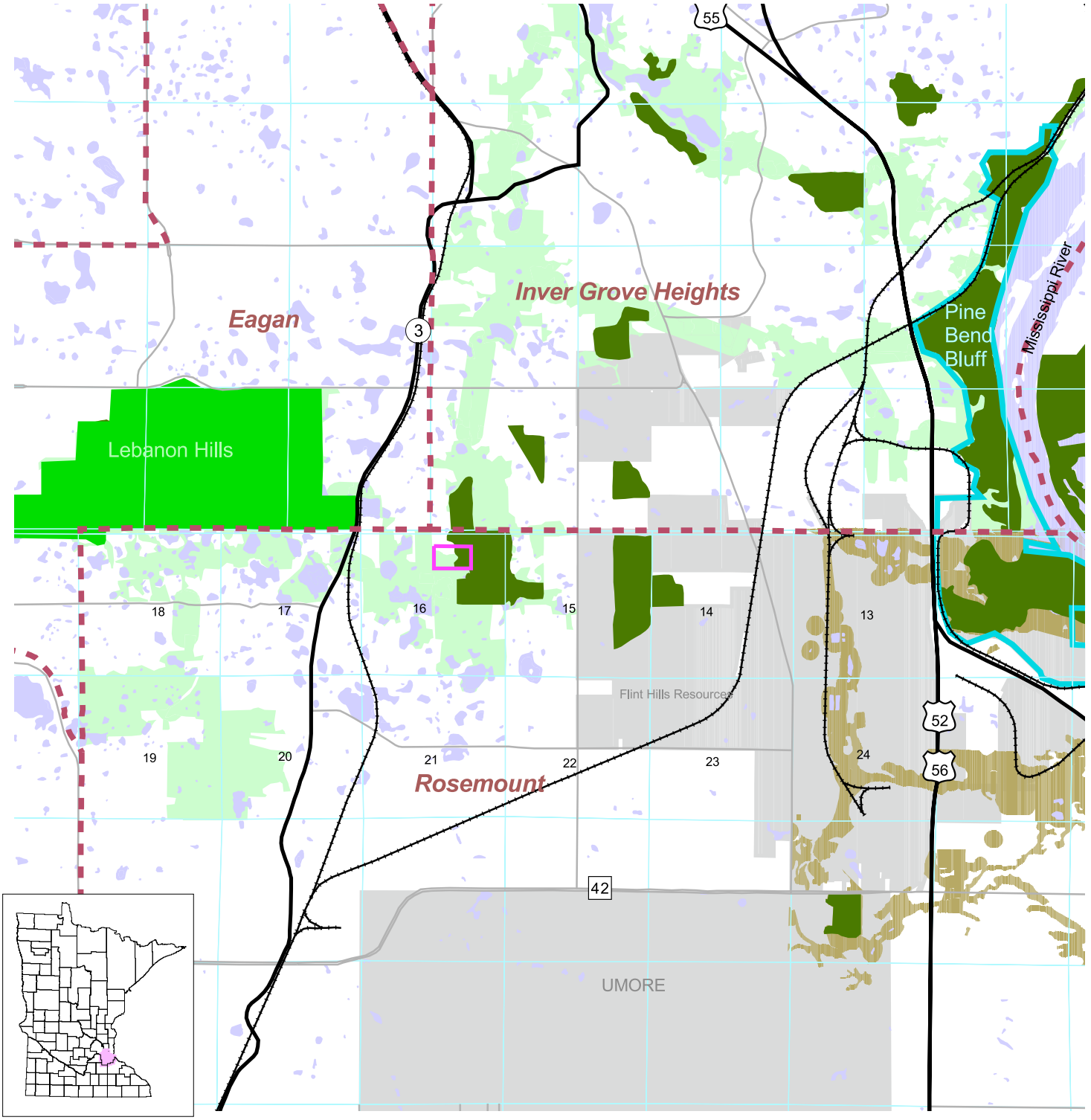
Shirley, S. 1994. Restoring the Tallgrass Prairie: an illustrated manual for Iowa and the upper midwest. University of Iowa Press, Iowa City.

Soil Conservation Service. 1983. Soil Survey of Dakota County Minnesota. United States Department of Agriculture.

Wovcha, D.S., B.C. Delaney, G.E. Nordquist. 1995. Minnesota's St. Croix River valley and Anoka sandplain: a guide to native habitats. University of Minnesota Press, Minneapolis/London.

# Figure 1. Site Location

Natural Area Management Plan - Wiklund Property
T115N, R19W, NWNE16 Dakota County




Data Source: MN DNR data deli

FRIENDS OF THE MISSISSIPPI RIVER

N

Scale 1:63,360 1 inch=1 mile

0 1 2 3 Miles

## LEGEND

- Northern Dakota Co. Greenway Plan
- DNR County Biological Survey Sites
- Wiklund Property
- Mississippi Greenways Plan

Natural Area Management Plan
Wiklund Property

Figure 2. Soil Types


Sources: 2000 aerial photograph from Metropolitan Council; Soils from Dakota County

FRIENDS OF THE MISSISSIPPI RIVER

N

Scale 1:3,00 1 inch = 250 ft

0 80 160 240 320 Feet

LEGEND

Wiklund property

10-ft contours

Soil Type:

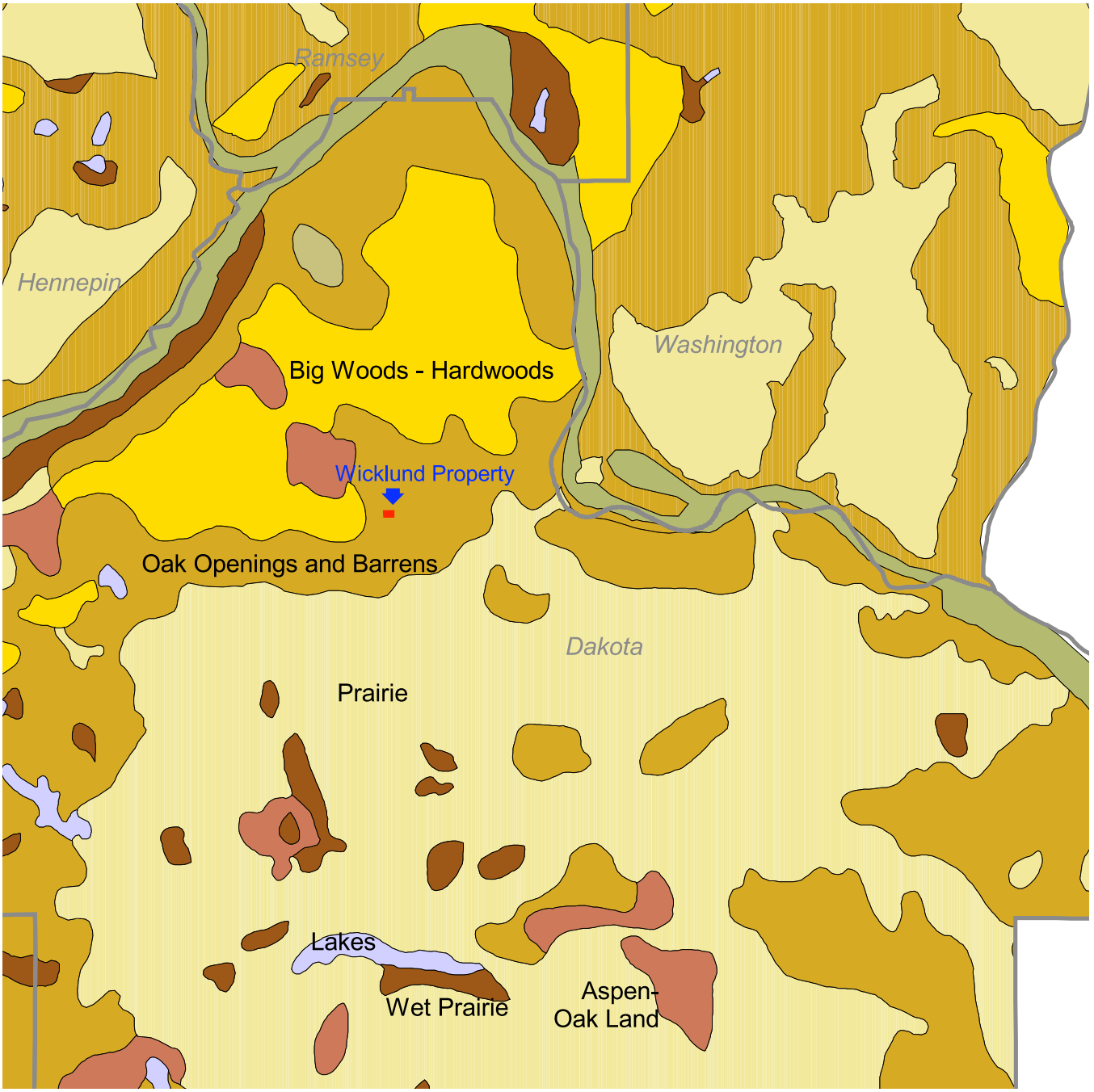
1824 Quam - hydric soil

279B Otterholt silt loam

342B Kingsley sandy loam

Figure 3. Presettlement Vegetation

Natural Area Management Plan
Wiklund Property




FRIENDS OF THE MISSISSIPPI RIVER

N

Scale 1:240,000

0 2 4 6 8 10 Miles

Natural Area Management Plan
Wiklund Property

Figure 4. Existing Land Cover:
Minnesota Land Cover Classification System (MLCCS)


FRIENDS OF THE MISSISSIPPI RIVER

Scale 1:2,400 1 inch = 200 feet

0 100 200 300 400 500 Feet

LEGEND

- 10-ft contours
- Parcel boundaries
- MN Land Cover Classification
- Wiklund property 26 ac (Includes 1-ac Bester property along west edge)

Natural Area Management Plan
Wiklund Property

Figure 5. Land Management and Restoration


FRIENDS OF THE MISSISSIPPI RIVER

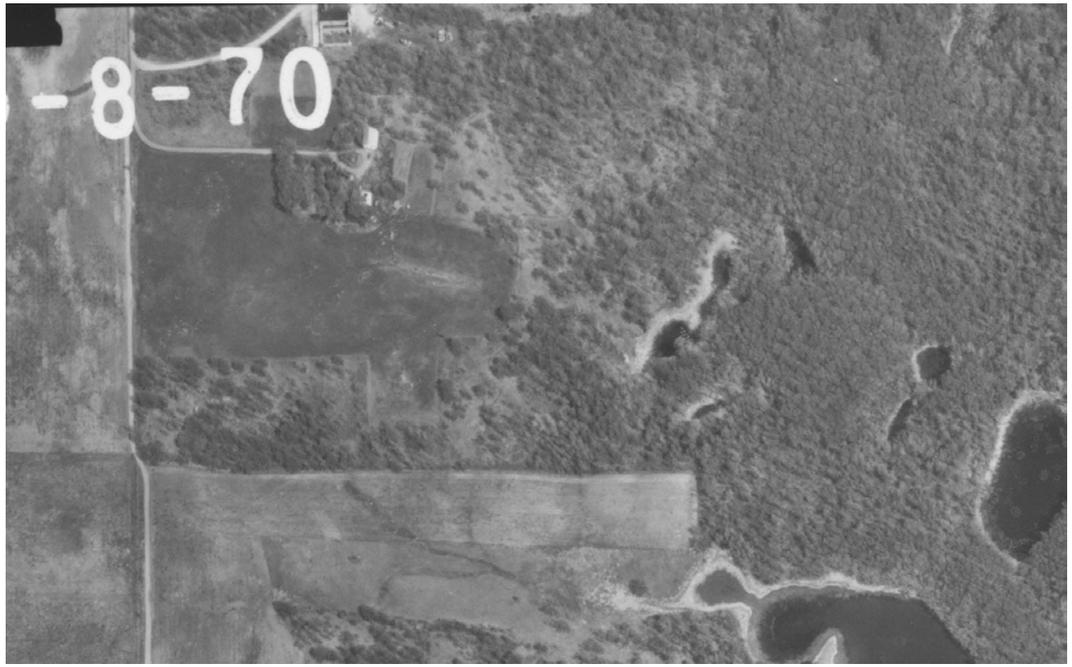
Scale 1:2,400 1 inch = 200 feet

0 100 200 300 400 500 Feet

LEGEND

- 1.8 ac Special Management Area
- Mowed trail (approx.)
- Prairie restoration area
- Oak Woodland-brushland management
- Savanna restoration area

## 1970




## 1962

## 1945

## 1937