

Master Plan for:

GOURDNECK STATE GAME AREA
Kalamazoo County, Michigan



DR

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**Michigan Department of Natural Resources
Wildlife Division
Southwest Management Unit
Crane Pond Field Office**

**GOURDNECK STATE GAME AREA MASTER PLAN
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INTRODUCTION

Purpose of the Plan

This master plan has been prepared for two purposes. It provides overall management direction for the Game Area and assures that the legal obligations for wildlife restoration and management are, or will be met, on the area. Public input was considered in developing the plan, but this is not a consensus document.

The mission of the Wildlife Division is to enhance, restore, and conserve the State's wildlife resources, natural communities, and ecosystems for the benefit of Michigan's citizens, visitors, and future generations. Management at Gourdneck State Game Area (SGA) will help fulfill this mission first through the establishment of native plant and wildlife communities that were replaced by agriculture in the 1800's and second by providing hunting, fishing and other recreational opportunities to Michigan residents and visitors.

Project Location and Boundary

Gourdneck SGA is located in Kalamazoo County, partially within the city limits of Portage and partially in Schoolcraft Township (T5S, R11W Sections 3 and 4) (Figure 1). Other nearby communities includes Kalamazoo to the north, Battle Creek to the east, and Vicksburg and Schoolcraft to the south. In 2003 the project boundary was revised by Wildlife Division staff and approved by the Natural Resources Commission in early 2004. Since much of the area is surrounded by the city of Portage and subsequent urban development, the project boundary was essentially limited to the present Michigan Department of Natural Resources (MDNR) ownership. However, two parcels located on Centre Avenue were not included in the project boundary (Figure 2).

These parcels were intentionally left out of the project in order to evaluate whether or not they continue to serve the purpose for which they were purchased. These parcels were recommended for retention based on the fact that they still fulfill the intent of purchase and both the DNR and Wildlife Division mission statements. Although urbanization has led to cutting these off from the larger portions of the Game Area, each parcel is large enough to offer some interior habitat and hunting opportunity. In addition, the Hampton Fen is a unique habitat feature where several state and federally listed species of plants and animals occur.

Area Description

Environmental Conditions and Biotic Inventory

Environmental Conditions:

The climate of Kalamazoo County and Gourdneck SGA is moderately influenced by Lake Michigan. Average annual temperatures range from a high of around 60°F to a low of 40°F. Average winter temperature is around 27°F and average summer

temperature around 71°F. Annual liquid precipitation is about 34 inches with annual snowfall of 71 inches. Growing season length is between 140 – 190 days with last frost occurring around May 3 and first frost around October 10.

Land formations around Kalamazoo County were heavily influenced by glaciers during the last ice age. Three distinctive features are evident around the county and include moraines, till plains, and outwash plains. The moraines are found in the northern half of the county with till plains evident in the southeastern corner. The outwash plains lie in the south central portion of the county and is the dominant feature of the Gourneck SGA.

Outwash plains are generally level with a variety of soils; sand and gravel make up a high percentage of underlying material. Drainage basins associated with lakes and streams are very common throughout this feature. Drumlins are also found scattered throughout and separated by narrow outwash deposits.

The topography of Gourneck SGA is very representative of outwash plains as the area is nearly level with only 54 feet difference in elevation. There are several small drainage basins associated with the 5 lakes on the Game Area. Lakes include Hampton, Hogsett, Mud, Sugarloaf, and Little Sugarloaf. In addition, several small streams are found on the area, most notably Gourneck, Portage, and Hampton creeks.

Also indicative of outwash plains is the variety of soils found on Gourneck SGA. There are 8 different soil types on the area with Houghton muck, Oshtemo sandy loam, and Kalamazoo loam being most common. Houghton muck is very poorly drained, found in depressions, and subject to frequent flooding. Kalamazoo loam and Oshtemo sandy loam are well drained soils associated with uplands. Several other loam and muck soils are found on the area in small pockets scattered around the dominant soil types.

Regional Ecosystem and Presettlement Condition:

The project area is located in Subsection VI.2. Kalamazoo Interlobate, sub-subsection VI.2.1. Battle Creek Outwash Plain, as described by Albert (1995). Historically, the Kalamazoo Interlobate contained areas of extensive tall grass prairies; nearly 50 prairies were known in this region. Oak savannas were common along the end moraines, with oak forests more common elsewhere. Swamp forest, wet prairies, marshes, and extensive wet meadows were common along streams flowing across the landscape.

Prior to settlement, the land cover type surrounding Gourneck was a mixture of prairie and oak savanna. Fire was important for maintaining both plant communities in the area. Historic accounts indicate that the future Gourneck SGA was associated with two local prairies, Prairie Ronde to the south and Gourneck Prairie to the east.

According to the presettlement vegetation map, the uplands of Gourneck SGA were primarily oak savanna associated with Prairie Ronde (Figure 3). The next biggest cover type was shrub swamp and emergent marsh found throughout the drainages. Other cover types found on the area included black oak barren and mixed conifer swamp. Some of these cover types are still present on the area. Although the description of pre-settlement vegetation is useful as a benchmark for understanding the potential conditions that might be encouraged in an area, it should not dictate the future management direction of the area.

Landscape Characteristics and Plant Communities:

From north to south the landscape changes from highly developed to some scattered agriculture. Much of the Game Area lies within the city limits of Portage and has been surrounded by residential and commercial development. Residential subdivisions and apartment complexes border the northern tracts of Gourneck and threaten to surround the southern parcel along U Avenue. Commercial buildings line the north side of Centre Avenue opposite of the Game Area. In addition, US-131 borders a large portion of the Game Area to the west, creating somewhat of a barrier for wildlife travel from the undeveloped and agricultural ground located west of the highway.

Although the native plant communities have been fragmented due to development, some components and plant species still exist. Some of the larger oak (*Quercus* spp.) trees were spared during construction of office complexes and line the streets north of Centre Avenue. Rather large wetland complexes have been protected from development and are in close proximity to the Game Area offering some habitat to wetland wildlife species. In addition, there are some relatively large property owners along Oakland Drive and Vanderbilt Avenue contributing some wildlife habitat in the area.

South of the Game Area some agriculture still exists although residential development is encroaching quickly. Row crops are most common in the historic prairie with pasture and hay fields along the numerous drainages. Other land cover features include several marsh complexes, lakes, and drains.

About half of Gourneck SGA can be classified as wetland due to the associated lakes and drains. Most of the wetland acreage is dominated by forest and shrub communities. There are two fens located on the Game Area, the Hampton Creek Fen located on Centre Avenue and the Vanderbilt Fen off Vanderbilt Avenue. A large wet meadow is found along the Gourneck Creek on the U Avenue parcel. In addition, emergent marsh complexes are located along the northern shore of Sugarloaf and Little Sugarloaf lakes.

Historically the uplands were actively farmed; however, several fields have now filled in with brush and trees. On the poorer soils these fields reverted to dry sand prairies and in one case a small oak savanna has been maintained through routine mowing. Currently about 10% of the upland can be classified as agriculture in the form of food plots and associated fence lines that separate fields. Oak forests dominate the upland landscape and are mixed with other hardwood species including maple (*Acer* spp.), American beech (*Fagus grandifolia*), and black cherry (*Prunus serotina*). Several small stands of red and jack pine are scattered throughout the Game Area.

Wildlife Resources:

The historic landscape features of prairies, savannas, swamps and expansive hardwood forests provided an abundance of quality wildlife habitat. Early recorded accounts mention wolves, panthers, bears, elk, and bison in addition to the many wildlife species found in the area today.

Gourneck SGA offers a diversity of wildlife habitat from open water to closed canopy forest and supports an abundant wildlife community. Several species of

waterfowl including mallards, Canada geese, and wood ducks use the area for breeding and brood rearing. Others including blue-winged teal, scaup, common goldeneye, and mergansers use the area lakes for migratory stopovers during spring and fall migration.

Wild turkeys are abundant on the Game Area and are often seen from US-131 in the small fields. The abundance of oak woodlands associated with small openings scattered throughout the Game Area provide excellent turkey habitat. Woodcock are also found on the area in small numbers, due in part to past habitat management along lowland corridors. Other upland game birds including ruffed grouse, pheasants, and bobwhite quail once occurred on the Game Area and may still at very low numbers.

White-tailed deer, cottontail rabbits, and fox squirrels are the most abundant game species on the area. Deer are abundant throughout the area and are starting to cause some conflict with residents of Portage. Excellent rabbit and squirrel habitat exists on all portions of the Game Area and are sought after by hunters every year. Furbearing species such as muskrats, raccoons, and mink are under utilized as trapping is not a common use of the Game Area. Other species including coyotes, red and grey foxes, and bobcat have been reported in the area as well.

The diversity of habitats is also home to many species of nongame wildlife as well. The large lowland complexes associated with open water offer habitat to many species of amphibians including frogs, turtles, and salamanders. Lowland and upland forests offer excellent habitat for various birds such as woodpeckers, nuthatches, thrushes, while the open marshes and grassland complexes offer habitat for marsh wrens, red-winged blackbirds, field sparrows and bluebirds. Raptors found throughout Gourdneck SGA include red-tailed hawks, broad-winged hawks, great-horned owls, and screech owls.

Threatened and Endangered:

Michigan Natural Features Inventory maintains a database of occurrences of threatened or endangered species in the state of Michigan. A search of this database indicates that there are several occurrences of state or federally listed species of plant or animal on the Gourdneck SGA (Appendix A). In addition, there are 2 occurrences of the prairie fen community which is listed as rare in the state. Most of the listed species are in association with these fens.

Although future management of the area must consider all of these species, the presence of the eastern massasauga rattlesnake may have the greatest influence on management. The Eastern massasauga rattlesnake uses a variety of lowland habitats including river bottom woodlands, shrub swamps, bogs, marsh borders, sedge meadows and wet meadows. They also use adjacent uplands in the summer. Habitat management in these areas will need to address concerns for the well being of individual snakes before being implemented.

Nonnative / Nuisance:

Autumn olive (*Elaeagnus umbellata*) and multi-flora rose (*Rosa multiflora*) are very abundant throughout the entire Game Area and have taken over several of the old fields and threatens to take over others without control. Garlic mustard (*Alliaria petiolata*) is starting to spread along some of the well used trails and parking lots. Glossy buckthorn (*Rhamnus frangula*) and purple loosestrife (*Lythrum salicaria*)

threaten the lowland habitats, especially near Vanderbilt Avenue. Mute swans (*Cygnus olor*) use the marsh complexes of Sugarloaf, Little Sugarloaf, and Mud lakes adjacent to Gourneck SGA.

Cultural History and Current Cultural Context

Several of the natural landscape features of Kalamazoo County have played an important role in the history and settlement of the area. Water resources and extensive prairies and oak openings created an ideal situation for agriculture and commerce. Some of the earliest inhabitants of this part of Michigan were the Potawatomi (French word for "People of Fire"). The Potawatomi were an agricultural society and attracted to the region by the fertile soil and longer growing seasons.

French explorers visited the area in the late 1600's, most notably Rene-Robert Cavalier De La Salle. LaSalle made a march through the region from Fort Miami (St. Joseph) up the Paw Paw River into western Kalamazoo County. A small French trading post was set up along the Kalamazoo River (Potawatomi for "Boiling Waters") in the late 1760's.

The first American settlement was established in 1828 by Bazil Harrison who came to Prairie Ronde after 6 weeks travel from Ohio. Upon arrival his party "found the beautiful Oak Openings called by the Indians "Waweoscotang," – Round Fire Plain." One year later Titus Bronson arrived at the French trading post and established a settlement along the Kalamazoo River named in his honor. Later the town was renamed Kalamazoo at the request of local residents.

More settlers followed and by the mid 1800's much of the prairies and oak openings had been settled. The 1854 Michigan Gazetteer described Kalamazoo County as, "The surface is nearly level, and is diversified by prairies, tracts of heavy timber, and plains, which are covered with scattered oak-trees. The soil is uniformly and extremely fertile. The chief productions are wheat, corn, oats, potatoes, hay, and wool... The streams furnish extensive water-power... Organized in 1830. Capital, Kalamazoo. Pop., 13,179."

The late 1800's and early 1900's brought industry and commercial development to Kalamazoo and with it more residents. Paper mills and manufacturing plants prospered in the late 1800's. In 1886 William E. Upjohn relocated his small pharmaceuticals operation to Kalamazoo. The Upjohn Company thrived and expanded into Portage in the 1950's providing jobs to many local residents. It continues to be a major supplier of jobs for the Kalamazoo/Portage area under the current direction of Pfizer.

The local history has certainly had impacts on land of Gourneck SGA. Much of the property was in agricultural production at the time the land was purchased. State Historical Preservation Office (SHPO) procedures have been followed whenever development activities were considered for this area, and will be followed for any future activities that will require movement of soil. No sites of archeological significance are presently known to occur on the Gourneck SGA.

Establishment of Area and Land Acquisition History

The first land purchase for Gourdneck SGA occurred in 1941 when the state purchased 490 acres from Christopher and Mayme Morgenstern at a rate of \$15.00 per acre. Pittman-Robertson (PR) funds were used for this initial purchase. In a memo to the Director dated September 4, 1941 H. D. Ruhl stated the “extensive frontage on Gourdneck Lake and Hogshead (Hogsett) Lake makes the tract unusually desirable for waterfowl and muskrats”.

Other major purchases followed in 1942, and by 1945 the current land ownership on U Avenue was complete and land along Centre Avenue had been purchased, all using PR funds. The land being purchased was good wildlife habitat in the form of wetlands and idle agriculture.

The next wave of land purchases came in the early 1950’s when the existing ownership along Centre Avenue was completed and a large section of land was purchased for the tract along US-131. The northern ¼ of Gourdneck was purchased in 1951.

During the middle 1960’s the final wave of land purchases occurred when the DNR purchased much of the existing ownership. Additional purchases in the 1970’s and 1980 have finished off the existing ownership.

Legislation, Policies and Legal Agreements Specific to this Area

Restriction on the use of certain firearms and activities related to the discharge of firearms are in place for all of Gourdneck. The discharge or possession of a center fire rifle and target, trap or skeet shooting are not allowed on the entire Game Area. Target shooting was discontinued as a result of constant abuse by target shooters who did not pick up after themselves. In addition, safety concerns were expressed by other users who had rounds flying overhead while hunting other game behind targets. Discharging or possessing a rifle or handgun on the Centre Avenue tracts is also prohibited due in part to safety concerns of neighboring homeowners.

Public Use

Hunting

Although hunting is a popular activity on the Game Area it may not be the most popular activity or use. Deer hunting is probably the most popular form of hunting on Gourdneck and the area receives quite a bit of pressure throughout the entire deer season. Rabbit hunting, after snow has covered the ground is popular, especially along the U Avenue trail, while squirrel hunters are able to find ample opportunity on the US-131 tract. Gourdneck SGA receives little waterfowl hunting pressure although Hampton, Hogsett, and Sugarloaf lakes offer some opportunity away from residential homes. Spring turkey hunters are able to find good numbers of birds on the U Avenue and US-131 tracts.

Fishing

The several lakes and ponds associated with the Game Area support a variety of warm water game fish. Fishing throughout the year is a popular activity on the lakes on and around the Game Area. Sugarloaf and Hogsett lakes have boat access sites and Hampton Lake has a walk in access off Centre Avenue. Access to Hogsett Lake is limited to May through December due to seasonal trail closures.

Other Activities

Being in a high population area, Gourdneck receives a large amount of use by non-sportsman. These other uses of the area may exceed hunting and fishing. One popular activity during the summer and early fall is picnic lunches. Parking lots off vehicle trails are often used by locals for a quiet place for a lunch break. Work trails through the Game Area are used as hiking, jogging, and skiing trails.

Commercial use of the area

Commercial timber harvests have been used on the Gourdneck SGA in order to improve wildlife habitat on the area. Additional timber sales may be used in order to achieve management goals and objectives. All commercial activities are incidental to, and have been determined to be compatible with, or having a minimal impact on, management activities undertaken to meet the wildlife management goals for the project.

Facilities

Parking lots

Gourdneck SGA has 9 parking lots that are maintained annually. Refuse removal is a constant maintenance activity especially along Centre Avenue. This has led to the closure of certain parking lots during the summer months due to excessive dumping of yard waste.

Trails

There are 2.8 miles of trails on Gourdneck SGA with about 1.5 miles open to vehicular access during certain times of the year. The public access trails require annual maintenance by adding gravel or grading. Typically, the trail on U Avenue and Vanderbilt Avenue are closed during the winter and spring months to alleviate part of the maintenance cost.

Boat launch

Hogsett Lake has a boat launch that is on Gourdneck SGA and maintained by the Wildlife Division. This launch site is located at the end of the U Avenue trail and is open to public access roughly between Memorial Day and early January.

Gates/barriers

Gates and barriers are maintained to prevent the illegal vehicular access to parts of the Game Area. Currently there are 12 gates and several hundred feet of metal guardrail.

Signs

Signs indicating SGA boundaries along road frontage are maintained at every property corner and every 0.1 Mile. Signs indicating boundaries not adjacent to roads are less complete. Signs posted on the game area include: Open to Hunting, Safety Zone, Leaving State Land, Foot Traffic Only, Centerfire Rifles Prohibited, and No Target Shooting.

Other

There are no maintained buildings, dikes, dams, water control structures or bridges on the game area.

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MANAGEMENT GOALS AND OBJECTIVES

Management Goal

Gourdneck State Game Area offers some unique opportunities and challenges for wildlife management in that much of the property lies within the city limits of Portage. Most of the land for Gourdneck SGA was purchased with PR dollars to restore wildlife communities and provide public access to the land. MDNR intent for purchase included providing hunting and fishing recreation opportunity to Michigan residents. Hunting activity has become somewhat limited on the northern sections of the Game Area due to development and urbanization. In addition, certain options for wildlife habitat management have also been limited by the increasing human population around the Game Area.

However, several threatened or endangered species of plants and animals are located on the northern sections in some of the unique habitat features. Historically, land cover on this section was oak savanna associated with Prairie Ronde and some of the historic features still exist. In addition, the Game Area receives heavy recreational pressure from local residents throughout the year.

Therefore, the first goal for the Game Area will be to restore and maintain unique habitats (native prairies, savannas, woodlands, and fens) where appropriate using or mimicking ecological processes. These activities will occur on the northern sections where hunting access and acceptability may be reduced by local residents. The second goal will be to provide for hunting recreation outside the city limits of Portage using small scale agriculture as a tool to manipulate food and cover resources for game species. The section of land along U Avenue is suitable for this activity due to less residential development along state property lines.

Management Objectives

Future Desired Condition

For planning purposes the Game Area is split into two compartments based on cover type characteristics, political issues, and ownership patterns. Compartment 1 includes the northern parcels of land along Centre Avenue and the largest parcel along US-131. This compartment lies entirely within the city limits of Portage and is surrounded by commercial and residential development. Several state listed plant and wildlife species as well as listed natural communities occur in this compartment. Compartment 2 includes the entire parcel located on U Avenue which is outside the city limits of Portage. Although residential development is threatening, relatively few homes are being built along the property boundaries.

In order to achieve the goal for the entire Game Area the management objective in compartment 1 will be habitat restoration. A large section of the area along US-131 will be included in a prairie/savanna restoration project (Figure 5). Plans are to establish a native tall grass prairie along US-131 and maintain this prairie with fire. Fire will be allowed to burn across the prairie into the woodlands to the north and east in an

attempt to restore the oak savanna that was once there. The two fens located in the compartment will be maintained or restored depending on condition.

Compartment 2 will change very little from its current condition. Several small fields are located in the center of this parcel and the parcel receives heavy hunting pressure. Management will focus on maintaining populations of game species for recreational opportunities.

Desired Wildlife Community

The overall management goal for Gourdneck SGA will benefit a multitude of wildlife species. The habitat restoration activities are expected to directly benefit wildlife species associated with prairies, savannas, and fens. This management direction will directly impact populations of frogs, toads, and reptiles as well as grassland birds and mammals. Woodland and forest associated wildlife species will be influenced indirectly through the use of prescribed fire and the removal of thick stands of vegetation. Allowing natural disturbances to occur in the forested portions of the Game Area will provide additional resources such as snags, coarse woody debris, and small openings for salamanders, birds, and small mammals.

Threatened and endangered species are expected to benefit from the restoration and mimicking of ecological processes. This coarse filter approach can be considered a first step in providing conditions that will help promote the well being of these species. Additional fine filter management options might be considered in the future to address specific life requisites of species.

Wildlife species associated with agricultural landscapes will benefit from management on the southern part of the Game Area through the small scale agricultural operations. Production of game species such as white-tailed deer, wild turkeys, and cottontail rabbits will be the focus of management activities on this site.

Objectives for Public Use

The entire area will remain open to public use throughout the year. Seasonal trail and parking lot closures will continue to help reduce disturbance to wildlife during critical periods of the year and keep maintenance costs down. Other uses of the Game Area such as hiking, picnicking, fishing, and wildlife viewing are expected to continue to increase. Hunting will remain an important seasonal use especially in the more remote portions of the Game Area.

MANAGEMENT ACTIVITIES

Habitat Management Techniques

Along Centre Avenue habitat management is somewhat limited due to proximity to residential and commercial buildings and busy city streets. Transporting agricultural equipment to the eastern most section along Centre Avenue is possible, but there are some issues with traffic and employee safety. Habitat management along Centre

Avenue may be limited to hand removal of brush or small scale opening maintenance through mowing. Use of small prescribed burns may benefit fen restoration efforts and should be explored as an option. Timber management is limited due to traffic issues on Centre Avenue; however, it may be possible to offer some small scale timber sales along Angling Road.

Prior to establishment of the prairie/savanna complex, invasive shrubs will be removed from old fields and oak woodlands adjacent to these fields will be thinned in an attempt to recreate an oak woodland system. Fire will be used to establish and maintain the entire prairie/savanna complex. A permanent burn line will be built to meet standards discussed with MDNR-Forest, Mineral, and Fire Management Division personnel and help identify this habitat project. The goal of prescribed burning will be to mimic the effects of natural fire by allowing it to burn where fuel loads allow, creating a mosaic pattern throughout the prairies and woodlands. Over time, a savanna like state should emerge in specific locations where the fire frequency is lower.

Upland forests not adjacent to the prairie work, wetland forests, or locations where management is limited due to equipment access will either be managed as wild areas where natural disturbances will be allowed to occur or as areas where small timber sales may be allowed. Many of these forest stands are either inaccessible for large scale timber removal operations or within sight of homes or busy roads, making it less desirable to conduct timber management activities. Small scale timber buyers may be an option for some tree removal with minimal visual impacts to the forest esthetics.

The primary habitat management activity along U Avenue will be small scale agriculture in suitable locations. Currently there are several small fields that have been planted with various crops aimed at providing food and cover sources for game species of wildlife. These activities will remain an integral part of management of this portion of the Game Area and should help fulfill the objective for game species production.

Upland timber resources are somewhat limited and sustainable forestry may not be applicable to this parcel. It may be feasible to offer small scale timber sales or firewood sales to manage timber on this tract.

Management of Specialized Habitats

Several of the state listed threatened or endangered plants and animals occur in the Hampton Creek and Vanderbilt fens. Both fens are threatened by invasive non-native plants and woody shrub encroachment, but introducing natural ecological processes to control woody brush invasion is not going to be feasible. Hand and mechanical removal of brush followed by herbicide treatment will be attempted to restore these habitats. Several conservation groups in the area may be interested in assisting with these projects which will take the burden off local Wildlife Division staff. Adding very small scale prescribed burns to the sights should be pursued as an option for continued management.

The proposed prairie restoration area is adjacent to the Vanderbilt Fen where eastern massasauga rattlesnakes have been found. Therefore, management activities on Gourdneck SGA will consider the following to avoid impacting eastern massasauga populations:

1-Mowing of idle fields, parking areas and dams is a necessary maintenance activity in many areas. Mowers will be set to a minimum height of 4-6 inches. Mowing will be restricted seasonally where possible to avoid the following time periods when the rattlesnake is most likely to be active: April, May (Spring emergence), and late July, August, and early September (basking and birthing).

2-When necessary, prescribed burns will be accomplished in late winter or very early spring before the snakes emerge from their hibernacula. Prescribed burns will not be implemented in areas of known occurrences when soil temperatures are above 64°F at a depth of 4 inches.

3-Hibernaculum alteration- operations and maintenance activities that may adversely impact hibernacula will be avoided in areas that are known hibernacula.

Facilities Management and Maintenance

There are no plans to develop additional public access sites on the Game Area. Current parking lots and trails provide adequate access for the amount of use the area receives. All facilities will be maintained and kept in proper working conditions throughout their normally expected functional timeframe.

Currently, three trails are open to vehicular access on the Game Area and require differing degrees of maintenance. The trail on Centre Avenue is open throughout the year and requires some maintenance, specifically refuse removal. The trail on Vanderbilt Avenue requires annual grading and occasional gravel. This trail is open only during the hunting season from September until the snow requires that it be closed. The U Avenue trail which provides access to Hogsett Lake requires the most attention due to its high rate of use. Currently the trail is open between mid May and January; however, the heavy maintenance burden may necessitate its closure. Closing the boat launch will not be popular; however, there is access to Hogsett Lake through the county park on the east side of the lake.

Monitoring and Adaptive Management

Wildlife populations, habitats, recreational activities, and facilities will be monitored as part of normal wildlife management activities on this area. Monitoring will include formal and informal investigations into the effectiveness of management actions. Assessments of effectiveness will provide specific information that will aid in planning and implementation of management activities on this area.

Evaluation of prairie restoration and habitat improvement projects will be monitored by scheduled site visits throughout the expected growing season. These visits will evaluate how well prairie/savanna plants are becoming established and whether management regimes such as fire are having the desired affects.

Wildlife species observed during site visits will be noted to determine if habitat management activities are influencing species expected. Some species of grassland nesting songbirds may be used as indicator species as the prairies are becoming

established. Game species such as deer and rabbits can be used to evaluate the effects of food plot management. Statewide surveys may not be applicable due to sampling size, however should any surveys become available they will be included in the wildlife monitoring effort.

Public use will be monitor during normal work activity and maintenance of facilities, discussions with users when encountered during work, and comments from the local Conservation Officer.

Information gathered during the monitoring effort will be integrated into an adaptive management approach. Adaptive management involves integrating management activities and assessment of the effectiveness of those activities through monitoring and then modifying plans to enhance the desired impacts of management on the area. Results of assessments of management actions will be reviewed by agency personnel and interested stakeholders annually, and appropriate modifications to management actions will be included in annual workplans so that continual improvement can be made toward meeting goals and objectives for this area.

PUBLIC INPUT

A public meeting is scheduled for August 31, 2005 at the Portage Public Library between 6:00 pm and 8:00 pm. The public is invited to provide comment at that time.

REFERENCES

Albert, D. A. 1995. Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin: a working map and classification. Gen. Tech. Rep. NC-178. St. Paul, MN: USDA, Forest Service, North Central Forest Experiment Station. 250p.

Tables:

Table 1. Breakdown of current and future desired cover types on Gourdneck SGA.

Cover type*	Current		Future	
	Acres	Percent of land area	Acres	Percent of land area
Aquatic				
Lake/pond	154	6.9	154	6.9
Total	154	6.9	154	6.9
Wetland				
Marsh	164	7.4	164	7.4
Fen	27	1.2	27	1.2
Forest	615	27.7	615	27.7
Shrub	159	7.2	159	7.2
Total	965	43.4	965	43.4
Upland				
Forest	810	36.5	688	31.0
Savanna	8	0.4	112	5.0
Prairie	40	1.8	147	6.6
Agricultural	243	10.9	154	6.9
Other	2	0.1	2	0.1
Total	1,103	49.6	1,103	49.6
Gourdneck total	2,222	100.0	2,222	100.0

*Based on Michigan Natural Features Inventory draft Natural Communities List.

Table 2. Summary of covertime classified using Operations Inventory standards (Data year 1986).

Covertype	Acres				Total
	Non-stocked	Seedling-sapling	Pole timber	Sawtimber	
Compartment 1					
A			5		5
E		7	156	291	454
G	74				74
L		60			60
M		4	96	11	111
N	88				88
O		10	7	409	426
R			111	37	148
T			8	18	26
U		40			40
V		27			27
Z	104				104
Total	266	147	382	765	1,561
Compartment 2					
E			105	28	133
G	70				70
L		100			100
M			34	52	87
N		76			76
O				51	51
R			20	15	35
U		60			60
Z	51				51
Total	121	236	159	146	661
SGA					
Total	387	383	541	912	2,222

FIGURES

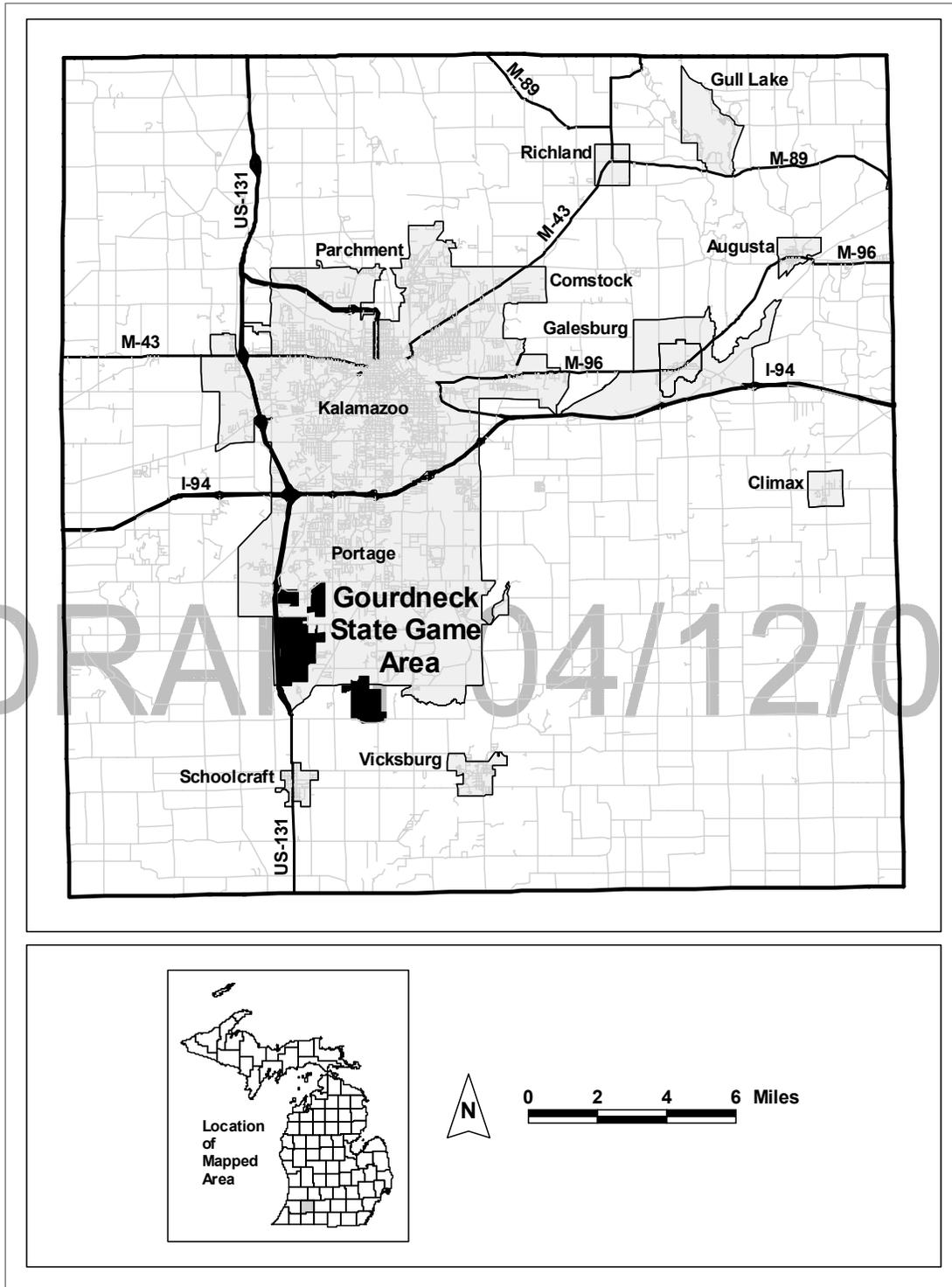


Figure 1. General location of Gourdneck State Game Area.

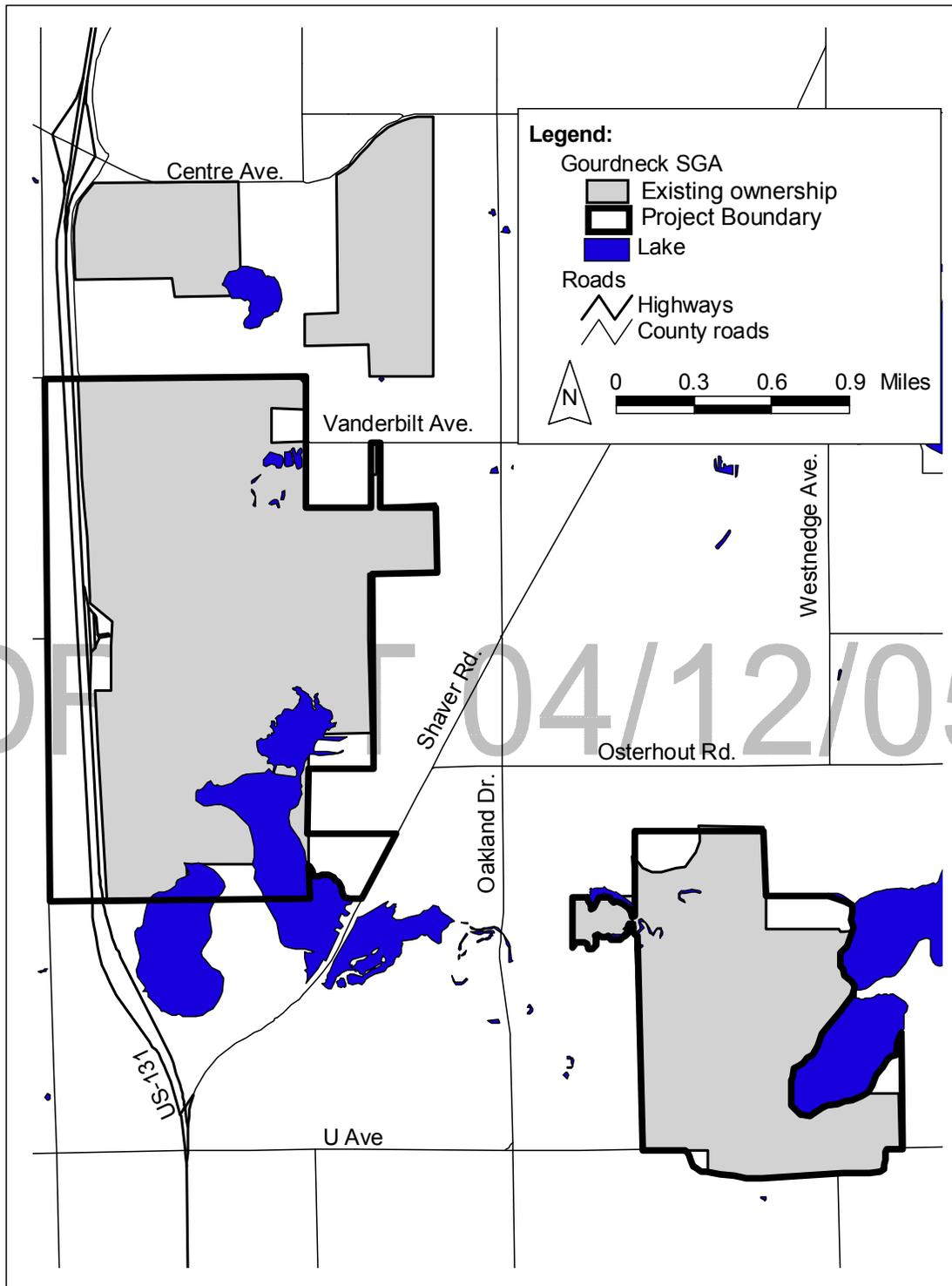


Figure 2. Gourneck State Game Area project boundary and Department of Natural Resources land ownership.

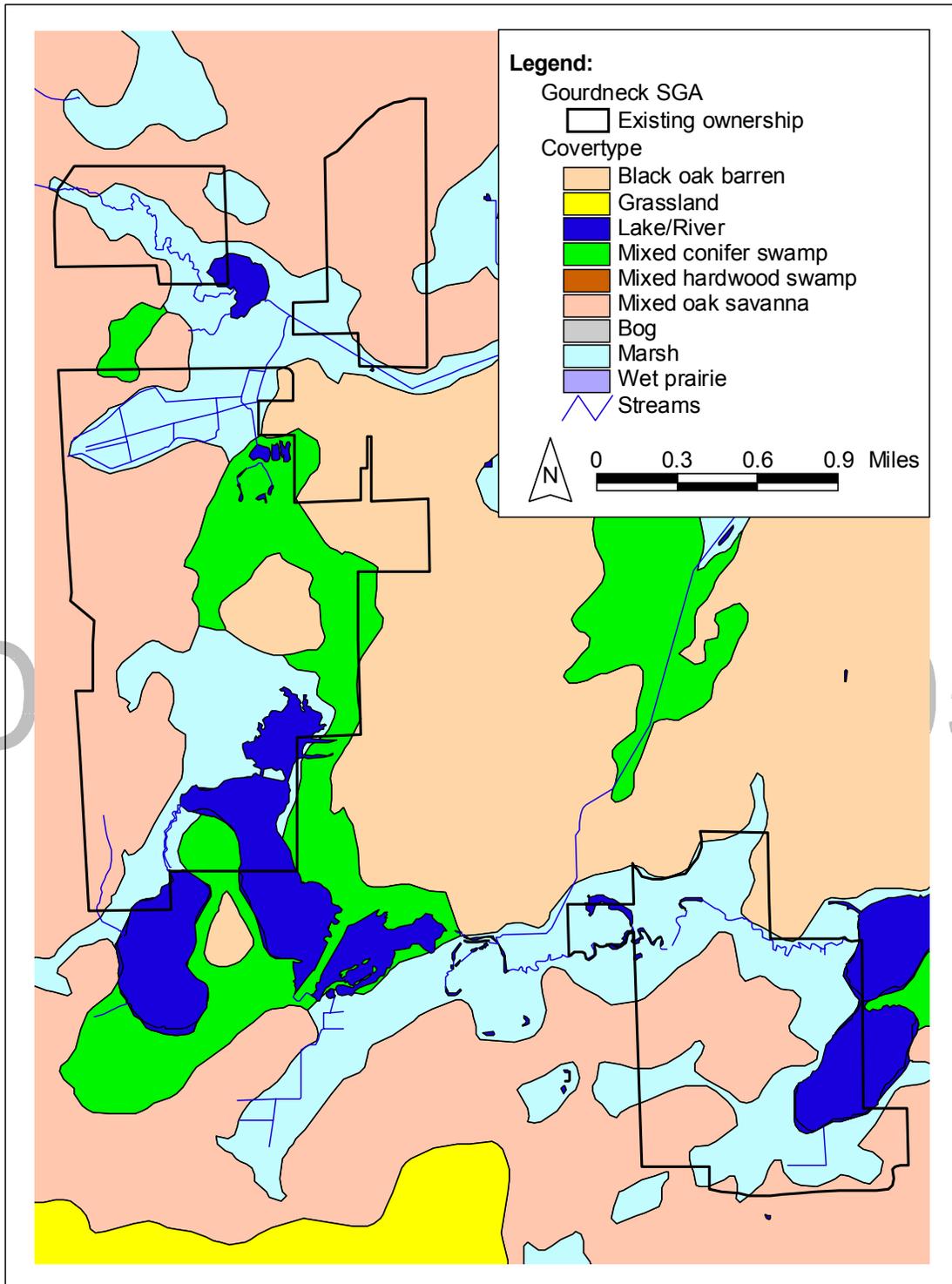


Figure 3. Presettlement cover type of Gourdnck State Game Area and surrounding landscape.

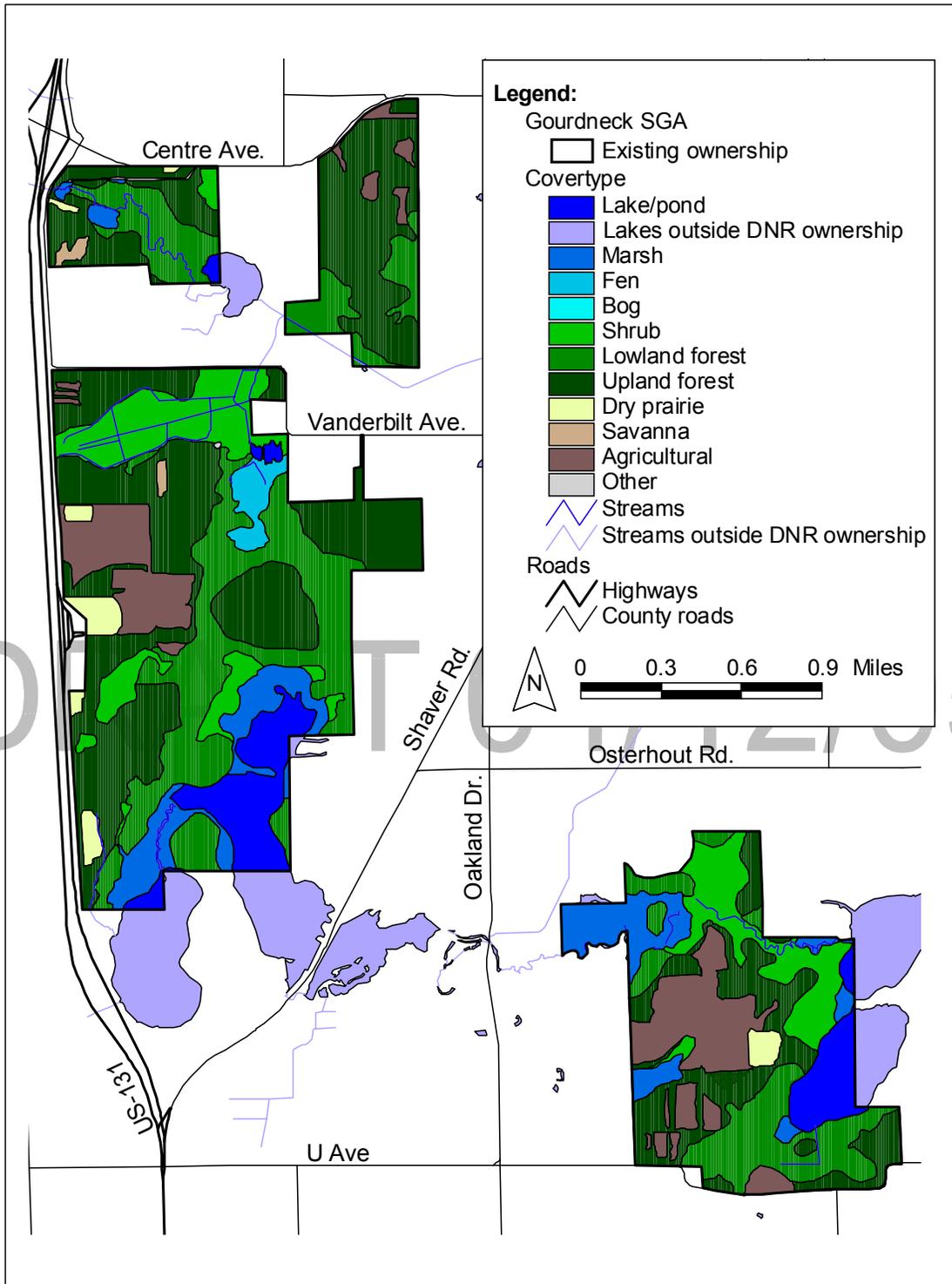


Figure 4. Present cover type on Gourdneck State Game Area.

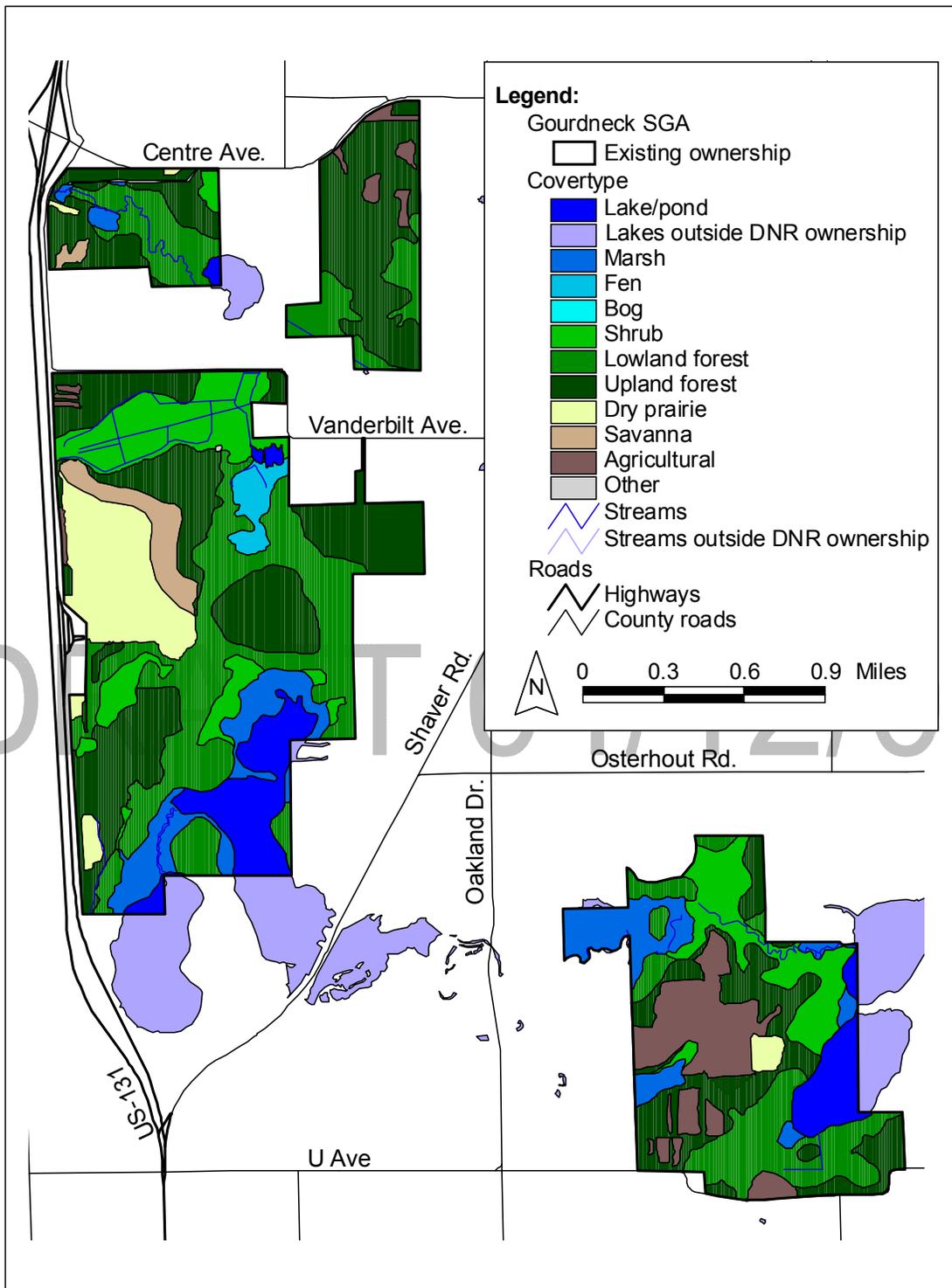


Figure 5. Future desired cover type on Gourdneck State Game Area.

APPENDICES

Appendix A. Michigan Natural Features Inventory list of threaten, endangered, or state concern species found on Gourdneck State Game Area.

		Status	
		State	Federal
Alkaline Shrub/herb Fen, Midwest Type	Prairie fen		
Alkaline Shrub/herb Fen, Midwest Type	Prairie fen		
Bowman's Root	<i>Gillenia trifoliata</i>	T	
Climbing Fern	<i>Lygodium palmatum</i>	E	
Cut-leaved Water-parsnip	<i>Berula erecta</i>	T	
Dodder	<i>Cuscuta pentagona</i>	SC	
Flattened Spike-rush	<i>Eleocharis compressa</i>	T	
Fleshy Stitchwort	<i>Stellaria crassifolia</i>	T	
Greenish-white Sedge	<i>Carex albolutescens</i>	T	
Hairy Angelica	<i>Angelica venenosa</i>	SC	
Leadplant	<i>Amorpha canescens</i>	SC	
Missouri Rock-cress	<i>Arabis missouriensis</i>	SC	
Narrow-leaved Reedgrass	<i>Calamagrostis stricta</i>	T	
Orange or Yellow Fringed Orchid	<i>Platanthera ciliaris</i>	T	
Prairie Coreopsis	<i>Coreopsis palmata</i>	T	
Prairie Indian-plantain	<i>Cacalia plantaginea</i>	SC	
Rattlesnake-master	<i>Eryngium yuccifolium</i>	T	
Rosinweed	<i>Silphium integrifolium</i>	T	
Straw Sedge	<i>Carex straminea</i>	E	
Tall Nut-rush	<i>Scleria triglomerata</i>	SC	
Tooth-cup	<i>Rotala ramosior</i>	SC	
Virginia Flax	<i>Linum virginianum</i>	T	
White Gentian	<i>Gentiana flavida</i>	E	
White Lady-slipper	<i>Cypripedium candidum</i>	T	
White or Prairie False Indigo	<i>Baptisia lactea</i>	SC	
Blanchard's Cricket Frog	<i>Acris crepitans blanchardi</i>	SC	
Douglas Stenelmis Riffle Beetle	<i>Stenelmis douglasensis</i>	SC	
Eastern Box Turtle	<i>Terrapene carolina carolina</i>	SC	
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	SC	C
Frosted Elfin	<i>Incisalia irus</i>	T	
Kirtland's Snake	<i>Clonophis kirtlandii</i>	E	
Spotted Turtle	<i>Clemmys guttata</i>	T	
Tamarack Tree Cricket	<i>Oecanthus laricis</i>	SC	

Appendix B. List of possible vertebrate wildlife species found on Gourdneck State Game Area.

Amphibians

Mudpuppy	<i>Necturus maculosus maculosus</i>
Eastern newt	<i>Notophthalmus viridescens</i>
Spotted salamander	<i>Ambystoma maculatum</i>
Blue spotted salamander	<i>Ambystoma laterale</i>
Eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>
Red-backed salamander	<i>Plethodon cinereus</i>
Four-toed salamander	<i>Hemidactylium scutatum</i>
Eastern American toad	<i>Bufo americanus americanus</i>
Fowler's toad	<i>Bufo fowleri</i>
Blachard's cricket frog	<i>Acris crepitans blanchardi</i>
Western chorus frog	<i>Pseudacris triseriata</i>
Northern spring peeper	<i>Pseudacris crucifer crucifer</i>
Gray treefrog	<i>Hyla versicolor</i>
Bullfrog	<i>Rana catesbeiana</i>
Green frog	<i>Rana clamitans melanota</i>
Wood frog	<i>Rana sylvatica</i>
Northern leopard frog	<i>Rana pipiens</i>
Pickerel frog	<i>Rana palustris</i>

Reptiles

Common snapping turtle	<i>Chelydra serpentina serpentina</i>
Common musk turtle	<i>Sternotherus odoratus</i>
Spotted turtle	<i>Clemmys guttata</i>
Eastern box turtle	<i>Terrapene carolina carolina</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
Common map turtle	<i>Graptemys geographica</i>
Painted turtle	<i>Chrysemys picta</i>
Eastern spiny softshell turtle	<i>Apalone spinifera spinifera</i>
Five-lined skink	<i>Eumeces fasciatus</i>
Northern water snake	<i>Nerodia sipedon</i>
Copper-bellied water snake	<i>Nerodia erythrogaster neglecta</i>
Queen snake	<i>Regina septemvittata</i>
Kirtland's snake	<i>Clonophis kirtlandii</i>
Common garter snake	<i>Thamnophis sirtalis sirtalis</i>
Northern ribbon snake	<i>Thamnophis sauritus septentrionalis</i>
Brown snake	<i>Storeria dekayi</i>
Northern red-bellied snake	<i>Storeria occipitomaculata occipitomaculata</i>
Smooth green snake	<i>Opheodrys vernalis</i>
Blue racer	<i>Coluber constrictor foxi</i>
Black rat snake	<i>Elaphe obsoleta obsoleta</i>
Eastern milk snake	<i>Lampropeltis triangulum triangulum</i>
Northern ring-necked snake	<i>Diadophis punctatus edwardsii</i>

Eastern hog-nosed snake
Eastern massassauga

Heterodon platirhinos
Sistrurus catenatus catenatus

Birds

Pied-billed grebe	<i>Podilymbus podiceps</i>
Least bittern	<i>Ixobrychus exilis</i>
Great blue heron	<i>Ardea herodias</i>
Green-backed heron	<i>Butorides virescens</i>
Mute swan	<i>Cygnus olor</i>
Trumpeter swan	<i>Cygnus buccinator</i>
Canada goose	<i>Branta canadensis</i>
Mallard	<i>Anas platyrhynchos</i>
American black duck	<i>Anas rubripes</i>
Northern pintail	<i>Anas acuta</i>
Gadwall	<i>Anas strepera</i>
American wigeon	<i>Anas americana</i>
Northern shoveller	<i>Anas clypeata</i>
Blue-winged teal	<i>Anas discors</i>
Green-winged teal	<i>Anas crecca</i>
Wood duck	<i>Aix sponsa</i>
Redhead	<i>Aythya americana</i>
Canvasback	<i>Aythya valisineria</i>
Ring-necked duck	<i>Aythya collaris</i>
Greater scaup	<i>Aythya marila</i>
Lesser scaup	<i>Aythya affinis</i>
Common goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
Hooded merganser	<i>Lophodytes cucullatus</i>
Common merganser	<i>Mergus merganser</i>
Red-breasted merganser	<i>Mergus serrator</i>
Ruddy duck	<i>Oxyura jamaicensis</i>
Turkey vulture	<i>Cathartes aura</i>
Coopers hawk	<i>Accipiter cooperii</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Broad-winged hawk	<i>Buteo platypterus</i>
American kestrel	<i>Falco sparverius</i>
Ring-necked pheasant	<i>Phasianus colchicus</i>
Ruffed grouse	<i>Bonasa umbellus</i>
Wild turkey	<i>Meleagris gallopavo</i>
Northern bobwhite	<i>Colinus virginianus</i>
Virginia rail	<i>Rallus limicola</i>
Sandhill crane	<i>Grus canadensis</i>
Killdeer	<i>Charadrius vociferus</i>
Spotted sandpiper	<i>Actitis macularia</i>
Upland sandpiper	<i>Bartramia longicauda</i>
American woodcock	<i>Scolopax minor</i>

Mourning dove
Black-billed cuckoo
Yellow-billed cuckoo
Eastern screech owl
Great horned owl
Barred owl
Northern saw-whet owl
Common nighthawk
Whip-poor-will
Chimney swift
Ruby-throated hummingbird
Belted kingfisher
Red-headed woodpecker
Red-bellied woodpecker
Downy woodpecker
Hairy woodpecker
Nothorn flicker
Pileated woodpecker
Eastern wood-pewee
Acadian flycatcher
Willow flycatcher
Least flycatcher
Eastern phoebe
Great crested flycatcher
Eastern kingbird
Horned lark
Purple martin
Tree swallow
Northern rough-winged swallow
Bank swallow
Cliff swallow
Barn swallow
Blue jay
American crow
Black-capped chickadee
Tufted titmouse
White-breasted nuthatch
Brown creeper
Carolina wren
House wren
Sedge wren
Marsh wren
Golden-crowned kinglet
Blue-gray gnatcatcher
Eastern bluebird
Veery

Zenaida macroura
Coccyzus erythrophthalmus
Coccyzus americanus
Otus asio
Bubo virginianus
Strix varia
Aegolius acadicus
Chordeiles minor
Caprimulgus vociferus
Chaetura palagica
Archilochus colubris
Ceryle alcyon
Melanerpes erythrocephalus
Melanerpes carolinus
Picoides pubescens
Picoides villosus
Colaptes auratus
Dryocopus pileatus
Contopus virens
Empidonax virescens
Empidonax trailii
Empidonax minimus
Sayornis phoebe
Myiarchus crinitus
Tyrannus tyrannus
Eremophila alpestris
Progne subis
Tachycineta bicolor
Stelgidopteryx serripennis
Riparia riparia
Hirundo pyrrhonota
Hirundo rustica
Cyanocitta cristata
Corvus brachyrhynchos
Parus atricapillus
Parus bicolor
Sitta carolinensis
Certhia americana
Thryothorus ludovicianus
Troglodytes aedon
Cistothorus platensis
Cistotherus palustris
Regulus satrapa
Polioptila caerulea
Sialia sialis
Catharus fuscescens

Wood thrush
American robin
Gray catbird
Northern mockingbird
Brown thrasher
Cedar waxwing
European starling
Solitary vireo
Yellow-throated vireo
Warbling vireo
Red-eyed vireo
Blue-winged warbler
Yellow warbler
Chestnut-sided warbler
Cerulean warbler
Prothonotary warbler
Worm-eating warbler
Ovenbird
Louisiana waterthrush
Common yellowthroat
Hooded warbler
Yellow-breasted chat
Scarlet tanager
Northern cardinal
Rose-breasted grosbeak
Indigo bunting
Dickcissel
Rufous-sided towhee
Chipping sparrow
Field sparrow
Vesper sparrow
Savannah sparrow
Grasshopper sparrow
Song sparrow
Swamp sparrow
Dark-eyed junco
Bobolink
Red-winged blackbird
Eastern meadowlark
Yellow-headed blackbird
Common grackle
Brown-headed cowbird
Orchard oriole
Northern oriole
Purple finch
House finch

Hylocichla mustelina
Turdus migratorius
Dumetella carolinensis
Mimus polyglottos
Toxostoma rufum
Bombycilla cedrorum
Sturnus vulgaris
Vireo solitarius
Vireo flavifrons
Vireo gilvus
Vireo olivaceus
Vermivora pinus
Dendroica petechia
Dendroica pennsylvanica
Dendroica cerulea
Protonotaria citrea
Helmitheros vermivorus
Seiurus aurocapillus
Seiurus motacilla
Geothlypis trichas
Wilsonia citrina
Icteria virens
Piranga olivacea
Cardinalis cardinalis
Pheucticus ludovicianus
Passernia cyanea
Spiza americana
Pipilo erythrophthalmus
Spizella passerina
Spizella pusilla
Poocetes gramineus
Passerculus sandwichensis
Ammodramus savannarum
Melospiza melodia
Melospiza georgiana
Junco hyemalis
Dolichonyx oryzivorus
Agelaius phoeniceus
Sturnella magna
Xanthocephalus xanthocephalus
Quiscalus quiscula
Molothrus ater
Icterus spurius
Icterus galbula
Carpodacus purpureus
Carpodacus mexicanus

American goldfinch
House sparrow

Carduelis tristis
Passer domesticus

Mammals

Virginia opossum
Masked shrew
Northern short-tailed shrew
Least shrew
Eastern mole
Star-nosed mole
Keen's bat
Little brown bat
Silver-haired bat
Big brown bat
Eastern red bat
Hoary bat
Eastern cottontail
Eastern chipmunk
Woodchuck
Thirteen-lined ground squirrel
Gray squirrel
Fox squirrel
Red squirrel
Southern flying squirrel
American beaver
White-footed mouse
Prairie vole
Meadow vole
Woodland vole
Muskrat
Southern bog lemming
Meadow jumping mouse
Coyote
Red fox
Gray fox
Raccoon
Long-tailed weasel
Least weasel
Mink
Badger
Striped skunk
Northern river otter
Bobcat
White-tailed deer

Didelphis virginiana
Sorex cinereus
Blarina brevicauda
Cryptotis parva
Scalopus aquaticus
Condylura cristata
Myotis keenii
Myotis lucifugus
Lasionycteris noctivagans
Eptesicus fuscus
Lasiurus borealis
Lasiurus cinereus
Sylvilagus floridans
Tamias striatus
Marmota monax
Spermophilus tridecemlineatus
Sciurus carolinensis
Sciurus niger
Tamiasciurus hudsonicus
Glaucomys volans
Castor canadensis
Peromyscus leucopus
Microtus orchrogaster
Microtus pennsylvanicus
Microtus pinetroum
Ondatra zibethicus
Synaptomys cooperi
Zapus hudsonius
Canis latrans
Vulpes vulpes
Urocyon cinereoargenteus
Procyon lotor
Mustela frenata
Mustela nivalis
Mustela vison
Taxidea taxus
Mephitis mephitis
Lutra canadensis
Lynx rufus
Odocoileus virginianus