

# Regional and Property Analysis Southeast Region Planning Group



## Properties in this Regional and Property Analysis include:

### Wildlife Areas

Big Muskego WA  
Honey Creek WA  
Karcher Marsh WA  
New Muenster WA  
Paradise Valley WA  
Tichigan WA  
Turtle Creek WA  
Turtle Valley WA  
Vernon Marsh WA  
Scattered Habitat Areas

### Fishery Areas

Honey Creek SBP  
Eagle Lake FA  
Camp Lake FA  
Wind Lake FA  
Silver Lake Marsh FA  
Hooker Lake FA  
Statewide Habitat Areas

### Natural Areas

Beulah Bog SNA  
Genessee Oaks SNA  
Mukwonago River SNA  
Peat Lake SNA

### Parks and Recreation

Clover Valley SIATA  
Genessee SIATA  
Ottawa SIATA  
Kettle Moraine  
Railroad SIATA

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**Cover Photos:** Upper left: Turtle Creek Wildlife Area. Upper right: Honey Creek Wildlife Area. Lower left: Tichigan Wildlife Area. Lower right: Turtle Creek Wildlife Area. Photos by Ryan P. O'Connor.

*For your convenience, this document is available on the internet at <http://dnr.wi.gov/> (keyword "master planning"). The document is also accessible from each property's webpage.*

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Each series consists of the following maps, unless the information could be represented on a combined map (e.g., the small Habitat and Fishery Areas) or the map was not needed.

- 1 = public lands
- 2 = infrastructure – existing
- 3 = motorized access (if warranted)
- 4 = current cover types
- 5 = primary sites and trout streams
- 6 = land records designation

# LIST OF ACRONYMS

ADA	Americans with Disabilities Act
BMPs	Best Management Practices
COA	Conservation Opportunity Area
CREP	Conservation Reserve Enhancement Program (federal NRCS program)
CTH	County Trunk Highway
EAB	Emerald Ash Borer
EL	Ecological Landscape
FA	Fishery Area (DNR managed property)
FM	Fishery Management (DNR bureau)
HA	Habitat Area (DNR managed property)
IATA	Ice Age Trail Alliance
LAWCON	Land and Water Conservation Fund Act (federal open space acquisition program)
NAWCA	North American Wetlands Conservation Act
NCMA	Native Community Management Area
NHC	Natural Heritage Conservation (DNR bureau)
NHI	Natural Heritage Inventory (DNR NHC database)
NR	Wisconsin Administrative Code (rules governing the management and assessment of natural resources properties and actions)
NRCS	Natural Resources Conservation Service, agency of the US Department of Agriculture
NSSF	National Shooting Sports Foundation
ORAP	Outdoor Recreation Act Program (former State of Wisconsin land acquisition program)
PR	Parks and Recreation (DNR bureau)
REA	Rapid Ecological Assessment. A DNR document that describes the unique native communities and biological resources at the properties in this planning group.
RMA	Recreation Management Area
RPA	Regional and Property Analysis. A DNR document that describes the regional setting and the physical, biological and cultural assets of the properties in this planning group.
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SGCN	Species of Greatest Conservation Need
SIATA	State Ice Age Trail Area
SNA	State Natural Area (DNR managed property)
SERPG	Southeast Region Planning Group
ss.	Wisconsin State Statutes
STH	State Trunk Highway
US FWS	US Fish and Wildlife Service
WA	Wildlife Area (DNR managed property)
WDNR	Wisconsin Department of Natural Resources (department)
WDOT	Wisconsin Department of Transportation
WisFIRS	Wisconsin Forest Inventory and Reporting System (DNR Forestry Division)
WM	Wildlife Management (DNR bureau)

## Introduction to the Property and Region

The Southeast Region Planning Group properties contain 20,947 acres of fee title and easement lands in Waukesha, Walworth, Racine, and Kenosha counties with small portions also found in Dodge, Jefferson Milwaukee and Rock counties (MAP A). The acreage acquired by program is as follows:

- Wildlife Management - 18,846 acres in fee title and easements,
- Fishery Management - 1,752 acres in fee title and one acre of easements,
- Natural Heritage Conservation - 129 acres in fee title,
- Parks and Recreation (Ice Age Trail) - 220 acres in fee title and easements.

### **Wildlife Areas (WA)** (fee title acres)

- |                                  |                                |
|----------------------------------|--------------------------------|
| Big Muskego Lake WA (735 acres)  | Tichigan WA (1,562 acres)      |
| Honey Creek WA (1,278 acres)     | Turtle Creek WA (1,060 acres)  |
| Karcher Marsh WA (283 acres)     | Turtle Valley WA (1,832 acres) |
| New Muenster WA (1,524 acres)    | Vernon WA (4,330 acres)        |
| Paradise Valley WA (1,757 acres) |                                |

An additional 4,485 acres of fee title and easements at 37 scattered parcels were acquired through statewide wildlife acquisition programs (e.g., Scattered Wildlife, Extensive Wildlife Habitat and Statewide Wildlife Habitat).

### **Fishery Areas (FA)** (fee title and easement acres)

- |   |                                     |
|---|-------------------------------------|
| Honey Creek Streambank Protection (508 acres) | Eagle Lake Fishery Area (95 acres)  |
| Camp Lake Fishery Area (99 acres)             | Wind Lake Fishery Area (14 acres)   |
| Silver Lake Marsh Fishery Area (35 acres)     | Hooker Lake Fishery Area (46 acres) |

An additional 950 acres of fee title and easement parcels on 15 scattered parcels has been acquired through statewide fishery acquisition programs (i.e., Statewide Habitat Areas and Remnant fishery areas).

### **State Natural Areas (SNA)** (fee title and easement acres)

- Beulah Bog State Natural Area (78 acres)
- Genesee Oak Opening and Fen State Natural Area (51 acres)
- Mukwonago River State Natural Area (41 acres within Statewide Wildlife Habitat lands)
- Peat Lake State Natural Area (227 acres within Statewide Wildlife Habitat and Extensive Wildlife Habitat lands)
- Cherry Lake Sedge Meadow State Natural Area (80 acres within the Honey Creek Wildlife Area)
- Karcher Springs State Natural Area (32 acres within Karcher Marsh Wildlife Area)
- New Muenster Bog Island State Natural Area (55 acres within the New Munster Wildlife Area)

### **State Ice Age Trail Areas (SIATA)** (fee title and easement acres)

- |  |                                 |
|--|---------------------------------|
| Kettle Moraine Railroad SIATA (13 acres) | Town of Ottawa SIATA (56 acres) |
| Town of Genesee SIATA (25 acres)         | Clover Valley SIATA (104 acres) |

## Purpose of the Regional and Property Analysis

The Department of Natural Resources (department) develops Master Plans describing the scope, purpose, and management of a property or a group of properties. These plans are developed within the parameters of Wisconsin Administrative Code, Chapter NR 44, which governs Master Planning for properties. Master Plans are required to be revisited and updated at 15-20 year intervals.

The Regional and Property Analysis (RPA) is the first phase in the three phase master planning process. The first phase consists of information gathering, public outreach and the development of a document that summarizes the recreational, habitat and infrastructure assets of each property. The RPA document has the following three major sections:

### Regional Analysis

The Regional Analysis section provides a concise description of the broader biological, ecological, recreational, cultural and economic environment that affects the properties and their uses. It places these assets in a regional context to highlight their relative recreational roles and/or habitat opportunities and challenges. It identifies ecological and recreational needs within the planning group region. It also defines existing and potential social demands or constraints that affect these properties and should be considered during the master planning process. These materials are found in the Appendices of this document.

### Property Analysis

The Property Analysis section describes the existing resources, uses, management opportunities, limitations, and needs on these properties. This section also describes, as needed, the surrounding lands indicating how their character and uses may affect the planning group properties.

### Findings and Conclusions

The Findings and Conclusions section is the most important component of the RPA. Based on the regional and property analyses, the Findings and Conclusions identify future habitat, recreation and infrastructure opportunities and challenges for these properties. It helps focus the planning process and becomes the foundation for building the plan's vision and goals, and action strategies in the Phase 2 Master Plan.

## Introduction to Properties by Designation

The recreational uses and management of these wildlife, fishery, natural area and Ice Age Trail properties are governed by their official designation.

**Wildlife and Fishery Areas** - Wildlife and Fishery Areas are acquired and managed under the authority of Sec. 23.09 (2) (d) 3 Wis. Statutes, and Administrative Code ch. NR 1.51. Wildlife Areas are designated to provide places where people can hunt, trap or fish. Wildlife and Fishery Areas are also open for traditional outdoor uses of walking, skiing, snow shoeing, nature study, berry picking, and other low-impact recreational activities. As directed by NR 1.51 and NR 1.61, other recreational uses may be allowed by the Master Plan if those uses do not detract from the primary purpose of these properties.

**Stream Bank Protection Areas** - The Stream Bank Protection program was established to protect watersheds, restore riparian corridors and aquatic habitat along streams, rivers and lakes, improve water quality and provide public access and fishing opportunities. Section 23.09 (2) (d) 13 and Section 23.094, Wis. Statutes (ss), provides legislative authority and direction for acquisition and management of these areas. In addition, these properties can provide opportunities for compatible recreational uses such as hunting, hiking, bird watching, nature study, and cross-country skiing.

**State Natural Areas** - Natural Areas are defined and authorized in ss. 23.27-23.29 and NR 1.32 as “an area of land or water which has educational or scientific value or is important as a reservoir of the state’s genetic or biological diversity and includes any buffer area necessary to protect the area’s natural value”. Section 23.27(1) defines natural areas as “reserves for native biotic communities...habitat[s] for endangered, threatened, or critical species...or areas with highly significant geological or archaeological features”. Section 23.28(1) provides authority to designate areas as State Natural Areas and Section 23.29 provides authority to legally dedicate and protect State Natural Areas in perpetuity. While the intent of the Natural Areas program is to preserve the best examples of the state’s diverse natural communities, many recreational uses are usually allowed, if they do not threaten the site’s natural values.

**Ice Age Trail** - The State Ice Age Trail Areas (SIATAs) (NR 1.29) are intended to provide the following:

- permanently protect and provide land for segments of the Ice Age Trail;
- preserve Wisconsin’s glacial landscape features;
- protect natural and cultural resources associated with the route of the Ice Age Trail; and
- where possible, offer a primitive atmosphere of relative solitude and perceived remoteness where visitors may experience a quiet connection with nature.

These properties provide opportunities for low impact public recreation such as hiking, backpacking and snowshoeing while protecting the natural and scenic character within the corridor. Ice Age Trail lands are purchased under the authority of ss. 23.09 (2) (d) 10. Limited camping is allowed at dispersed camping areas for long-distance hikers. Hikers (in accordance with NR 45.10 (1) (a) 5) follow the “Leave No Trace” principles. Stays are limited to one night and no fires are allowed except for portable camp stoves.

**Scattered Habitat, Fishery and Natural Areas** – Many small parcels have been acquired through a variety of statewide conservation programs, primarily two wildlife programs (Extensive Wildlife Habitat and Scattered Wildlife Lands) and two fishery programs (Remnant Fishery Areas and the Statewide Habitat Program). These programs acquired lands in fee title and easement for the following reasons:

- provide land and waters for public hunting, fishing, trapping and nature enjoyment,
- protect critical habitats from incompatible land uses and reduce the risk of non-point pollution,
- provide habitat to sustain game and non-game species, and protect native communities.

### Cultural Resources

Wis. Statutes Section 44.40 and department Manual Code (1810.10) require that any activities on state lands with the potential to disturb archaeological sites or other historic properties only be undertaken after consultation with the department Archaeologist. Section 106 of the National Historic Preservation Act also applies to undertakings that are funded in whole or in part with federal funds.

### Land Cover Interpretation

Providing a description of the land cover and vegetation is an important element of the planning process. This document includes narrative ecological descriptions as well as maps and tables derived from GPS land cover estimates. There are distinct programmatic differences in the detailed Natural Heritage and Wildlife Management habitat descriptions compared to the broad based Forestry land cover types. A principal difference is the “top down” view is not intended to capture the detail included in the “ground up” ecological community descriptions.

The natural plant and animal community descriptions in the property write-ups are derived from the “ground up” analyses provided by the Natural Heritage Conservation or Wildlife Management programs. In comparison, the maps and tables for each property are derived from the ‘tree-top’ or broad based “land cover type” descriptions contained in the Forestry database. As a result, a property description may describe the presence of one or more small, unique natural communities while the maps and tables only include the broad based “top down” land cover types. For example, a unique bog or fen described in the property narrative will be included in a more generic wetland category in the tables and maps.

## Analysis of the Regional and Local Context

### Regional Socioeconomic and Land Use Patterns

The information in this section was drawn from the following resources:

- ✓ Wisconsin Department of Administration Wisconsin Population & Household Projections and US Census QuickFacts <http://www.doa.state.wi.us/Divisions/Intergovernmental-Relations/Demographic-Services-Center> and <http://quickfacts.census.gov/qfd/index.html> .
- ✓ UW-Madison Applied Population Laboratory profiles providing a regional context for WDNR managers as they engage in planning and decision making for their properties (WDNR 2010).
- ✓ The "*Ecological Landscapes of Wisconsin*" (WDNR 2014) describes land use and socio-economic characteristics on a regional basis for properties statewide. For this document, focus was narrowed to the Southeast Glacial Plains and the Southern Lake Michigan Coastal Ecological Landscapes. These characterizations apply to areas well beyond this planning group, but most of the generalized regional descriptions are consistent with each other.
- ✓ Population and planning materials available on federal, state and local web sites.

### Population

The population of the four counties (Kenosha, Racine, Walworth and Waukesha) surrounding these properties was about 854,000 in 2010 (WDOA, 2013). The cities with the largest populations in these counties were Kenosha (99,218), Racine (78,860), Whitewater (11,150) and Waukesha (70,718) respectively.

These four counties lie within the most densely populated region of the state (Table 1). They have an average population density of 500 people/square mile and about 46% of the population in the planning area lives in Waukesha County. Waukesha, Kenosha and Walworth counties are anticipated to have population growth rates higher than the state as a whole with rates ranging between 17-26%. Waukesha County has a substantially higher proportion of college graduates than the other three counties and the state as a whole. These counties also lie between the heavily populated Milwaukee and Chicago metropolitan areas.

Four primary population trends stand out as relevant to outdoor recreation planning and habitat management. (1) the region has a relatively large and growing population, particularly in the cities and their suburbs, (2) development pressure and growth in towns outside the urban centers, (3) the aging of the population so that the population over age 65 will constitute about 25% of the overall population by 2040, and (4) the continued growth of minorities as a percentage of the population, especially the Hispanic and Asian populations.

**Table 1 Socio-economic snapshot of the southeast counties compared to the State of Wisconsin**

	Walworth County	Kenosha County	Racine County	Waukesha County	State
2010 Population	102,228	166,426	195,408	389,891	5,686,986
Land Area (mi <sup>2</sup> )	555	272	333	550	54,157
Population Density (people/mi <sup>2</sup> )	184	612	588	709	105
Projected Population Growth between 2010 and 2040 (%)	21	26	9	17	14
Median household income (2009-2013) (\$)	54,020	54,930	54,090	75,850	52,413

## Employment

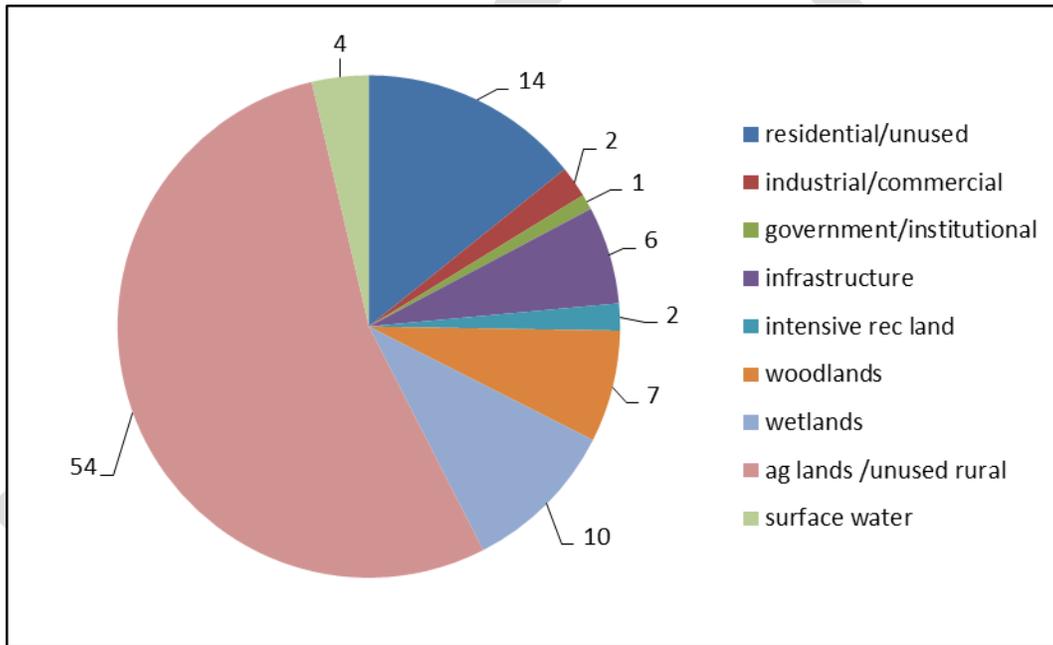
The dominant employment sectors are manufacturing, health care, wholesale and finance. The fishing, hunting, bird watching, hiking, and other nature based recreation opportunities on the properties contribute in some amount to the tourism and service sectors of these local economies.

## Transportation Network

The transportation infrastructure of the region is highly developed with a higher density of federal, state and local highways and roads connecting the urban and rural areas along with railroads and airports than the state as a whole (WDNR 2010).

## Land Uses and Ownership

Kenosha, Racine, Waukesha and Walworth counties have a total area of about 1,710 square miles and a diverse mix of agricultural, residential, wetlands, forests, and developed land uses (Figure 1). Agriculture was the dominant land use in 2000. However, given the development in this region the pie chart underestimates the amount of developed land and over estimates the undeveloped lands. Field crops (especially corn, soybeans and hay) are the primary agricultural commodities produced in these counties.



**Figure 1 - Land Uses in the Planning Group Counties**  
(Sources - County 2035 Comprehensive Plans)

A major objective of the state fish, wildlife and natural area properties is to protect and/or restore native communities such as wetlands, woodlands and grasslands. For example, it is estimated that over 50% of the pre-settlement wetlands were lost to drainage and filling (SEWRPC, 2011). Many of the agricultural lands in the region were created or enhanced by the ditching and draining of set soils and wetlands.

A significant issue affecting grassland habitat in the region is the reduction of acreage enrolled in the federal Conservation Reserve Program (CRP). Enrolled acres were maintained in permanent vegetative cover, primarily as grasslands. Higher commodity prices and other factors have led to a substantial reduction in CRP acres in these counties (U.S.D.A., 2014). The acres enrolled in CRP dropped from a high of almost 25,000 acres in the mid-1990's to less than 7,000 acres in 2013. This is a loss of nearly 18,000 acres of grasslands in these counties.

Wildlife populations will rise and fall in response to a variety of factors, including the amount and quality of the critical habitats (e.g., nesting, brooding, feeding and resting areas) on the landscape. The loss of CRP grasslands has hindered efforts to sustain populations of grassland-dependent game and non-game species. The CRP acres on private land helped provide a landscape-scale approach to grassland wildlife management. Acreage enrolled in CRP is expected to continue to decline with an attendant loss of permanent vegetative cover for grassland wildlife such as pheasant and grassland songbirds.

CRP lands also help protect ground and surface water quality and quantity that help to sustain water resources important to providing high quality trout streams, warmwater streams and wetlands.

Fragmentation of habitats has also had a significant adverse impact on habitat quality and wildlife populations, especially forest interior and grassland birds. Many areas have diminished value as wildlife habitat due to roads, utility corridors, in-holdings of developed lands, and other intrusions.

Residential development in the region has primarily occurred in and around the cities and smaller villages. However, proximity to the Milwaukee metropolitan area is contributing to increased development pressure in these counties, especially on agricultural lands and woodlands.

Population growth adds to housing and infrastructure development, which impacts both the supply and demand for land and outdoor recreation. Housing development, especially in unincorporated rural areas, can fragment and reduce the supply of land available for hunting, fishing, snowmobiling and other forms of outdoor recreation.

Conversely, this increased population may also broaden the demand for outdoor pursuits, including walking, dog walking, bike trails and horse riding. At the most basic level, more housing in an area generally means more people are likely to participate in some form of outdoor recreation.

**Land Cover**

Collectively, the land cover of the planning group properties is nearly 70% wetlands and open water. The uplands primarily consist of grasslands followed by nearly equal amounts of oak, deciduous hardwoods and agricultural lands. The relative amount of each land cover is shown below.

Upland Land Cover	% of Total
Grassland	12
Oak	6
Upland Hardwoods	6
Agriculture	4
Upland Conifer	<1
Shrub	<1
Developed	<1

Lowland Land Cover	% of Total
Emergent Marsh	26
Lowland Shrub	20
Non-forested wetlands	12
Open Water	5
Bottomland Hardwood	5
Swamp Hardwood	<1
Swamp Conifer	<1

**Recreation and Public Lands in the Planning Region**

A large and growing number of recreational activities are occurring in the region. The majority of the land in these counties is privately owned. Undeveloped private parcels can provide recreational opportunities for the land owners and their guests. By comparison, the public acreage available for traditional outdoor recreational opportunities is much smaller (Table 2).

The department is the major provider of recreation and conservancy lands in the region. More than 47,000 acres in park, trails, state forest, wildlife, fishery and natural area lands is available for traditional nature based outdoor recreation (Map A). Collectively, these state properties represent about 4.2% of the total land area of these counties. Major department properties within the region not included in this planning process include all state parks, state bike/hike trails (excluding Ice Age Trail parcels), the Kettle Moraine State Forest – Southern Unit, the Bong Recreation Area, Rainbow Springs Recreation Area, and the Chiwaukee Prairie and LuLu Lake state natural areas.

Table 2 Public Access (fee title) Lands in the Region					
Land Holdings	Kenosha County	Racine County	Walworth County	Waukesha County	Total
Land Area (acres)	174,611	213,184	368,951	371,535	1,128,281
DNR (acres)	7,141	3,955	15,056	20,971	47,123
Local* (acres)	4,150	3,150	3,376	9,143	19,819
Conservation/Rec Lands (DNR) (%)	6.5 (4.1)	3.3 (1.8)	5.0 (4.1)	8.1 (5.6)	5.8 (4.2)

Sources: (DNR Land Records System, 2014, County Comprehensive/Open Space Plans, US-FWS 2014)

\* Estimates of Recreation / conservation lands owned by local units of government, land trusts, schools and conservation groups from local planning documents and web based information.

**Other Recreation Lands** – A number of other programs or entities provide land that can be used for hunting, fishing, trapping or other nature based pursuits. The Voluntary Public Access lease program (funded by a USDA Voluntary Public Access and Habitat Incentive Program (VPA-HIP)) provides about 2,476 acres for public recreation, primarily hunting, in the planning region. The county totals are 76 acres in Kenosha County, 110 acres in Racine County, 1,061 acres in Walworth County, 40 acres in Waukesha County and 1,189 acres in northeast Rock County. About 710 acres of these VPA leases are adjacent to the properties in this planning group. All of these leases will expire in 2017. These lands are at risk of being closed to the public if the land is not re-enrolled and/or funds are not allocated to continue the lease program.

A small amount of private land (about 180 acres) enrolled in the Managed Forest Law is available for public hunting and other recreational purposes in these four counties.

The Wisconsin Department of Transportation (DOT) has acquired about 1,400 acres of wetland mitigation sites in these counties. Many of these acres have been restored to wetlands or grasslands and are open to the public.

Counties/local units of government, university, school forest, land trust and non-profit properties may also provide the public with opportunities for nature based recreation activities. These lands also provide environmental services benefits to the local and regional communities. However, these properties typically have different recreation, conservation, education or research missions than a state fish and wildlife property. As a result, they often limit or do not allow the recreational activities provided by the state fish and wildlife lands.

Lands acquired for conservation purposes using state Stewardship funds are open for outdoor pursuits as defined by law.

**Lake Management Districts** - Joint management of important resources, such as lakes, that border state properties involves collaboration between local units of government and the department. Several department properties in this planning group border lakes that have established lake protection districts.

Examples include:

- Big Muskego Lake WA and the Big Muskego Lake/Bass Bay Protection & Restoration District
- Tichigan WA and the Waterford Waterways Management District

A number of other properties and lake protection districts are located in this planning group and are mentioned in the respective property descriptions. The department planning team will contact via email the lake management districts with current email addresses on the UW Extension Lake Management Organizations web page.

## Recreation Demand, Uses and Resources

### Defining the Purpose of the Planning Group Properties

The department properties are intended to provide opportunities for dispersed, non-motorized hunting, fishing, trapping hiking and cross-country skiing activities in primitive to lightly developed settings. They can also support other compatible activities such as canoeing, bird watching, berry picking, nature enjoyment and other low intensity recreational pursuits

These properties help serve the recreational needs for numerous citizens in the most heavily populated region of the state. Use of these public lands and waters is heavy, and the demand for recreation access is rapidly exceeding the capacity of existing facilities and resources (WDNR 2010). The on-going development of this region will decrease the amount of undeveloped land while increasing the demand for an ever increasing number of recreational pursuits such as walking, dog walking, geocaching and trails.

### Recreation Demand and SCORP Findings

The findings from the 2012 and 2006 Statewide Comprehensive Outdoor Recreation Plans (SCORP, WDNR 2012 and 2006a) were used to describe the recreation opportunities in the planning region. The Federal Land and Water Conservation Fund (LWCF) Act of 1965 requires states to prepare a SCORP to be eligible for LWCF acquisition and development assistance grants administered by the department.

The SCORP evaluates the demand for and supply of outdoor recreation facilities in the state. Outdoor recreation participation surveys are conducted by the National Survey on Recreation and the Environment (NSRE) which examines 62 recreational uses for adults, ages 16 and older, for the various SCORP regions in the state. The Lower Lake Michigan Coastal Region includes Kenosha, Racine, Walworth, Milwaukee, Waukesha, Ozaukee, Washington and Sheboygan counties.

The 2006 and 2012 SCORP reports suggest that future participation trends include the following high, stable and declining demand uses that meet the intended purposes of these fish, wildlife, natural area, and park and recreation properties:

**Increasing Demand** - bird watching, wildlife viewing/photography, canoeing/kayaking, snowshoeing, walking and geocaching.

**Stable Demand** - cross-country skiing, snow shoeing, day hiking, primitive/tent camping and fishing.

**Decreasing Demand** - hunting, mountain biking, horseback riding, snowmobiling and backpacking.

Several activities that are not a stated purpose of these properties, but can be accommodated as a compatible passive use include enjoyment of the properties when pleasure driving or biking.

One of the major recommendations in the 2006 SCORP was the preservation and protection of larger areas to provide space for popular regional outdoor recreational activities.

In 2005 the department conducted a series of town meeting across the state to identify concerns that are impediments to outdoor recreation in Wisconsin. The following issues were the most influential in the southeast planning region:

- Urban sprawl/development
- Loss of access to lands and waters
- Inadequate access to public lands
- Maintain rustic areas and natural lands
- Managing invasive species
- Need for more hiking/biking trails
- Better boat access
- More silent sport opportunities
- Multiple-use recreation conflicts

## License Purchases

License and stamp/permit purchases are an indication of participation in regulated outdoor activities. Table 3 provides information on adult license sales averaged over four years (2011-2014). Sporting activities are popular in the planning area as indicated by the 137,500 resident licenses and over 11,600 non-resident licenses sold each year. Undoubtedly, some of the 56,100 resident license purchasers from nearby Milwaukee County also use these properties.

License	Purchases	License	Purchases
Annual fishing	75,454	Turkey	6,456
Gun Deer	28,876	Small Game	7,966
Archery	11,686	Patron and Sports	7,116

## Hunting and Trapping

The oak-hickory dominated forests, mixed grasslands and wetlands provide excellent wildlife habitat for many species including deer, turkey, small game and waterfowl. About 7% of the population over 18 in the planning region purchases a deer hunting license annually. The public lands are heavily used for hunting, and crowding can be an issue, especially on opening day for deer, waterfowl, and pheasant.

Trapping of fur-bearing animals also occurs on these properties. Over the last four years about 873 trapping licenses were purchased annually in these four counties.

Over 6,190 turkey stamps, about 4,080 pheasant stamps, over 11,350 goose permits and 5,550 waterfowl stamps were purchased annually in the planning area (2011-2014 sales period).

Pheasant hunting is popular in the southeast region and draws hunters locally and from other states. Nine of the Southeast Region Planning Group properties are stocked with farm-raised pheasants to provide opportunities for pheasant hunting (Table 4). The Richard Bong Recreation Area has 3,600 acres of pheasant habitat and 10,000 – 12,000 birds are stocked yearly. The Kettle Moraine State Forest – Southern Unit also provides over 5,600 acres of habitat and over 3,800 birds are stocked annually.

The small wild pheasant population in the planning region exists mainly on private land. The habitat needed to maintain a sizable, sustainable population of wild pheasants is no longer present. About 60% of the Pheasant Stamp funds are directed toward rearing pheasants and 40% for habitat management.

Property	acres suitable	2013 stocking	2014 stocking
Vernon WA	1,500	980	1,040
New Munster WA	1,250	860	860
Honey Creek WA	1,100	700	700
Tichigan WA	1,000	700	700
Paradise Valley WA	425	180	460
Beulah Station/Honey Creek SPA	570	360	360
Clover Valley HA	400	240	240
Troy HA	200	120	120
Hoosier Creek HA	115	120	120
<b>Total</b>	<b>6,560</b>	<b>4,260</b>	<b>4,600</b>

## Fishing and Water-based Activities

As noted above, over 75,000 resident fishing licenses are sold in the four counties each year. About 12% of the population over 18 in these counties purchases a fishing license. Nearly 7,500 inland trout stamps are purchased annually in these counties. An additional 36,300 resident fishing licenses and over 4,100 inland trout stamps are sold annually in Milwaukee County.

**Warmwater Sport Resources** - The water resources on or adjacent to these properties include numerous lakes, rivers, streams and ponds. The major rivers and streams in the region are the Fox River, Bark River, Turtle Creek and Honey Creek.

Stocking of warmwater resources with walleye, northern pike and some musky is a common management activity. The fish stocking records for several of the larger lakes with access from a planning group property are listed in Table 5. Other stocked water bodies include the Fox River, Bark River, Ashippun Lake, Lac La Belle, School Section Lake, Lake Keesus, Eagle Spring Lake, Como Lake, Potter Lake, Wind Lake, Silver Lake, Hooker Lake and Camp Lake.

Lake	Walleye	Northern pike	Musky
Big Muskego Lake		38,000 (large)	
Delavan Lake	212,000 (small)		7,600 (large)
Lower Nemahbin Lake	22,500 (large)	1,900 (large)	
Nagawicka Lake	68,000 (small) 5,400 (large)	5,500 (large)	
Lower Phantom Lake		3,500 (large)	
<b>Total</b>	<b>307,900</b>	<b>48,900</b>	<b>7,600</b>

**Coldwater Resources** - There are 1.7 miles of Class 2 and 4.3 miles of Class 3 trout waters on the planning group properties. Class 2 streams have some natural reproduction, good survival and carryover of adult trout may occur resulting in larger trout. Class 3 trout waters are marginal habitats with no natural reproduction and generally no carryover of trout from one year to the next. The Class 3 streams have been intermittently stocked with brown and rainbow trout and portions of the Class 2 streams have been stocked with brook and brown trout to maintain the trout fisheries and provide recreational opportunities. Portions of the Bark River and Mukwanago River are also considered trout waters, though only small sections may pass along or through a department property. Other streams, such as Karcher Creek, may also have potential as trout waters.

The following trout streams are important or have the potential to contribute to the local fishery and provide a valuable recreational opportunity close to the major population center of Wisconsin.

- Palmer Creek (Class 3 - New Muenster WA)
- Mill Brook (Class 2/3 – Vernon WA)
- Tichigan Creek (Class 3 - Tichigan WA)
- Rosenow Creek (Class 2 – Lac La Belle HA)

## Wildlife Viewing and Nature Enjoyment

Birding is a popular activity in the region. Big Muskego Lake and the wildlife area are identified as an Important Bird Area (WDNR 2007). This designation is reserved for select areas that are extremely important to bird life. Several of the properties in this planning group are also included in the Lake Michigan Region and the Southern Savanna Region auto trails of the Great Wisconsin Birding and Nature Trail (WDNR, 2008). Properties identified as waypoints to visit along the birding trails include the New Muenster WA, Honey Creek WA, Tichigan WA and Turtle Creek WA. Other properties with noted bird watching opportunities include Paradise Marsh WA, Vernon WA and Turtle Valley WA.

A number of the rivers and streams are also popular canoe and kayak destinations. The most popular are the Fox River, Mukwanago River, Turtle Creek and Honey Creek.

## Trails

There are four State Ice Age Trail (IAT) Areas in this planning group. The Ice Age National Scenic Trail is one of eleven National Scenic Trails and is the only one located entirely within Wisconsin. The IAT is also one of 41 designated Wisconsin State Trails and the only one specifically designated as a "State Scenic Trail." The recreational goal of the IAT is to develop a continuous footpath that provides users with diverse scenic, cultural and nature based experiences. Hiking, cross country skiing and snow shoeing are the primary recreational activities.

Other state trails in the region include the White River State Trail (19 miles) and the Glacial Drumlin State Trail (52 miles). These trails are primarily located along abandoned railroad rights-of-way and provide year round, multi-use recreation opportunities (e.g., walking, biking, snowshoeing and cross-country skiing (the trails are not groomed for skiing). Snowmobiling is allowed on portions of the Glacial Drumlin Trail and all of the White River Trail. A two mile section of the White River Trail is open for horseback riding. Hunting is only allowed on very limited sections of the Glacial Drumlin Trail.

There are about 611 miles of snowmobile trails in these counties. They are predominantly located in rural areas, but many have links to cities and villages to make amenities available to riders (*ASWC web*).

There are no mountain bike or equestrian trails located on these properties. Providing horse trails and mountain biking trails are better suited to the Kettle Moraine State Forest – Southern Unit, Bong Recreation Area and county parks rather than the properties in this planning group. County parks provide 54 miles of designated hiking trails, 19 miles of bridle trails, and 28 miles of ski trails.

## Camping

Tent and RV style camping is provided at numerous public and private facilities in the region. No camping is allowed on these fish, wildlife and natural area lands.

## Geocaching

The geocaching web map indicates there are caches on a number of the properties with over 30 caches on the Vernon WA (*Geocaching web map*).

## Walking and Dog Walking

An increasingly common activity is pleasure or exercise walking and dog walking (e.g., Vernon WA, Honey Creek and Tichigan WA), especially where residential developments are close to properties. There are issues with individuals walking their dogs at Tichigan WA in the refuge during the closed period.

## Accessibility Recreation Considerations

The National Survey on Recreation and the Environment (*Cordell, et. al. , 2004*) indicated a number of nature based outdoor pursuits were popular among mobility-disabled individuals. These properties can accommodate activities such as canoeing, fishing, nature study, sightseeing and wildlife/bird watching.

## Biological Resources and Ecological Characteristics

Background information for this section of the Regional & Property Analysis is largely reproduced from the "Ecological Landscapes of Wisconsin" (WDNR 2014). Developed by the WDNR Ecosystem Management Planning Team, this resource identifies the best areas of the state to manage for natural communities, including their key habitats, aquatic features, native plants, and native animals from an ecological perspective. Additional information more finely tuned to regional characterization of the is reproduced from the Rapid Ecological Assessment for State Natural Areas and Wildlife Areas of the Southern Kettle Moraine Region (WDNR 2011a).

It's important to note that land cover and vegetation descriptions in this document use different terminology compared to land cover types (WisLand) or forest stands (Forest Recon). These differences in terminology and land cover classification result from different goals and thus different approaches to describing the landscape and its elements. The ecological descriptions presented here describe natural communities, from a holistic perspective including characteristic tree, shrub, and herbaceous plant species, animals, as well as abiotic characteristics such as glacial landforms, soil and water chemistry, natural disturbance regime, etc. Thus, natural communities form the basic unit of conservation for the plants and animals they support, as well as providing a foundation for management of these species. Other classification systems, such as land cover mapping, are more general and provide useful information for wildlife habitat management, but lump some natural communities under broad categories. For example, the land cover type "wetland" may include unique natural communities such as Calcareous Fen, Springs and Spring Runs, and Southern Sedge Meadow.

### Ecological Landscapes

The properties lie within the Southeast Glacial Plains and the Southern Lake Michigan Coastal Ecological Landscapes. Figure 2 shows the properties in relation to the Ecological Landscapes.

The **Southeast Glacial Plains Ecological Landscape** borders Illinois and covers a large area of southeastern Wisconsin. This ecological landscape is home to some of the world's best examples of continental glacial activity. Most of this Ecological Landscape is composed of glacial materials deposited during the Wisconsin Ice Age. Apart from the interlobate moraine (a long ridge-like formation that developed between the Green Bay and Lake Michigan lobes during the Wisconsin Glaciation), most of the region offers moderate topographical relief, with glacial deposits forming the greatest irregularities (Martin 1974). Soils in this landscape vary from poorly drained clayey to well drained loamy soils with a silt loam surface over calcareous loam till.

Historically, the vegetation in the Southeast Glacial Plains Ecological Landscape consisted of a mix of prairie, oak forests, savanna, and maple-basswood forests on the moraines and drumlins in the uplands. Wet-mesic Prairie, Southern Sedge Meadow, Emergent Marsh, Calcareous Fen, and tamarack swamps are found in poorly drained, wetter portions of the landscape.

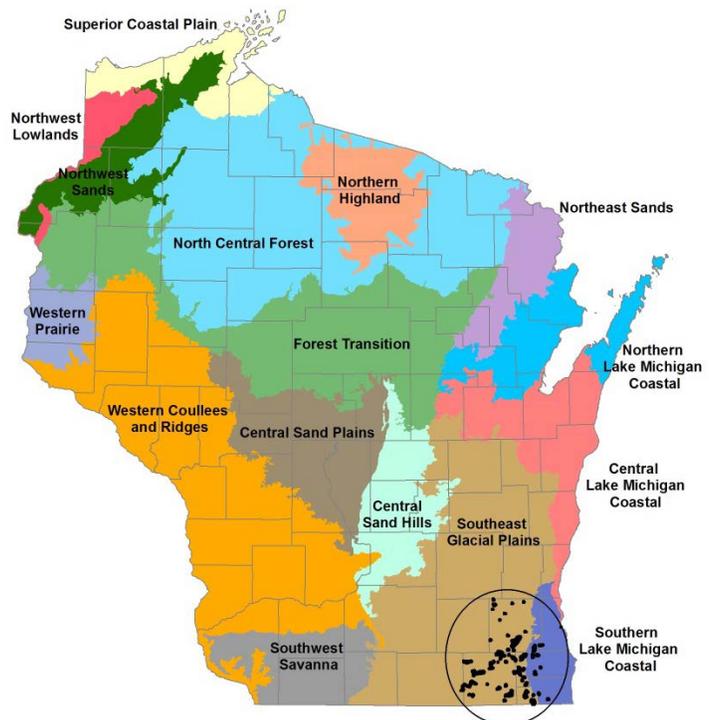


Figure 2 - Ecological Landscapes of Wisconsin and the study area

The Southeast Glacial Plains Ecological Landscape has undergone dramatic changes in land use and land cover, incurred by settlers that plowed the prairies, drained the wetlands, and cut the forests for lumber and to make way for farmland. The landscape went from a primarily open structure of prairies, wetlands, and savanna to primarily agricultural cropland. Remaining forests occupy only about 10% of the land area, with important cover types including oak, maple-basswood, and lowland hardwoods. Over half of the wetlands in this landscape were drained for farming purposes; some escaped this fate because they were simply too difficult to drain.

The **Southern Lake Michigan Coastal Ecological Landscape** lies in the southeastern-most corner of the state and is the most highly populated and heavily developed Ecological Landscape in the state. The primary landform is level to gently rolling ground moraine with deposits 50-100 feet thick over the underlying Silurian dolomite bedrock. In the uplands, soils are primarily moderately well drained brown calcareous silty clay loam till. In the lowlands, soils are primarily very poorly drained non-acid mucks or silty and clayey lacustrine types.

Historically, vegetation consisted of a mix of prairie, oak forests, savanna, and maple-basswood forests. Today most of these ecosystems are severely fragmented and disturbed by widespread and intensive agricultural, industrial and residential development, and invasive species. Nevertheless, this landscape provides some significant management opportunities, especially for surrogate grasslands and embedded prairie, sedge meadow and marsh community remnants.

### **Natural Communities of the Region**

Opportunities for sustaining natural communities in Ecological Landscapes were developed in 2005 by the Ecosystem Management Planning Team (*EMPT 2007*) and later focused on wildlife Species of Greatest Conservation Need and their habitat in the Wisconsin Wildlife Action Plan (*WDNR 2006b*). These opportunities are further recognized in the Rapid Ecological Assessment for the Southern Kettle Moraine Region (*WDNR 2011a*).

The management goals include sustaining natural communities that:

- historically occurred in a given landscape, and
- have a high potential to maintain their characteristic composition, structure, and ecological function over a long period of time (e.g., 100 years).

These goals help guide land and water management activities so they are compatible with the natural communities within the Southeast Glacial Plains and Southern Lake Michigan Coastal Ecological Landscape and help maintain important components of local ecological diversity and function.

There are "major" and "important" management opportunities for 17 natural communities in the Southeast Glacial Plains Ecological Landscape and "major" and "important" management opportunities for 13 natural communities in the Southern Lake Michigan Coastal Ecological Landscape are listed in Table 6. There is a high degree of overlap between the list of major and important communities in both Ecological Landscapes due to their relative proximity to each other.

A "major" opportunity indicates that the natural communities can be sustained in the Ecological Landscape, either because many significant occurrences of the natural community have been recorded in the landscape or major restoration activities are likely to be successful in maintaining the community's composition, structure, and ecological function over a longer period of time. An "important" opportunity indicates that although the natural community does not occur extensively in the Ecological Landscape, one to several occurrences are present and are important in sustaining the community in the state. In some cases, important opportunities may exist because the natural community may be restricted to just one or a few Ecological Landscapes within the state and there may be a lack of opportunities elsewhere.

Natural Community	Southeast Glacial Plains	Southern Lake Michigan
Calcareous Fen	X	X
Coolwater streams	X	
Emergent Marsh	X	X
Floodplain Forest	X	
Inland lakes	X	X
Shrub-carr	X	X
Southern Dry-mesic Forest	X	X
Southern Hardwood Swamp	X	X
Southern Mesic Forest	X	X
Southern Sedge Meadow	X	X
Southern Tamarack Swamp (rich)	X	X
Submergent Marsh	X	
Surrogate Grasslands	X	X
Warmwater rivers	X	X
Warmwater streams	X	
Wet Prairie	X	X
Wet-mesic Prairie	X	X

Numerous rare species are known from the Southeast Glacial Plains and Southern Lake Michigan Coastal Ecological Landscapes. Tables 7 and 8 list the number of rare species known to occur in each of these landscapes based on information in the department's NHI Working List (WDNR 2014). "Rare" species includes all species classified as "Endangered", "Threatened", or "Special Concern".

Listing Status	Taxa					Total Fauna	Total Plants	Total Listed
	Mammals	Birds	Herptiles	Fishes	Invertebrates			
Federally Endangered	0	0	0	0	2	2	0	2
Federally Threatened	0	0	0	0	0	0	2	2
Federal Candidate	0	0	1	0	2	3	0	3
State Endangered	0	9	7	5	11	32	10	42
State Threatened	1	9	3	6	5	24	27	51
State Special Concern	2	18	3	8	54	85	48	133

Table 8 Listing Status of Rare Species in the Southern Lake Michigan Coastal Ecological Landscape								
Listing Status	Taxa					Total Fauna	Total Plants	Total Listed
	Mammals	Birds	Herptiles	Fishes	Invertebrates			
Federally Endangered	0	0	0	0	0	0	0	0
Federally Threatened	0	0	0	0	0	0	1	1
Federal Candidate	0	0	1	0	0	1	0	1
State Endangered	0	3	3	2	2	10	11	21
State Threatened	0	3	2	4	0	9	12	21
State Special Concern	1	7	0	5	7	20	16	36

The Wisconsin Wildlife Action Plan denoted Species of Greatest Conservation Need (SGCN; WDNR 2006a). Species of Greatest Conservation Need are animals that have low and/or declining populations that are in need of conservation action. They include various birds, fish, mammals, reptiles, amphibians, and invertebrates (e.g., dragonflies, butterflies, and freshwater mussels) that are:

- Already listed as threatened or endangered;
- At risk because of threats to their life history needs or their habitats;
- Stable in number in Wisconsin, but declining in adjacent states or nationally.
- Of unknown status in Wisconsin and suspected to be vulnerable.

There are 42 vertebrate SGCN significantly associated with the Southeast Glacial Plains Ecological Landscape and 18 associated with the Southern Lake Michigan Coastal Ecological Landscape. This means that these species are (and/or historically were) significantly associated with this Ecological Landscape, and that restoration of natural communities with which these species are associated would significantly improve their conditions. Tables 43 and 44 at the end of this document contain additional information about these plant and animal species.

## Physical Environment

This section is reproduced in part from "Ecological Landscapes of Wisconsin" (WDNR 2014). Land Type Associations (LTAs) of Wisconsin represent a further definition of the NHFEU (Cleland et al. 1997). The NHFEU is a classification system that divides landscapes into ecologically significant regions at multiple scales.

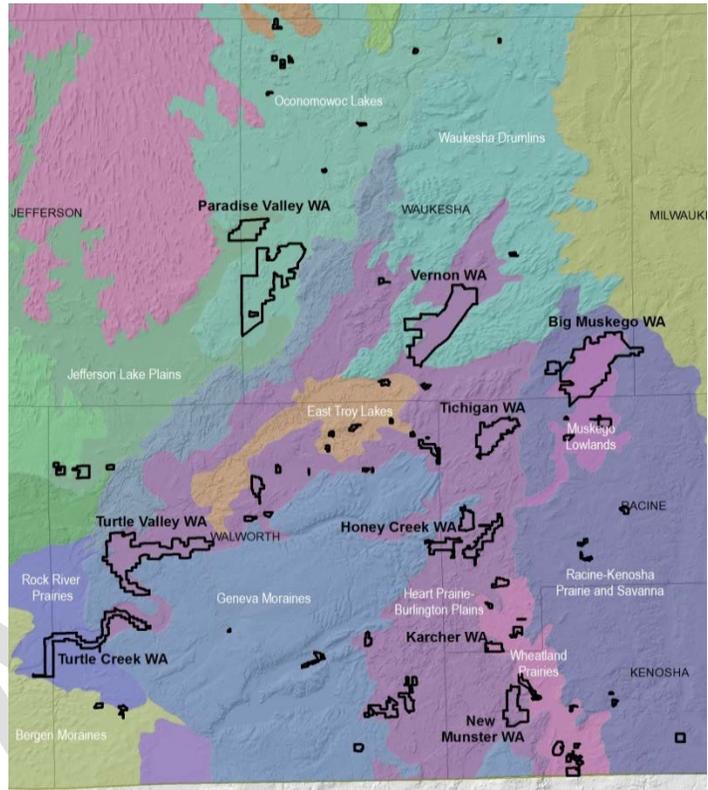
The study area encompasses eleven LTAs: Oconomowoc Lakes, Waukesha Drumlins, Jefferson Lake Plains, East Troy Lakes, Heart Prairie-Burlington Plains, Rock River Prairies, Bergen Moraines, Muskego Lowlands, Geneva Moraines, Wheatland Prairies, and Racine-Kenosha Prairie and Savanna (Figure 3)

The region is underlain by Silurian dolomite of the Niagara Formation with a bedrock depth that is between 50 and over 100 feet. Turtle Creek Wildlife Area is located in the outwash plain south of the late Wisconsin maximum of the Green Bay and Lake Michigan Lobes (Dott and Attig 2004). The rest of the is located just east of the interlobate region of the Green Bay and Lake Michigan lobes in a till plain deposited by several glaciations that is 300 feet thick at one location (Dott and Attig 2004).

Many of the properties lie in board outwash plains (Honey Creek WA, New Munster (in part) Turtle Creek WA, Turtle Valley WA) or lake plains (Big Muskego Lake WA, Karcher WA, New Munster (in part), Tichigan WA, Vernon WA), and are low in the landscape, often associated with modern day lakes, streams, or marshes. In some places (e.g. Turtle Creek), the outwash channel cut into the adjacent higher-elevation till plain, creating steep slopes where the two landforms intersect. Portions of Paradise Valley WA, Tichigan WA, and New Munster WA, are associated with interlobate features such as kames, kettle depressions, and eskers. Rolling till plains are common across the landscape of southeast Wisconsin.

### Soils

Houghton muck is the predominate wetland soil on these properties. These soils are very poorly drained and are constantly saturated with water at or near the surface. In the uplands, loams to silt loams are common on many properties (Karcher WA, Honey Creek WA, Big Muskego WA, Paradise Valley WA, Tichigan WA, Vernon WA, and Turtle Valley WA) in the form of loamy outwash over a variety of parent material ranging from calcareous sand and gravel outwash to calcareous silty and clayey lacustrine deposits in former lakebeds. Depending on the underlying parent material, drainage ranges from somewhat excessively drained on the sand and gravel outwash to poorly drained where underlying pockets of silty clay impede water infiltration. Silt loams associated with floodplains and loess over outwash are found along the Turtle Creek. Finally, somewhat excessively to excessively well drained sandy loam to loamy sands are associated with the glacial outwash at Paradise Valley WA.



**Figure 3 - Land Forms and Landtype Associations of the Southeast Region Planning Group (Landtype Associations (LTAs) are in white typeface)**

## Hydrology

The planning group lies west of the sub-continental divide with the waters draining toward the Mississippi River system. The two major drainage systems are the Fox (Illinois) and Rock River watersheds. The major **Fox (Illinois)** streams and their estimated length in the planning area county are the **Fox (Illinois) River** (Waukesha - 46 miles, Racine – 21 miles, and Kenosha - 14 mile); **Mukwonago River** (Walworth - 4 miles and Waukesha - 12 miles). The **Rock River** tributaries include **Turtle Creek** (Walworth - 18 miles and Rock - 25 miles), **Bark River** (Waukesha - 32 stream miles), respectively.

Properties in the eastern portion of the planning group (Big Muskego WA, Honey Creek WA, Karcher WA, New Muster WA, a portion of Turtle Valley, and Vernon WA) lie with the Fox River basin which flows southward into the Illinois River. Properties on the western portion of the planning group (Paradise Valley WA, Turtle Creek WA, and a portion of Turtle Valley WA) lie within the Rock River basin which flows to the Mississippi River through northwestern Illinois.

Significant hydrologic features of the region include numerous springs and groundwater fed streams, lakes and large wetlands along the stream channels. Agriculture is the dominant land use and this activity has affected many of the wetlands and streams in the region because of the ditching and tiling to drain the adjacent soils. Urban and suburban developments are having an increasingly large impact on both the surfacewater and groundwater in these watersheds. The water bodies on the larger properties include both lakes and streams (Table 9).

Property Name	Waterbody Name	Basin	ORW/ERW/303(d)*	Trout Stream
Big Muskego WA	Big Muskego Lake	Fox		
Honey Creek WA	Honey Creek	Fox	303(d) proposed	
Karcher WA	Karcher Creek	Fox		
Mukwonago River HA	Mukwonago River	Fox	ERW (east of Eagle Springs Lake to Lower Phantom Lake)	Class II
New Munster WA	Palmer Creek Bassett Creek	Fox		Class III
Tichigan	Fox River Tichigan Creek	Fox	303(d) listed	Class III
Turtle Creek WA	Turtle Creek	Rock	303(d) listed (Walworth Co.) EWR (Rock Co.)	
Turtle Valley WA	Sugar Creek	Fox	303(d) listed	
Vernon WA	Fox River Mill Brook Pebble Brook	Fox	303(d) listed	Class II

\* ORW/ERW = Outstanding Resource Water and Exceptional Resource Water

\* 303(d) = a designation given to water resources with impaired water quality (e.g., nutrient, sediment or chemical contamination)

The trout streams, a portion of the Mukwonago River and Turtle Creek (Rock County) are listed as Exceptional Resource Waters (ERW) (NR 102.11). ERW provide outstanding recreational opportunities, support valuable fish and wildlife habitat, have good water quality, and are not significantly impacted by human activities. ERW are recognized as being the highest quality waters in the state even though they may still receive point source pollution discharge at the time of designation.

The Mukwonago River is among the cleanest and most biologically diverse streams in southeastern Wisconsin. It provides critical habitat for a number of rare, threatened, and endangered species of fish and invertebrates. The two-mile stretch of river from the natural area downstream to its confluence with the Fox River contains the last known self-sustaining longear sunfish population in Wisconsin.

Other fish inhabiting the river are grass pickerel, rosyface shiner, sand shiner, banded killifish, tadpole madtom, rainbow darter, and brook silverside. Longnose gar are often seen patrolling the waters.

Equally diverse is the freshwater mussel fauna. Sixteen species are found here, including Wisconsin's only remaining viable population of a State Endangered species.

Rural uses cover most of the land area in the Mukwanago River watershed, which is perhaps the least disturbed watershed in the Fox River Basin. Development in the watershed has increased rapidly in the last few years. Impervious surfaces are becoming more abundant and storm water runoff is increasing. Many of the historic areas that supported agriculture are now supporting suburban housing development.

Unfortunately, impaired waters occur in the region as well. The Fox River, the major drainage in the eastern portion of the planning group, is listed as impaired under section 303(d) of the Clean Water Act for PCBs and total phosphorus. As a result fish contamination and an impaired biological community are concerns. A fish consumption advisory exists on the Fox River, including Lake Michigan for PCBs and mercury. A portion of Turtle Creek downstream of Delavan is listed as impaired for total phosphorus with low dissolved oxygen levels occurring during low flows. Honey Creek is proposed for 303(d) listing as an impaired water body due to pollutants, sediment load and a degraded biological community.

Big Muskego Lake, a 2,194 acre lake located in Waukesha County, is located within the project boundary of the Big Muskego Lake Wildlife Area. This shallow drainage lake has a maximum depth of 23 feet and has soft mucky bottom sediments. The lake includes an extensive Emergent Marsh that grades into floating islands of vegetation before giving way to open water, and provides important habitat for colonial nesting water birds and marsh birds. Water clarity is excellent and the water level manipulation and periodic drawdowns have been used to discourage carp, excessive algae growth, and low oxygen.

Several lakes are bordered by scattered fishery areas included in this planning group. These lakes are briefly described in the write-ups for the small properties located in these four counties.

Every watershed in the Southeast Glacial Plains Ecological Landscape has a "High" susceptible rating for groundwater pollution (WDNR 2014). This is related in part to the interaction of the soils and geology of these watersheds with the agricultural, suburban and urban land uses in these counties.

### **Vegetation and Natural Communities**

The landscapes in this region are a mosaic of open wetlands, oak savanna/forest, and grasslands. Virtually all of the major properties in this planning group have at least 50% of their fee title acreage in wetlands or open water. As a result, wetlands and aquatic habitats figure prominently in the cover types of this planning group.

Emergent Marsh, Southern Sedge Meadow, Shrub-carr, Wet-mesic and Wet Prairie, Calcareous Fen, and Tamarack Swamp occur in areas with poorly drained soils, and are associated with streams, rivers, lakes and their associated valleys and basins.

Degraded Oak Opening and pockets of remnant Dry-mesic Prairie occur on ridge tops and drier slopes. Oak Woodlands, Southern Dry-mesic Forest and an occasional pine plantation are found on the moister slopes with pockets of upland brush frequently mixed in. On the moistest, nutrient rich sites, Southern Mesic Forest is present. Prairie restorations and surrogate grasslands are also present in old fallow fields. Croplands are used to provide food plots and are often part of grassland rejuvenation management.

*Detailed descriptions of the major community types are included in the Rapid Ecological Assessment for the Southern Kettle Moraine Region Planning Group, page 20-25. Detailed descriptions of vegetation by property are also provided in the property narratives.*

## Opportunities for Biodiversity Conservation

This noted for its diverse natural communities and species diversity in the Rapid Ecological Assessment for this planning group. Appendix A provides a matrix of rare species associated with these natural communities. In addition, there are a number of broad themes that capture the exceptional resources of this property group:

***Oak Savanna, Prairie, Fen, and Sedge Meadow Conservation*** - Several opportunities exist on these properties to restore globally rare Oak Woodland communities. Such actions would improve habitat for many plants and animals that are specialists of grassland, savanna, woodland, and barrens. Less than 0.1% of original prairie remains in Wisconsin. Lowland prairies often intergrade with other wetland types such as fen and sedge meadow, so the associated wetland types are also included below.

Oak savanna sites with good restoration potential include:

- **Tichigan Wildlife Area** (southwest portion of property near Calcareous Fen)
- **Honey Creek Wildlife Area** (near Cherry Lake Sedge Meadow SNA)

Wet prairie, calcareous fen, emergent marsh, southern sedge meadow, and/or springs and spring runs conservation sites include the following:

- **Tichigan Wet Prairie Primary Site**
- **Tichigan Springs and Fen Primary Site** (and adjacent lowland areas)
- **Vernon Fen Primary Site**
- **Honey Creek Wildlife Area - Cherry Lake Sedge Meadow SNA**
- **Turtle Lake Sedge Meadow Primary Site**
- **Delevan Marsh Primary Site**
- **Turtle Creek Springs Primary Site**
- **Karcher Marsh Wildlife Area**

*For a detailed discussion on these conservation themes, see page 31-33 in the REA.*

***Wetland Conservation*** - At least 50% of the acreage on the major properties in this planning group are classified as either wetlands or shallow open water. Most properties also have a river or stream flowing through or along the edge of the property. As a result, wetlands and aquatic habitats figure prominently in the habitat types of this property group. It is notable that all nine of the Primary Sites designated for this property group are wetlands indicating the significant role they play in the larger landscape.

All wetlands are important targets for conservation and restoration, as they serve to slow the release of storm water (thus minimizing flooding), filter nutrients and pollutants that are carried in runoff, and provide moisture banks during low water periods or droughts. Wetlands also provide vital habitat for numerous animals and plants, including basking, foraging, and overwintering habitat for numerous rare or uncommon amphibians and reptiles. Table 10 illustrates the wide variety and extent of wetlands that occur on these properties.

*For a detailed discussion on wetland conservation, see pages 31-32 in the REA.*

**Table 10 Wetland types and acreage of the Southeast Region Planning Group based on NHI surveys and Wisconsin Wetlands Inventory data**

Property Name	Calcareous Fen	Emergent Marsh	Hardwood Swamp	Shrub-carr	Southern Tamarack Swamp (rich)	Southern Sedge Meadow	Springs and Spring Runs	Wet-mesic Prairie	Wet Prairie	Wet Meadow (reed canary grass)	Approximate Total Wetland Area (acres, not including open water)**
Big Muskego WA		X								X	2,889
Honey Creek WA	X	X		X		X				X	1,269
Karcher Marsh WA*	X	X		X			X	X		?	252
New Munster WA	X	X		X		X				X	866
Paradise Valley WA*				X						X	2,744
Tichigan WA	X	X		X		X	X	X	X	X	1,159
Turtle Creek WA	X	X		X		X	X			X	1,033
Turtle Valley WA	X	X				X				X	2,254
Vernon WA	X	X	X	X	X	X	X			X	3,865
<b>TOTAL</b>											16,330

\* Not surveyed thoroughly by NHI

\*\* Acreage based on Wisconsin Wetlands Inventory data in current project boundary

**Bird Conservation** - This planning group provides important opportunities for conservation of marsh birds and grassland birds. Emergent marshes and are among the most productive of all habitats for waterfowl and other waterbirds (*Eldridge 1990*). Marshes and sedge meadows support an impressive variety of nesting rare and common marsh and waterbirds.

These properties also provide valuable upland habitat that helps support grassland birds. Grassland birds have declined more steeply than any other group of birds in North America. Grassland habitats support good numbers of grassland birds include remnant prairies, fallow fields and planted prairies.

Properties with the best potential for conserving the following types of bird life include:

Marsh bird properties:

- **Big Muskego WA**
- **New Munster WA**
- **Karcher Marsh WA**
- **Vernon WA**

Grassland bird properties:

- **Tichigan WA**
- **Turtle Creek WA**
- **Turtle Valley WA**

For a detailed discussion on bird conservation, see page 30 in the REA.

**Herptile Conservation** - These properties provide regionally significant habitat for frogs, snakes and turtles. Many herps are highly threatened due to a combination of factors including sensitivity to pollution and altered hydrology, landscape fragmentation, predation (e.g., turtles and turtle nests), vehicle mortality while crossing roads, and persecution (e.g., snakes). The properties provide some of the most significant habitat for rare and common herps in all of southeastern Wisconsin, supporting several extremely rare species including queensnake, documented from only 3 locations in the state in the past 25 years.

Protecting, restoring and/or maintaining water quality and natural springs and seeps is important in supporting herps. Management that maintains a variety of natural community types, especially wetland complexes, and combats non-native invasive species will help support these species. Finally, restoring and maintaining adjacent uplands to prairie or savanna helps provide critical basking and nesting habitat.

Properties with the best potential for conserving herps include:

- **Turtle Creek WA**
- **Turtle Valley WA**
- **Vernon WA**

*For a detailed discussion on herptile conservation, see page 31 in the REA.*

### Primary Sites

Nine ecologically important sites, or “Primary Sites,” were identified in the REA. (Table 11) These sites warrant high protection and/or restoration consideration during the development of the property master plan. Primary Sites generally encompass the best examples of the following:

- 1) rare and representative natural communities,
- 2) documented occurrences of rare species populations, and/or
- 3) opportunities for ecological restoration or connections.

Short descriptions of these sites are included in the property narratives with complete descriptions of the Primary Sites in Appendix F of the REA.

<b>Primary Site Name</b>	<b>Property</b>
Vernon Fen	Vernon WA
Big Muskego Marsh	Big Muskego Lake WA
Tichigan Wet Prairie	Tichigan WA
Tichigan Springs and Fen	Tichigan WA
Cherry Lake Sedge Meadow SNA	Honey Creek WA
Turtle Lake Sedge Meadow	Turtle Valley WA
Delavan Marsh	Turtle Creek WA
Turtle Creek Springs	Turtle Creek WA
New Munster Bog Island SNA	New Munster WA

## Invasive Species Management Considerations

Non-native invasive species thrive in newly disturbed areas, but also may invade and compromise high-quality natural areas. They often establish quickly, tolerate a wide range of conditions, are easily dispersed, and are relatively free of the diseases, predators, and competitors that kept their populations in check in their native range.

Non-native invasive plants can out-compete and eliminate native plants by monopolizing light, water, and nutrients, and by altering soil chemistry and mycorrhizal relationships. In situations where non-native invasive plants become dominant, they may even alter ecological processes by limiting use of prescribed fire, by modifying hydrology, and by limiting tree regeneration and ultimately impacting forest composition (*WDNR In prep. b*).

In addition to the threats to native communities and native species diversity, these species negatively impact forestry (e.g., reduce tree regeneration, growth and longevity), recreation, agriculture, and human health (e.g., may cause skin rashes and increase the incidence of tick-borne diseases).

The frequent usage of these properties has contributed to the introduction and spread of non-native invasive species throughout the properties. Parking areas, trails, and other high-use areas are typical entry points for non-native invasive species. They can be introduced by visitors' footwear, clothing, vehicle tires, boats, and recreational equipment.

Once established, invasive species may continue to spread along natural corridors (e.g., waterways) and along human-made corridors (e.g., trails and roads). They even have the potential to invade remote natural areas via vectors such as wind, water, and wildlife. Non-native invasive species may also be spread inadvertently through management activities such as timber operations and roadside mowing, especially if Best Management Practices aren't followed.

Several non-native invasive species are widespread across one or more properties and pose the greatest immediate threat to native species diversity, rare species habitats, high-quality natural communities and the provision of high quality wildlife habitats. Examples include:

- Reed canary grass (*Phalaris arundinacea*)
- Narrow-leaved and hybrid cat-tail (*Typha angustifolia* and *T. X glauca*)
- Common reed grass (*Phragmites australis*)
- Common buckthorn (*Rhamnus cathartica*)
- Glossy buckthorn (*Rhamnus frangula*)
- Oriental bittersweet (*Celastrus orbiculatus*)
- Autumn-olive (*Elaeagnus umbellata*)
- Bell's honeysuckle (*Lonicera X bella*)
- Garlic mustard (*Alliaria petiolata*)

Property-specific locations of the above invasive species, as well as other less widespread invasive species are listed in the Rapid Ecological Assessment. See the REA (pages 33-35) for a more thorough discussion of non-native invasive species.

## Description and Analysis of the Properties

### Big Muskego Lake Wildlife Area

Big Muskego Lake Wildlife Area (WA) is primarily located in Waukesha County, but a small portion also lies in southwest Milwaukee County (**Map Series B**). This wildlife area was established in 1999 to protect the lands around the lake following the 1995-96 lake rehabilitation project to restore the sport fishery.

Fee Title Lands:	735 acres
Current Acreage Goal:	3,800 acres
Current Project Boundary:	6,875 acres

Big Muskego Lake has a surface area of 2,194 acre lake and a maximum depth of five (5) feet. The lake has excellent water clarity. The wildlife area has about 2.5 miles of lake frontage and 0.2 miles of frontage along the Muskego Canal. The department also owns 13 acres of easements at this property of which 12 acres are open to the public.

#### Recreation

The wildlife area provides excellent hunting and trapping opportunities for turkey, deer, mourning doves, small game, and especially waterfowl. Big Muskego Lake is an extremely popular waterfowl hunting area. By local government ordinance, hunting is only allowed with the use of shotgun or archery equipment. Big Muskego Lake also provides opportunities for muskrat and beaver trapping.

The lake offers a unique opportunity to observe breeding Forster's terns, yellow-headed blackbirds, eagles, and ospreys, as well as a number of other resident and migratory wildlife species.

An additional recreation feature of the wildlife area is a snowmobile trail that enters the property on Boxhorn Drive. The snowmobile trail is maintained by local snowmobile clubs

Foraging, hiking, and snowshoeing opportunities are available on the property, although use is minimal and no established trails exist.

Three public boat landings provide access to Big Muskego Lake. The City of Muskego manages a paved boat landing off Durham Drive (22 car trailer spaces, one is ADA) and a paved boat landing off Boxhorn Drive (27 car trailer spaces, two are ADA). There is a daily fee of \$7 for use of these landings, and various seasonal and annual passes are also available. The City of Muskego also manages and maintains a gravel boat launch off Muskego Dam Road on the south side of the lake. A private boat landing operated by Hunter's Nest tavern is located off Durham Drive.

#### Habitat and Vegetative Cover

The central feature of this wildlife area is Big Muskego Lake. This large, shallow lake has many floating vegetation islands that are ideal habitat for colonial nesting water birds and marsh birds. The lake is fringed with extensive wetlands including dense cat-tail marshes dominated by broad-leaved and narrow-leaved cat-tails with some reed canary grass and common reed grass (Table 12).

Moving inland the habitat grades a mix of disturbed Shrub-carr, Southern Mesic Forest, groves of small bur oaks with dense understories of common buckthorn, and several small areas with prairie plantings. There are also active agriculture and fallow fields on the property. Several small wetland basins are also found in the upland areas.

Cover Type	% Cover
Agriculture	13
Grassland	20
Oak	7
Upland Hardwood	6
Lowland Shrub	12
Marsh/Emergent Wetland	39
Bottomland Hardwoods	1
Water	1
Developed	<1
<b>Total</b>	<b>100</b>

**Forest Resources**

Forests cover about 14% of this wildlife area. Three oak stands scattered in different parts of the property account for just under half of the forest (48%). Central Hardwoods constitute 43% of the forested area with both stands on the west side of the lake. Bottomland Hardwoods make up 9% of the forested acres. No harvesting is scheduled in any of the forest stands. These forest cover types are summarized in Table 13.

<b>Forest Types</b>	<b>Stands</b>	<b>Acres</b>
Oak	3	55
Central Hardwoods	2	49
Bottomland Hardwoods	2	10
<b>Total</b>	<b>7</b>	<b>114</b>

**Wildlife Resources and Habitat Management**

This wildlife area supports excellent waterfowl production. Deer, turkey, mourning doves and small game are common in the uplands. Overall, Big Muskego Lake is one of the more significant marshland areas for both game and non-game waterbirds in southeast Wisconsin.

The lake provides important conservation opportunities for marsh birds and colonial waterbirds. The marshes provide critical habitat for a variety of uncommon marsh birds and rare colonial waterbirds such as Forster's terns, yellow-headed blackbirds, eagle, and osprey.

The property provides opportunities for extensive shallow marsh habitat restoration. Several parcels are planned for restoration in the next three years. Potential funding sources and partners include NAWCA grants, waterfowl stamp funds, the City of Muskego, the Big Muskego Lake Management District, and the Milwaukee Municipal Sewerage District.

Other opportunities include expanding grasslands to provide much needed upland nesting cover around Big Muskego Lake. There are also possibilities for restoring oak woodlots and expanding remnant open-grown white and bur oak openings. Control of invasive woody species is needed in the oak woods.

The long-term habitat goals have focused on re-establishing pre-settlement vegetation with allowance given to global and statewide priorities for rare species and critical habitat. Control of woody and herbaceous invasive species, such as buckthorn is a major activity too.

The department works in close association with the City of Muskego to curb the spread of invasive species and enhance habitat management opportunities on and around the property. This partnership has been successful at targeting invasive species, promoting prescribed burning, and integrating long term strategic planning goals.

Burning is the primary habitat management tool. The timing and use of burning takes into account the life-history requirements of invertebrates, reptiles and other species found on the property. Chemical and mechanical methods are also used to control herbaceous and woody vegetation.

In 2014, a new European invasive alga, starry stonewort, was discovered just upstream in Little Muskego Lake. This was the first time this species has been detected in Wisconsin. The department is working with the Little Muskego Lake Management District, the City of Muskego and the Southeast Wisconsin Regional Planning Commission to manage the infestation and prevent its spread.

Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory at this property include birds, a turtle, and a fish, (Table 14). *For a list of rare or declining species of the entire property group, see Table 3 in the REA. For a list of rare species by property, see Appendix G in the same document.*

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Waterbirds			2	2
Marsh birds	3			3
Turtle	1			1
Fishes	1			1

**Primary Site**

**Big Muskego Marsh** (2,988 acres), including the lake, is considered a Primary Site. The natural community of greatest interest is the large Emergent Marsh surrounding Big Muskego Lake. This marsh provides valuable habitat in a landscape otherwise dominated by agriculture and residential development. This marsh is important to two rare colonial waterbirds and several rare marsh birds, ducks, and birds of prey. *For more details on this primary site, see Appendix F of the REA, for this planning group.*

**Seasonal Waterfowl Refuge**

A portion of the Big Muskego Lake WA is designated a seasonal waterfowl refuge (NR 15.02), and is closed to all waterfowl hunting (Figure B-2A). This area is closed Sept. 1 - Nov. 30 to all activity to provide migrating waterfowl a protected roosting site during migration, except deer hunting is allowed during the deer gun season. The waterfowl refuge includes about 90 acres of cat-tail-dominated wetland plus open water along the west side of Big Muskego Lake WA.

**Fisheries Management**

The Big Muskego Lake and Bass Bay fisheries have been managed as “biomanipulation lakes” since the lake reclamation activities in 1996. Biomanipulation strategies include high minimum length limits and low daily bag limits for northern pike and largemouth bass. Special regulations for Big Muskego Lake include a reduced bag limit and eight inch minimum length limit for panfish. Protective fishing regulations combined with northern pike stocking program are intended to improve water quality and fishery habitat by maximizing predation on rough fish and small panfish. Fewer and larger panfish and larger gamefish increases plankton grazing on algae and reduced rough fish densities that reduces phosphorus availability.

Anglers fishing Big Muskego Lake and Bass Bay can find trophy angling opportunity for largemouth bass and northern pike. The special panfish size and bag limit provide a unique angling opportunity for quality sized bluegill and crappie.

**Soils, Geology and Hydrology**

Big Muskego Lake lies in a glacial lake basin. The adjacent uplands are comprised of silty clay loams of lacustrine and ground moraine origin and are poorly to very poorly drained. Higher elevation uplands contain level to slightly sloping silt loams, with small areas of moderately sloping silt loams that are prone to erosion. In general, soil management is centered on the wetness and poor drainage in the lowlands. The site is underlain by Paleozoic sedimentary rocks of the Maquoketa Formation, including shale, dolomitic shale and dolomite, and also by Silurian dolomite.

Big Muskego Lake is a 2,194 acre shallow drainage lake with a maximum depth of 23 feet. The lake has an extensive marsh edges that grades into floating islands of vegetation before giving way to open water. The associated marshes and the open water are underlain by soft mucky organic sediments.

Water clarity is excellent and the water level manipulation and periodic drawdowns are used to discourage carp, excessive algae growth, and low oxygen. Unfortunately, carp were able to re-enter Big Muskego Lake during the June flooding in 2008 and have increased in abundance in recent years. Big Muskego Lake is fed from the north by Muskego Creek and drains south via the Muskego Canal to Wind Lake, and then to the Fox River via the Wind Lake Drainage Canal.

### **Public Access and Administrative Facilities**

- Parking Lots – Seven lots (six gravel and one native surface) with capacity for 27 vehicles.
- Roads and Gates – 0.7 miles of closed gravel roads and three gates (two cable gates and one pipe gate)
- Signs – Six entrance signs
- Boat Launches – a department boat ramp is available along the Muskego Canal off STH 36. Several municipal and town ramps are also located in the vicinity.
- Water Control Structures, Dikes and Impoundments – three water control structures and three dikes.
- Culverts – five culverts
- Firebreaks – five firebreaks
- Habitat Infrastructure – an electric carp barrier.

### **Big Muskego Lake/Bass Bay Protection and Rehabilitation District**

The Big Muskego Lake/Bass Bay Protection and Rehabilitation District was formed in 1978 to address a number of issues adversely affecting lake recreation, water quality and wildlife/fisheries habitat. The District undertook a major lake rehabilitation project in 1995-1997 and the *Big Muskego Lake and Bass Bay Management Plan* (Big Muskego Lake/Bass Bay Protection and Rehabilitation District, June 2004) indicates the following, "Prior to the project the lake was a turbid, carp-dominated, open expanse of shallow water. After a full year drawdown and eradication of rough fish, the lake shifted to a marsh/shallow lake complex with numerous islands of emergent vegetation (cat-tails, bulrushes). The clearer water supported a fishery that included large panfish, largemouth bass and numerous northern pike. Nesting habitat for waterfowl improved and non-game species such as Forster's Terns, Yellow Headed Blackbirds, and Ospreys were more commonly seen in the enhanced conditions. Improved hunting, fishing, and wildlife viewing opportunities have increased the recreational use of the waterway."

The lake management plan was developed to sustain the improvements achieved by the restoration project. The plan further states, "With its proximity to Milwaukee, this waterway provides a convenient recreation venue for thousands of users each year. Continued development of lands within the watershed, invasive species and human activities are potential threats to the water quality, fishery, wildlife, and the quality of the recreational experience. Implementation of a sound lake management plan will ensure that Big Muskego Lake and Bass Bay remain a valuable resource to the area."

The primary goals of the 2004 lake management plan include:

- Improving and maintaining water quality
- Improving and maintaining opportunities for water-based recreational activities
- Maintaining a healthy assemblage of fish and providing quality angling opportunities
- Providing quality waterfowl hunting opportunities
- Providing habitat for a diversity of wildlife including endangered, threatened, and rare species
- Managing aquatic plants to reduce nuisance and invasive species.

These goals are consistent with the natural resources and recreation management goals typically developed during the department's master planning process. The goals of the lake management plan will be considered during the development of the habitat and recreation management recommendations for the Big Muskego Lake WA in this master planning process.

## Honey Creek Wildlife Area

Honey Creek Wildlife Area (WA) is located in western Racine County and eastern Walworth County, north of the City of Burlington (**Map Series C**). The Wisconsin Conservation Department made the first land purchase for this property in 1958. This property also has 59 acres of easements of which 50 acres are open public.

Fee Title Acreage:	1,278 acres
Current Acreage Goal:	1,436 acres
Current Project Boundary:	2,300 acres

This property consists of four units that provide a diverse mix of oak-hickory woodlands, wetlands, grasslands, dry prairie, wet meadow and deep marsh habitats. Two of the units have access to important water bodies in the area - Long Lake and Honey Creek.

### Recreation

The wildlife area provides excellent hunting opportunities for turkey, deer, squirrel, rabbit, and waterfowl. Pheasant hunting on the property is supported by the department pheasant stocking program. and provides 2.5 acres of dove fields to enhance dove hunting. This property is listed in the in the Great Wisconsin Birding and Nature Trail - Lake Michigan Region as a site for seeing waterfowl in the wetlands and woodland songbirds in the forested areas. Long Lake and an adjacent marsh area, that is partly located on state land, provide opportunities for waterfowl hunting and canoeing. A snowmobile trail, maintained by the local snowmobile club, passes through this property off of CTH W and CTH FF.

### Habitat and Vegetative Cover

This property consists of large glacial outwash basins and channels dominated by Emergent Marsh, Southern Sedge Meadow, and Southern Tamarack Swamp communities bordered by degraded Southern Dry-mesic Forest on the adjacent coarse-textured moraines and eskers (Table 15).

The eastern unit of this property contains the 80 acre Cherry Lake Sedge Meadow SNA. This natural area has a high quality Southern Sedge Meadow that contains plants that tolerate both alkaline and acid soil conditions, and a Southern Tamarack Swamp (rich), with a dense understory of glossy buckthorn. A small Wet-mesic Prairie is also present. The area north of the Sedge Meadow historically supported a small Calcareous Fen, but is now dominated by glossy buckthorn.

The natural area is bordered by an esker on the west and a moraine to the south. These uplands were grazed but still support a restorable Oak Woodland dominated by red oak, white oak, and bur oak as well as small patches of degraded Dry-mesic Prairie. Non-native invasive shrubs are common through much of the forest understory and almost all of the former prairie/savanna areas.

Cover Type	% Cover
Agriculture	2
Grassland	7
Upland Shrub	1
Aspen	5
Upland Conifer	4
Oak	17
Upland Hardwood	7
Lowland Shrub	26
Emergent Wetland	28
Water	3
Developed	<1
<b>Total</b>	<b>100</b>

The northern unit of the property is the most diverse with shrub carr and emergent vegetation in the lowlands surrounded by a mosaic of aspen, oak, grasslands, croplands, conifer forests, and hardwood forests dominated by early successional species.

The western unit consists of a large emergent marsh with oak in the adjacent uplands.

The southern unit contains open water and emergent marsh that grades into a large wetland complex of Southern Sedge meadow and Shrub-carr with a moderate quality Southern Dry- mesic Forest in the uplands.

Many of the emergent wetlands are dominated by hybrid cat-tail and narrow-leaved cat-tail.

**Forest Resources**

Oak is the dominant forest type on this property (Table 16). Seventy three acres of oak are marked for a shelterwood harvest and have been put out for bid. Invasive brush control work was conducted in the area adjacent to the Cherry Lake Sedge Meadow SNA and the southwest portion of the northern unit. The harvest and related brush control efforts are aimed at promoting oak regeneration. Tree planting may be performed if needed after the harvest. Similar treatment of the remaining oak stands is being considered.

Table 16 Honey Creek WA Forest Cover		
Forest Type	Stands	Acres
Oak	4	224
Central hardwoods	3	90
Aspen	3	62
White pine	2	52
<b>Totals</b>	<b>12</b>	<b>428</b>

Central hardwoods cover 21% of the forested area and these stands will receive treatments similar to the oak to promote the desired species (e.g., oak, hickory, black cherry).

Aspen makes up 14% of the forested area and one 9 acre stand will be included with the oak harvest mentioned above. Clearcutting the aspen and box elder will promote natural aspen regeneration. As with the oak, the understory buckthorn in these stands will be treated prior to harvest. Harvests of the remaining aspen stands will be timed to produce a mix of aspen age classes for maximum wildlife benefit.

White pine is found on 12% of the forested area. The largest stand (48 acres) is a mix of white pine with Oak/Central Hardwoods. A portion of this stand is being treated to remove black locust and promote oak. A four acre pine plantation is due for thinning.

**State Natural Area and Primary Sites**

The **Cherry Lake Sedge Meadow SNA** (80 acres) is located within the 139 acre Primary Site. The SNA contains Southern Sedge Meadow, Calcareous Fen, and Southern Tamarack Swamp (rich) communities. The site has supported several rare plant and animal species, but most could not be relocated in recent surveys. These species may be extirpated due to the extensive glossy buckthorn population. Restorable Oak Woodlands occur in the uplands adjacent to the SNA and are being considered as a potential part of the natural area. *Details on this primary site are found in Appendix F of the SER Rapid Ecological Assessment.*

**Wildlife Resources and Habitat Management**

Honey Creek WA supports good populations of turkey, deer, squirrel, rabbit, dove and waterfowl. Pheasants are also stocked on the property. A wide variety of marsh birds can also be found on the property including marsh wren, swamp sparrow, sora rail, Virginia rail and the uncommon yellow-headed blackbird. The wetlands also support a variety of amphibians.

Significant opportunities for biodiversity conservation at Honey Creek WA include:

- Sedge Meadow conservation (near Cherry Lake Sedge Meadow SNA)
- Oak savanna restoration (near Cherry Lake Sedge Meadow SNA)
- Wet-mesic prairie conservation (east unit)

This property provides good opportunities for oak woodland, dry prairie and grassland management. Several forest stands have mature oaks with understories dominated by woody invasives including black locust, buckthorn and honeysuckle. Several gravel knolls have dry prairies remnants that support little bluestem, rough blazing star and hoary puccoon, but some areas are overgrown with woody invasives.

Several habitat management tools are used to manage these habitats. Prescribed burning is the primary tool with mowing, hand work (i.e., chain sawing, pulling, etc.) and herbicide application also used to promote the native and surrogate communities and control the invasive plants. The timing and use of all these tools takes into account the life history requirements of invertebrates, reptiles, plants, and other species found on the property.

Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory known at this wildlife area include grassland and marsh birds, invertebrates, a fish, a turtle, and several plants (Table 17). *For a list of rare or declining species of the entire property group, see Table 3 in the REA. For a list of rare species by property, see Appendix G in the same document.*

Table 17 Rare or Declining Species - Honey Creek WA				
Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Grassland Birds	1	1		1
Marsh Birds	3			3
Invertebrates	1	1		2
Fish	1			1
Turtle	1			1
Plants	4	3		7

### Aquatic Resources

Honey Creek flows through the western-most unit of this property. The creek has been proposed for 303(d) listing from near its source just west of East Troy to its confluence with the White River for a degraded biological community.

Long Lake is a drainage lake located on the border of the southern unit of the wildlife area. This lake has a surface area of 84 acres, a maximum depth of five feet and primarily has a muck bottom. The lake has a largemouth bass fishery with panfish, catfish and northern pike also present. The Long Lake Channel is the outlet stream for Long Lake and it flows southeast to the Fox River. A small unnamed stream enters Long Lake on the northeast and it drains the wetlands associated with the Honey Creek Sedge Meadow SNA and Brock Lake. The Long Lake Protection District promotes Eurasian water milfoil management activities to reduce the extent and spread of this invasive species.

### Soils and Geology

Approximately two-thirds of the soils of Honey Creek WA are very poorly drained to poorly drained mucks, loams, and silt loams. The remaining one-third is well drained to somewhat excessively drained loams and silt loams on slopes ranging from two to 30 percent slopes, with steeper slopes being highly erodible. The property is primarily underlain by Silurian dolomite.

### Public Access and Administrative Facilities

- Parking lots – five lots (five gravel) with capacity for 47 vehicles.
- Roads and Gates – 4.2 miles of seasonally open, primitive access roads, 3.4 miles of closed, primitive service roads and seven cable gates.
- Trails – one mile of snowmobile trail along a seasonally open, primitive access road.
- Signs – Two entrance signs and five informational signs
- Firebreaks – 4.7 miles of firebreaks along the primitive roads.
- Water Control Structures, Dikes and Impoundments – one water control structure and one primitive (native material) dike.
- Culverts – three culverts

## Karcher Marsh Wildlife Area

The Karcher Marsh Wildlife Area (WA) is located about 5 miles southeast of the City of Burlington (**Map Series D**). The first parcels for this property were acquired in 1959 and the department currently owns 283 acres in fee title. The southwest portion of the property contains the 32 acre Karcher Springs State Natural Area (SNA).

Fee Title Acreage:	283 acres
Current Acreage Goal:	378 acres
Current Project Boundary:	335 acres

### Recreation

This wildlife area provides hunting opportunities for turkey, deer and small game. The SNA provides opportunities for research and education. The property also offers wildlife viewing opportunities.

### Habitat and Vegetative Cover

This wildlife area is predominantly comprised of Emergent Wetlands (mostly Southern Sedge Meadow) and Shrub-carr (Table 18). The lowlands are occasionally flooded by beaver. Two small farm fields on the southern part of the property (about eight acres) are sharecropped for wildlife habitat.

Cover Type	% Cover
Agriculture	3
Oak	2
Grassland	8
Lowland Shrub	34
Emergent Wetland	52
Water	<1
Developed	<1
<b>Total</b>	<b>100</b>

### Forest Resources

The only forest on this property is a six acre oak stand within the SNA boundary. No management other than invasives control is planned for this stand.

### State Natural Area

This state natural area was designated in 1972. This 32 acre SNA contains a complex of springs, calcareous fen and a cold/cool water stream flowin from the east side of an esker. The oak stand on the esker is degraded by a large population of multiflora rose. The site is managed as a reserve for calcareous fen and oak opening, as a wetland protection site, and as an ecological reference area. Natural processes and prescribed fire will determine the structure of the site's natural communities.

### Wildlife Resources and Habitat Management

Three special concern plants tracked by the Natural Heritage Inventory occur at Karcher Marsh WA.

### Aquatic Resources

Karcher Creek is a small, fast and clear stream with its headwaters in the SNA. The stream will be stocked with brook trout to assess its viability as a trout stream.

### Soils and Geology

Soils are predominantly very poorly drained to poorly drained mucks and silt loams associated with lacustrine deposits, with small scattered upland areas of loams and silt loams associated with the surrounding outwash plain. A small esker has somewhat excessively drained loam to gravelly sandy loam on moderate slopes. The property is primarily underlain by Silurian dolomite.

### Public Access and Administrative Facilities

This property has a short graveled access road leading to the parking lot located north of CTH JB, two gatees, one culvert and about 2.5 miles of closed, native surface, service roads.

## New Munster Wildlife Area

New Munster Wildlife Area (WA) is located in southwest Kenosha County about 0.75 miles northeast of the Village of Twin Lakes. The Wisconsin Conservation Department made the first land purchase in 1947. The department currently owns 1,524 acres in fee title (**Map Series E**).

Fee Title Acreage:	1,524 acres
Current Acreage Goal:	1,672 acres
Current Project Boundary:	1,710 acres

The property has a rolling landscape that contains a matrix of wetlands, oak-hickory woodlands, agricultural fields, a pine plantation and small dry prairies. Palmer Creek, the only trout stream in Kenosha County, flows through the central and northeastern portion of the property.

### Recreation

The wildlife area provides excellent hunting opportunities for turkey, deer, squirrel and rabbit. The combination of pheasant stocking, adjacent agricultural lands, grassland cover on the wildlife area and the 4.5 acres of dove fields enhances the opportunities for pheasant and dove hunting on the property. A 20-acre flowage on the east side of the property provides opportunities for waterfowl hunting and wildlife viewing. This property is listed in the in the Great Wisconsin Birding and Nature Trail - Lake Michigan Region as a site for seeing many species of waterfowl in the wetlands and woodland songbirds in the forested areas. The property provides unimproved canoe launching access at several locations along the Fox River.

### Habitat and Vegetative Cover

New Munster WA occupies a broad wetland basin between upland moraines (Table 19). The low-lying central part of the property supports Shrub-carr and scattered tamaracks, as well as an oak-dominated island on a kame. This area is described in more detail in the following section on the New Muster Bog Island SNA.

Shrub-carr extends outside the natural area boundary and transitions into Southern Sedge Meadow with pockets of Calcareous Fen and narrow-leaved cat-tail-dominated Emergent Marsh. These open wetlands include areas of invasive reed canary grass and scattered common reed grass.

Shrub-carr lies along Palmer Creek and Bassett Creek as well.

The northern and southern uplands that surround the lowlands contain Southern Dry-mesic Forest dominated by large oaks and eastern red cedar that have been disturbed due to past grazing. Small conifer plantations are also present in the southern third of the property. Virtually all of the forested uplands contain a dense understory of non-native, invasive shrubs. A small Oak Woodland is located in the southwest corner of the property interspersed with small prairie remnants and old fields replanted to prairie.

A small share-cropped agricultural field occurs on a small upland ridge surrounded by Shrub-carr just east of the SNA boundary.

Cover Type	% Cover
Agriculture	13
Grassland	2
Upland Conifer	1
Upland Hardwood	18
Oak	12
Non-Forested Wetland	25
Lowland Shrub	10
Swamp Conifer	12
Bottomland Hardwood	4
Water	3
Developed	<1
<b>Total</b>	<b>100</b>

**Forest Resources**

Almost half (47%) of this wildlife area is forested and Oak makes up 25% of the forest resource (Table 20). A timber harvest is planned for the property targeting 89 acres of hardwoods and pine plantation. A shelterwood harvest was put out for bid on about half of the Oak woodlands. The management goal is to regenerate the oak community. Brush control work has been conducted on a large portion of the proposed harvest area.

The Miscellaneous deciduous woodland is the most abundant forest type on the property. This forest type is dominated by box elder maple with small volumes of other Central Hardwood species and a scattering of upland brush also present. Efforts to transition portions of the Miscellaneous deciduous community to desirable forest have been considered.

There is a fifteen acre white pine plantation that is marked for thinning.

There is great concern over the impact of emerald ash borer on the loss of ash and the adverse impact on the high canopy forest that currently exists throughout this property.

<b>Forest Types</b>	<b>Stands</b>	<b>Acres</b>
Miscellaneous deciduous	1	262
Oak	4	172
Tamarack	1	172
Bottomland Hardwoods	2	66
White Pine	1	15
Central Hardwoods	1	6
<b>Totals:</b>	<b>10</b>	<b>693</b>

**State Natural Area and Primary Site**

The **New Munster Bog Island SNA** (55 acres) is found within the 296 acre Primary Site. This Primary Site is one of the largest, intact Shrub-carr in southeast Wisconsin. It supports several rare animals and plants, but it has become heavily degraded by invasive shrubs. This natural area contains a small, but significant Southern Dry-mesic Forest on a kame, surrounded by Shrub-carr. The forest is dominated by large old-growth red and white oaks, including some up to 40 inches dbh, and a dense shrub layer of non-native invasive and native species. The remainder of the SNA is comprised of thick Shrub-carr dominated by a dense tangle of willow, dogwood, common buckthorn, and Bell's honeysuckle, as well as scattered tamarack, yellow birch and Purpus' birch (an unusual hybrid between yellow birch and bog birch). *For more details on this primary site, see Appendix F of the SER REA.*

**Wildlife Resources and Habitat Management**

Turkey, deer, squirrel, rabbit, dove, and waterfowl are found on this wildlife area. Pheasant are stocked and sustained by the mosaic of grasslands, Shrub Carr wetlands and agricultural lands. The wetlands provide habitat for beaver, amphibians, turtles, and a variety of marsh birds including Virginia rail, least bittern, and marsh wren. Common song birds such as wood thrush and verry are found in the uplands.

Significant opportunities for biodiversity conservation at New Munster WA include:

- Marsh birds and plant and animal species associated with high-quality marsh and Shrub-carr habitats.

Past agricultural use has impacted the natural communities, but good opportunities exist to manage for and/or restore oak dominated woodlands, dry prairies, wet meadows, and grasslands. Several woodlands have open grown oaks with understories dominated by buckthorn and honeysuckle. There are also gravel knolls with remnant dry prairies that support big and little & bluestem, rough blazing star, and hoary puccoon. The prairie remnants also have issues with woody invasive encroachment.

The most common habitat management practices include prescribed burning, mowing, hand work (i.e., chain sawing, pulling, etc.), and herbicide application to manage the vegetation and control invasive plant species. The timing and use of all these tools takes into account the life history requirements of invertebrates, reptiles, plants, and other species found on the property.

Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by the Wisconsin Natural Heritage Inventory known at this wildlife area are listed in Table 21. *For a list of rare or declining species on the property group, see Table 3 in the REA. For a list of rare species by property, see Appendix G in the same document.*

Table 21 Rare or Declining species - New Munster Wildlife Area				
Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Marsh birds	2			2
Fish		1		1
Aquatic Invertebrates	1			1
Turtles	1			1
Plants	2	1		3

### Aquatic Resources

This property has about three miles of frontage along the **Fox River**. The Fox River is listed as impaired under section 303(d) of the Clean Water Act for PCBs and total phosphorus which have resulted in fish contamination and an impaired biological community, respectively. A fish consumption advisory also exists on the Fox River for PCBs and mercury.

**Palmer Creek**, a Class III trout stream, flows through the northern half of the main unit of this property. Portions of this creek have been channelized in the central part of the property. A small portion of the **New Munster Creek** flows the property. This stream is also being assessed for its capacity to sustain brown trout. **Bassett Creek** flows through the southeastern corner of the property and has limited fishing access. The stream supports common species found in local warm water streams (i.e., bluegill, etc).

### Soils and Geology

The New Munster WA is a mix of lacustrine, ice-contact (kame/esker), and outwash deposits, with more recent alluvial depositions along streams. Low-lying poorly to very poor drained mucks occupy approximately 50% of the property. Well drained and somewhat excessively drained loams and gravelly loams occupy the uplands. Uplands range from gently sloping to moderately sloping, with the steeper slopes prone to erosion. The property is primarily underlain by Silurian dolomite.

### Public Access and Administrative Facilities

- Parking Lots – nine lots (seven gravel and two native surface) with capacity for 74 vehicles.
- Roads and Gates -3.7 miles of open, primitive access roads, 0.2 miles of seasonally open access roads, 4.5 miles of closed, primitive service roads, and twelve gates (ten cable gates and two metal gates).
- Signs – one entrance sign and eight informational signs.
- Water Control Structures, Dikes and Impoundments – one water control structure, one dike and one impoundment.
- Culverts – one culvert
- Buildings – This property has a farmhouse. Long-term options for the house include tearing it down or allowing Law Enforcement staff to use it.

## Paradise Valley Wildlife Area

Paradise Valley Wildlife Area (WA) is located in western Waukesha County with a small portion of the north unit also in Jefferson County. The project was approved in 2012 to provide habitats that benefit game species and wildlife of greatest conservation need. This property also includes 73 acres of land purchased through statewide acquisition programs and 54 acres of non-public access easements.

Fee Title Acreage:	1,757 acres
Current Acreage Goal:	4,000 acres
Current Project Boundary:	7,668 acres

Habitat management is focused on watershed, wetland and lake conservation. This project also seeks to increase nature-based public recreation and lake access opportunities.

The project boundary for this wildlife area encompasses a large area designated as a Primary Environmental Corridor by the Southeast Wisconsin Regional Planning Commission (SEWRPC). The property serves as a connector for primary environmental corridors and conservation areas in western Waukesha County. A primary environmental corridor is defined as an “area in the landscape containing especially high value natural, scenic, historic, scientific, and recreational features. It contains the best remaining woodlands and wetlands, wildlife habitats, undeveloped shorelines and flood lands, groundwater recharge and discharge areas, and steeply sloped lands.

About 1,757 acres have been acquired and the four management units are designated the Bark River Unit, Beaver Dam Lake Unit, Reagons Lake Unit, and School Section Lake Unit (Map Series F). The on-going habitat management actions will improve water quality, reduce soil erosion, and reduce nutrient loads in the watersheds.

### Recreation

This property provides many nature based recreation activities including hunting, fishing, bird watching, hiking, boating with an emphasis on non-motorized activities. Several of the units are stocked with pheasants during the fall hunting season. Warm water fishing opportunities are available at Beaver Dam Lake, Reagon Lake and the Bark River. The sport fish in these waters include northern pike and largemouth bass. The Bark River also provides a smallmouth bass and a low density walleye fishery.

The Glacial Drumlin State Trail borders the north boundary of the Bark River Unit. A channelized section of the Bark River runs between the trail and the wildlife area with no access between the properties. There are no designated trails within the properties, but the numerous gravel and grass service roads and dikes, especially at the Bark River unit, provide generous walking access.

### Habitat and Vegetative Cover

The wildlife area lies in large wetland valleys surrounded by high quality and degraded oak openings and savanna, southern forest, grasslands and agricultural land that was once prairie. The land cover in three of the four units is primarily non-forested. The land cover on the department owned parcels is shown in Table 22).

None of the native communities on this property were identified as achieving Primary Site status.

Cover Type	% Cover
Agriculture	2
Grassland	5
Upland Shrub	1
Aspen	3
Upland Hardwood	6
Oak	<1
Upland Conifer	1
Emergent Vegetation	52
Non-Forested Wetland	13
Lowland Shrub	9
Bottomland Hardwood	4
Swamp Conifer	1
Water	1
Developed	<1
<b>Total</b>	<b>100</b>

**Forest Resources**

No particular forest type is dominant at this property currently. Bottomland Hardwoods are the most common forest type (23% of the forested area) (Table 23). Thinning is scheduled in one 13-acre stand within the next five years.

One aspen stand covers 61 acres and one Miscellaneous deciduous (primarily box elder) covers 62 acres. Both of these stands are located on wetter sites mixed with lowland brush and reed canary grass. No harvesting is planned in these stands.

Central Hardwoods cover 58 acres and thinning is scheduled in the next ten years. Two 10 acre pine plantations are present with one typed as red pine, and the other as Scotch pine. These conifers will be harvested over time to manage the area for other native cover types. Tamarack and oak types are also present in small areas.

<b>Table 23 Paradise Valley WA Forest Cover</b>		
<b>Forest Types</b>	<b>Stands</b>	<b>Acres</b>
Bottomland Hardwoods	3	69
Miscellaneous deciduous	1	62
Aspen	1	61
Central Hardwoods	3	58
Tamarack	1	25
Red pine	1	10
Miscellaneous coniferous	1	10
Oak	1	5
<b>Total</b>	<b>12</b>	<b>300</b>

Existing forest stands are managed to reduce invasive species and promote native tree species and habitat diversity. A small component of existing forest is managed as conifer plantation to meet the needs of the forest products industry. Forest areas will be managed through timber sales and department habitat management activities.

**Wildlife Resources and Habitat Management**

Paradise Valley WA supports deer, turkey, squirrel, rabbit, and variety of other wildlife species. Pheasants are also stocked in the fall. A variety of ducks, marshbirds, and song birds use the property, with Beaver Dam Lake offering good habitat for waterfowl and colonial waterbirds.

The management objectives for this property as stated in the property feasibility study are as follows:

- Enhance 1,000 acres of existing wetland and upland habitat;
- Establish 800 acres of native prairie and cool season grasslands;
- Restore 400 acres of drained wetlands; and
- Establish and/or enhance 300 acres of southern forest and oak savanna.

About 2,000 acres of wetland lie within the project boundary.

Where appropriate, uplands that were previously cropped or pastured will be restored to open grasslands or oak savanna by seeding those areas with native grasses and forbs. Open upland areas adjacent to large stands of southern forest may be planted to native forest types. The grasslands will be managed using periodic mowing and prescribed burning to control encroaching woody vegetation. About 40 acres are currently being cropped to provide wildlife food and cover.

Areas that have established upland brush are managed using prescribed burning and mowing, and may be converted to native type grassland cover through a variety of means including herbicide treatment, mowing and/or burning followed by no-till seeding. Lowland brush areas and vegetated types (i.e. sedge meadows) are managed primarily through periodic prescribed burning although mowing may be utilized during the frozen months or extremely dry conditions.

Approximately 1,000 acres of drained muck farm was restored within the Bark River Unit in partnership with the NRCS Wetland Reserve Program. Additional parcels within the project boundary also contain degraded or drained wetland areas. There are current plans to restore and improve the converted wetland areas to increase the conservation value for a variety of wildlife species and maintain them in a hemi-marsh condition utilizing state waterfowl stamp grants.

Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory known at Paradise Valley Wildlife Area include grassland birds and amphibians (Table 24). *For a list of rare or declining species of the entire property group, see Table 3 in the SER REA. For a list of rare species by property, see Appendix G in the same document.*

Table 24 Rare or Declining Species - Paradise Valley Wildlife Area				
Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Forest Birds		1		1
Grassland Birds		2		2
Marsh/water birds			2	2
Fish			1	1
Turtle	1			1
Plants	1	1		2

### Aquatic Resources

The project area lies within the Rock River drainage basin, but it is divided between the Bark River watershed and the Scuppernong River watershed. Many of the lakes in the Bark River watershed are experiencing heavy development pressure or have extensive development around them. While many wetlands have been drained or filled in this watershed, a significant amount of wetland still remains.

The Scuppernong River watershed is not experiencing the same type of rapid development. The predominate land use is agriculture though there is a significant public ownership in the Kettle Moraine State Forest and two state wildlife areas. The land cover includes large forested tracts and wetland areas, including a number of wetlands that have been drained for agriculture.

Streams within the project boundary include the Bark River and Scuppernong Creek. Lakes in or adjacent to the project boundary include Larkin Lake, Reagon Lake, and School Section Lake in the Town of Ottawa, and Beaver Dam Lake in the Town of Eagle. School Section Lake has the largest surface area at 125 acres, but has a maximum depth of only eight feet.

### Soils and Geology

Wetland soils, particularly mucks, are the dominant soil types at the Paradise Valley WA. These soils are very poorly drained and are constantly saturated with water at or near the surface. In the uplands, loams to silt loams are common along with sandy loam to loamy sand associated with glacial outwash, and are well drained to somewhat excessively drained. The northern two-thirds of the property is underlain by Paleozoic sedimentary deposits of dolomite with some limestone and shale, while the southern third is underlain by a mixture of shale, dolomitic shale and dolomite.

### Public Access and Administrative Facilities

- Parking Lots and Signs – six lots (gravel) with capacity for 43 vehicles and five entrance signs.
- Roads and Gates – 0.75 miles of fully developed, open access roads, 1.1 miles of moderately developed, closed service roads, 2.2 miles of lightly developed, closed service roads, 3.3. miles of primitive, closed service roads, and two gates (one pipe gate and one cable gate).
- Boat Launches and Observation Decks – one improved launch with ramp at Beaver Dam Lake and one observation deck is located in the northern unit along the Bark River.
- Firebreaks – three firebreaks.
- Buildings and Culverts – one unheated storage shed and two culverts.

## Tichigan Wildlife Area

Tichigan Wildlife Area (WA) is located in northwest Racine County about two miles northwest of the Village of Waterford (**Map Series G**). The Wisconsin Conservation Department made the first land purchase for this wildlife area in 1958.

Fee Title Acreage:	1,562 acres
Current Acreage Goal:	1,584 acres
Current Project Boundary:	2,010 acres

### Recreation

The wildlife area provides excellent hunting opportunities for turkey, deer, squirrel, rabbit, dove and waterfowl. A 60 acre Class 2 dog training area is also located on the wildlife area. Pheasant hunting opportunities are supported by the department pheasant stocking program. The combination of agricultural lands, cat-tail marsh and grasslands provides excellent cover for pheasants. Other recreational pursuits include bird watching, wildlife viewing, hiking and other nature based activities. The property is listed in the Great Wisconsin Birding and Nature Trail - Lake Michigan Region as a site for seeing many species of ducks, Great Egrets, Least Bitterns, terns and shorebirds. A local snowmobile club maintains 5.5 miles of snowmobile trail on this property. The snowmobile trail runs from the northeast corner of the property to the south and west at Marsh Road and STH 83.

### Habitat and Vegetative Cover

The property contains a variety of habitats that provide excellent wildlife cover (Table 25). Wetlands dominant this property with Emergent Marsh, Shrub-carr, and Southern Sedge-meadow the most common communities. Several agricultural fields north of Marsh Road have been planted to prairie. The cat-tail marsh on the fringe of Tichigan Lake transitions into grasslands, wet-prairies and oak-hickory woodlands moving inland. Several excavated wildlife ponds are also present.

Two remnant native communities are found on this property. The first is a Wet Prairie in the northern portion of the property. This community is dominated by a dense herb layer of big bluestem along with giant goldenrod, prairie, Virginia mountain mint and Joe-pye-weed interspersed with shrubs such as silky dogwood, glossy buckthorn and shrubby cinquefoil. Southern Sedge Meadow pockets include tussock sedge-dominated areas with a moderate to sparse shrub layer of silky dogwood and red osier dogwood.

The second is a degraded Oak Opening dominated by large (over 24 inches dbh) bur oak, white oak, red oak, and black oak along with American basswood and shagbark hickory on the esker and moraine located on the south of the wildlife area. A dense understory of buckthorn, gray dogwood and prickly-ash is found beneath the forest canopy. High-quality Calcareous Fen and Springs, and Spring Runs are located at the base of this moraine and esker. The seeps and bubbling springs are often surrounded by sparsely vegetated marl flats. The Springs and Calcareous Fen occur on the east side of the esker are larger and of higher quality.

Large portions of the property have been invaded by glossy buckthorn. Narrow-leaved cat-tail is scattered throughout the wettest portions of the site. Narrow-leaved cat-tail and common reed grass has invaded the wet areas in the far eastern portions of the site.

Cover Type	% Cover
Agriculture	9
Grassland	1
Upland Shrub	1
Aspen	1
Upland Hardwood	6
Oak	10
Upland Conifer	1
Emergent Vegetation	23
Non-Forested Wetland	11
Lowland Shrub	18
Bottomland Hardwood	2
Water	18
Developed	<1
<b>Total</b>	<b>100</b>

**Forest Resources**

Oak is the primary forest resource on the wildlife area (Table 15) and constitutes 58% of the forested area. Three of the oak stands totaling 83 acres are scheduled for a combination thinning and shelterwood harvest. Invasive brush is a problem in all of these stands, and brush control will be undertaken prior to the harvests.

Central Hardwoods make up 38% of the forest resource and most of this forest type (92 acres) is in one stand. The stand is scheduled for harvest preparation with the oak stands mentioned above. The harvest would involve thinning and shelterwood harvesting with brush control prior to the cut.

<b>Forest Types</b>	<b>Stands</b>	<b>Acres</b>
Oak	6	142
Central Hardwoods	2	93
Aspen	1	9
Bottomland Hardwoods	1	1
<b>Total</b>	<b>10</b>	<b>245</b>

Aspen and bottomland hardwood types are minor components of the forest resource on this property.

**Primary Sites**

**Tichigan Wet Prairie** (34 acres) represents one of the larger Wet Prairie sites in the state. This globally rare natural community supports several rare plants and a diverse array of birds. Wet Prairie is noted in the Wisconsin Wildlife Action plan as an important conservation opportunity in the Southeast Glacial Plains ecological landscape.

**Tichigan Springs and Fen** (79 acres) is a high-quality site and has characteristics of an ecological reference area. This community is a complex of Calcareous Fen, Southern Sedge Meadow, and Springs and Spring Runs. It is considered a Class 1 Natural Area (NA-1) by the Southeast Regional Planning Commission (SEWRPC) and supports over half a dozen rare plant species.

*For more details on these Primary Sites see Appendix F of the REA.*

**Wildlife Resources and Habitat Management**

Significant marshy areas and open water in this wildlife area and the adjacent Tichigan Lake support excellent waterfowl production. Turkey, deer, squirrel, rabbit, and dove can also be found. Tichigan WA supports Blandings Turtle and Bull snakes, as well as other amphibians and reptiles. This property also provides habitat for numerous amphibians and marsh birds such as Virginia rail, great blue heron, marsh wren, sandhill crane, and red-winged blackbird.

The Tichigan WA offers significant opportunities for biodiversity conservation including:

- Wetland conservation (especially for Wet Prairie and Calcareous Fen)
- Oak savanna conservation (southwest portion of property)
- Grassland bird conservation (in association with planted prairies)

These natural communities provide opportunities for grassland, wetland, oak opening, oak savanna, wet meadow and cat-tail marsh habitat management. Several sites are dominated by open grown oaks with dense understories of woody invasives and present opportunities for oak savanna restoration. Additional opportunities exist for enhancement/restoration of several high-quality Wet Prairies, but woody invasives and nutrients runoff issues need to be addressed. Management of woody and/or herbaceous invasive species is currently carried out in all of the habitat types.

The property also has a 190-acre waterfowl refuge. The refuge contains an impoundment that is planted to millet in the spring and flooded in the fall to create a feeding and resting area for migrating waterfowl. The department conducts intensive wetland management on the 25 acre impoundment adjacent to the refuge area. The refuge is closed to all entry during the migratory bird seasons except deer hunting is allowed in the gun deer season. The department also manages water levels on two smaller flowages on the south side of the property.

The habitat management activities used on this property include prescribed burning, mowing, hand work (i.e., chain sawing, pulling, etc.), and herbicide application to maintain or restore the native communities and control invasive plants. The timing and use of all these tools takes into account the life history requirements of invertebrates, reptiles, plants, and other species found on the property.

Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory known at Tichigan Wildlife Area include two endangered species, three state threatened species, and six species of special concern as shown in Table 27.

*For a list of rare or declining species of the entire property group, see Table 3 in the SER REA. For a list of rare species by property, see Appendix G in the same document.*

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Fish			1	1
Turtle	1			1
Plants	5	3	1	9

### **Aquatic Resources**

Tichigan Creek, a Class 3 trout stream, is associated with a series of high-quality headwater springs originating from the base of an esker in the Primary Site. The stream is a small, but important, local fishery that is regularly stocked with brown trout and is the focus of an upcoming habitat restoration effort.

Tichigan Lake is a natural lake that has been enlarged by a dam on the Fox River. The enlarged lake covers 279 acres and has a maximum depth of 63 feet, though the average depth is only six feet. The Fox River and Tichigan Lake support a diverse and popular sport fishery that includes walleye, large and smallmouth bass, northern pike and panfish.

The Fox River is listed as impaired under section 303(d) of the Clean Water Act for PCBs and total phosphorus which have resulted in fish contamination and an impaired biological community, respectively. A fish consumption advisory also exists on the Fox River, including Lake Tichigan, for PCBs and mercury.

### **Soils and Geology**

Tichigan WA lies in a large outwash channel with pockets of lacustrine and ice-contact (esker) deposits. Nearly 80% of the property is either water or poorly to very poorly drained mucks, silt loams, and silty clay. The uplands are well drained to somewhat excessively drained gravelly loams associated with eskers and loams and silt loams associated with loess over outwash deposits. A significant portion of the uplands have moderately steep slopes (6 to 30 percent) and are prone to erosion if un-vegetated. The property is underlain by Paleozoic sedimentary rocks of the Maquoketa Formation, including shale, dolomitic shale and dolomite, and also by Silurian dolomite.

## Public Access and Administrative Facilities

- Parking Lots – seven lots (one asphalt and six gravel) with capacity for 53 vehicles.
- Roads and Gates – about one miles of open, access roads, about three miles of seasonally open, access roads and about six miles of closed, service roads and ten gates.
- Boat Launches – One department launch that is paved with capacity for 11-15 car-trailers. This launch is ADA accessible and has a restroom.
- Water Control Structures, Dikes and Impoundments – five water control structures and about one mile of dikes.
- Culverts – three culverts.
- Fencing – 5,800 feet of fencing.
- Buildings - one unheated, equipment storage building.

The department is considering a change to NR 15.024 No Entry Wildlife Refuge designation for the waterfowl refuge on the Tichigan Wildlife Area. The existing rule closes the refuge to all entry from September 1 through December 31, except for the 9 day gun deer season and the muzzleloader season. However, due to concern that deer hunters entering the refuge during these hunting seasons could disturb waterfowl and thus diminish the purpose of the refuge, the department has been closing the refuge to all entry.

To correct this situation and make the rule permanent, the department is proposing a change to NR 15.024 that states that the refuge will be No Entry during the open migratory seasons. The department is currently operating the refuge under this proposed rule per administration direction. The department is seeking public feedback regarding support or opposition to the proposed rule change through this master planning process.

## Waterford Waterways Management District

The Waterford Impoundment is a flowage that is both fed and drained by the Fox River. This impoundment includes Tichigan Lake, a natural lake that existed prior to the dam being constructed in the Village of Waterford. The water level of Conservation Bay and Tichigan Lake is controlled by the Waterford Dam. The Waterford Waterways Management District (WWMD) conducts a variety of management and monitoring activities with an emphasis on invasive species.

A Southeast Wisconsin Regional Planning Commission (SEWRPC) Staff Memorandum (pages 36, 48, 51 SEWRPC December, 2012) noted the following, “a critical key to the ability of an ecosystem, such as a lake, to maintain its ecological integrity is through biological diversity. Conserving the biological diversity, or biodiversity, of an ecosystem helps, not only to sustain the system, but preserves a spectrum of options for future decisions regarding the management of that system. Generally, the Waterford Impoundment has poor biodiversity in its aquatic plant communities, with few species being reported.” This memorandum further states that, “Where larger-scale Eurasian water milfoil herbicide treatments have taken place, native species have been observed to ....populate areas that were once dominated by nonnative species of aquatic plants.”

“Aquatic plants within the Waterford Impoundment are an important component of the lake ecosystem, providing habitat and food for a variety of aquatic and other organisms, including fish and waterfowl. In turn, these organisms support a large part of the recreational industry associated with the Waterford Impoundment and its surrounding community. Thus, the presence of aquatic plants is a key element, not only in the biological economy of the Lake, but also the human economy of the surrounding landscape. The presence of aquatic plants is natural and part of a healthy lake system.”

The SEWRPC plan indicates areas of the lake having a predominantly wetland-like character that should be preserved with management limited to control of purple loosestrife infestations. Conservancy Bay which is a sizeable open water area of the Tichigan WA is considered a habitat area by the plan.

## Turtle Creek Wildlife Area

Turtle Creek Wildlife Area (WA) is located in western Walworth County and eastern Rock County. The wildlife area stretches along the creek from the City of Delavan to the Town of Bradford at South O’Riley Road (**Map series H**). Acquisition of this property began in 1960 and it currently consists of four units ranging in width from 150 to 1500 feet wide. In addition to the 1,060 acres of fee title about 13 acres of open access easements have been acquired.

Fee Title Acreage:	1,060 acres
Current Acreage Goal:	1,614 acres
Current Project Boundary:	2,670 acres

### Recreation

The Turtle Creek WA provides excellent hunting opportunities for waterfowl, doves, turkeys, small game, upland game birds, and deer. Large flocks of migrating waterfowl provide jump-shooting opportunities along the creek. Due to the relatively narrow width of the state property retrieval of animals can lead to trespass issues. Trapping for muskrat is also popular on this property.

Significant recreational opportunities in addition to hunting exist at this wildlife area. Turtle Creek is a popular canoeing and kayaking stream, with nearly 15 miles of creek frontage within the project boundary. Hiking is also popular along established firebreaks. The property is mentioned in the Great Wisconsin Birding and Nature Trail - Southern Savanna Region as a site for seeing yellow, blue-winged and golden warblers, along with eastern meadowlarks, brown thrashers, and lark sparrows. Large concentrations of fall and winter migrating waterfowl can be seen at Turtle Creek. A snowmobile trail, maintained by local snowmobile clubs, crosses the property at Riley Road.

### Habitat and Vegetative Cover

The property primarily contains shrub carr wetlands with smaller amounts of sedge meadow, Central Hardwoods, and small prairie remnants. The wetlands are of low to moderate quality due to the abundance of reed canary grass. The uplands are dominated by degraded Oak Woodlands and Central Hardwoods, as well as a small native prairie remnant (Table 28).

See the **Primary Sites** section for the description of vegetative cover at the two Primary Sites.

Cover Type	% Cover
Agriculture	1
Upland Hardwood	8
Oak	5
Non-Forested Wetland	7
Lowland Shrub	79
Developed	<1
<b>Total</b>	<b>100</b>

### Forest Resources

This property has 137 acres of forest cover consisting of a balanced mix of Oak, Central Hardwoods and Miscellaneous deciduous hardwoods (Table 29). Timber and regeneration management activities are scheduled for all of the woodlands. Regeneration of oak and other desirable hardwoods (e.g., hickory, black cherry and walnut) is the focus of these activities.

Forest Type	Stands	Acres
Central Hardwoods	1	32
Miscellaneous deciduous	1	47
Oak	2	58
<b>Total</b>	<b>4</b>	<b>137</b>

## Primary Sites

**Turtle Creek Springs** (319 acres) has the highest quality native wetland complex on the wildlife area. This site is located on the Walworth-Rock County line centered on CTH C. This site includes a mosaic of Calcareous Fen, Spring and Spring Runs, Shrub-carr, Southern Sedge Meadow, and Emergent Marsh Areas. The areas with active groundwater flow are highest in quality with hanging fens occurring on short slopes interspersed with numerous small Springs and Spring Runs. Below the slope, communities grade into Shrub-carr and Southern Sedge Meadow with Emergent Marshes dominated by cat-tail in the wettest areas.

The site supports numerous rare species, including several state-listed herptiles and has the characteristics of an ecological reference area.

A small, unplowed bluff prairie is present on an east-facing slope overlooking Turtle Creek. Otherwise, the uplands are very degraded with second- and third-growth hardwoods, including many weedy species such as black locust. Non-native invasive shrubs and garlic mustard are abundant in the uplands in both forested and non-forested habitats. Much of the wetlands and adjacent uplands were heavily grazed prior to state acquisition.

**Delavan Marsh** (52 acres) is one of the largest, relatively intact Southern Sedge Meadows on the wildlife area and in the planning region. This marsh is located on the north side of Turtle Creek about 2.5 miles northwest of the City of Delavan. The marsh supports numerous bird species that require large, open grass- and/or sedge-dominated landscapes as well as several rare herptiles.

This relatively large Southern Sedge Meadow is mixed with Shrub-carr. The sedge meadow is fed by a small unnamed creek and several small seeps. Dominant species include tussock sedge, shining aster, giant goldenrod, Joe-pye-weed, and silky dogwood. Shrub-carr-dominated areas are characterized by tussock sedge beneath scattered Bebb's willow, silky dogwood, bog birch, trembling aspen saplings, and glossy buckthorn.

*For more details on these primary sites, see Appendix F of the REA.*

## Wildlife Resources and Habitat Management

Turtle Creek WA supports waterfowl, doves, turkeys, muskrat, small game, upland game birds, and deer. In addition, a variety of songbirds can be found including the eastern meadowlark, brown thrasher, lark sparrow and a variety of warblers. The wetlands along the creek also support numerous reptiles, amphibians, and dragonflies.

Significant biodiversity conservation opportunities at Turtle Creek WA include:

- Wetland conservation
- Prairie conservation
- Grassland bird conservation
- Herptile conservation

This property also provides opportunities for grassland, oak savanna and oak woodlands management. Stands with open-grown white and bur oak could be managed as oak openings, but the invasive woody species need to be controlled. Habitat goals are geared toward establishing pre-settlement vegetation with allowance given to global and statewide priorities for rare species and critical habitat.

Control of woody and herbaceous invasive species, such as buckthorn, honeysuckle, and black locust is a major activity. Off-site erosion, nutrient loading, and chemical runoff continue to degrade the quality of the creek.

Burning is a primary habitat management tool with the timing and use of the burning taking into account the life-history requirements of invertebrates, reptiles and other species found on the property, particularly a rare herptile which is known to hibernate along the creek.

Chemical and mechanical means along with hand- removal are used to control invasive species and brush for rejuvenation of native species. Brush encroachment on open wetland habitats is a significant problem.

Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory are found at the Turtle Creek WA (Table 30).

For a list of rare or declining species of the entire property group, see Table 3 in the SER REA. For a list of rare species by property, see Appendix G in the same document.

Table 30 Rare or Declining Species - Turtle Creek WA				
Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Herptiles	2		2	4
Fish	1	1	1	3
Mussel	1			1
Plants	4	1		5

### Aquatic Resources

Turtle Creek supports a diverse warmwater fishery including large and smallmouth bass, northern pike, panfish, and a variety of forage fish.

Turtle Creek in Rock County is listed as an Exceptional Resource Water (ERW) under NR 102.11. An ERW provides outstanding recreational opportunities, supports valuable fish and wildlife habitat, has good water quality and is not significantly impacted by human activities.

However, a portion of Turtle Creek in Walworth County downstream of the City of Delavan is listed as impaired for total phosphorus that results in low dissolved oxygen during low flow periods. Sediment from off-site erosion is also a concern.

### Soils and Geology

Turtle Creek occupies a glacial outwash channel overlain in places by more recent alluvial deposits. In places, the outwash channel cuts into the adjacent till plain. Over 80% of the wildlife area is comprised of poorly drained to very poorly drained mucks, silt loams, and other wet streamside deposits. The upland soils are a mix of well drained to excessively drained silt loams and loams over gravelly substratum on slopes ranging from gently to steeply sloping (up to 45%). Moderate and steeply sloping areas have high erosion potential. The property is underlain by Paleozoic sedimentary deposits of dolomite with some limestone and shale.

### Public Access and Administrative Facilities

- Parking Lots – six lots (five native surface and one gravel) with capacity for 37 vehicles.
- Roads and Gates – no roads and two cable gates.
- Boat Landings – two lightly developed carry-in landing sites.
- Entrance Signs – four entrance signs.
- Firebreaks – four firebreaks

Access to Turtle Creek and the property is also available from roadside pullouts off USH 14, STH 11 and School Section Road.

## Turtle Valley Wildlife Area

Turtle Valley Wildlife Area (WA) is located in northwestern Walworth County about five miles north of the City of Delavan (**Map Series I**). This former mint farm came into state ownership in 2000. The department has partnered with the US Fish and Wildlife Service through 30 year Wetland Reserve Program easements to restore the wetlands.

Fee Title Acreage:	1,832 acres
Current Acreage Goal:	5,550 acres
Current Project Boundary:	5,600 acres

### Recreation

This wildlife area provides excellent hunting opportunities for waterfowl, doves, small game, and deer. A small wild pheasant population still exists on this property. The easements with NRCS provide funding for dike and water control structure replacement and invasive species treatment. Trapping muskrat and beaver is also popular at this wildlife area.

The 6.5 miles of dikes on this property are popular with hikers, birders and naturalists. A snowmobile trail maintained by the local snowmobile clubs crosses the property on CTH P and exits at Pierce Road.

The Wisconsin Department of Transportation owns a 420 acre wetland mitigation site along Turtle Creek within the project boundary for this wildlife area. This land is open for public hunting, fishing, trapping and other nature based activities. Ownership of this mitigation site is intended to be transferred to the department and the Turtle Valley WA.

### Habitat and Vegetative Cover

This wildlife area is dominated by grasslands, prairie plantings and thickets of common buckthorn on the mineral soils. The property has a variety of wetland communities, including Southern Sedge Meadow, Shrub-carr, Wet Meadow and Emergent Marsh. These habitats provide excellent cover for wildlife, particularly migrating and nesting waterfowl (Table 31). Invasive cat-tails and reed canary grass are management issues in these wetlands.

The property contains several flowages that impound water along ditched portions of Sugar Creek and Turtle Creek.

### Forest Resources

Forests cover only three percent of this property. There is one oak stand covering 37 acres and bottomland hardwoods cover an additional 11 acres. The oak is being sustainably managed with regeneration of the oak the desired goal. The bottomland hardwood forests are at risk of being adversely affected by ash mortality due to Emerald Ash Borer. Timber management activities are planned to salvage the ash as feasible.

Cover Type	% Cover
Agriculture	3
Grassland	59
Oak	2
Emergent Vegetation	18
Non-Forested Wetland	4
Lowland Shrub	4
Bottomland Hardwood	<1
Water	9
Developed	<1
<b>Total</b>	<b>100</b>

### Primary Sites

**Turtle Lake Sedge Meadow** (34 acres) is located in the northwest corner of the wildlife area. This site harbors a good-quality sedge meadow in what was historically a much larger wetland complex south of Turtle Lake. The calcareous Southern Sedge Meadow is dominated by tussock sedge and blue-joint grass and grades into Shrub-carr dominated by shrubby cinquefoil, bog birch, and willows. Invasive common buckthorn is a management concern at this site. Though small in size, the sedge meadow supports several rare species indicating high quality remnant habitat and this site presents a quality wetland restoration opportunity in a landscape highly impacted by agriculture.

*For more details on this primary site, see Appendix F of the REA.*

## Wildlife Resources and Habitat Management

Turtle Valley WA supports populations of waterfowl, doves, deer, beaver, muskrat, and small game. A limited number of wild pheasants are found on this property. A variety of marsh birds use the site, including yellow-headed blackbird and marsh wren, as well as a number of uncommon grassland birds. A number of reptiles and amphibians are also found on the property.

Significant opportunities for biodiversity conservation at Turtle Valley WA include:

- Wetland conservation
- Grassland management to promote grassland bird conservation
- Herptile conservation

Opportunities exist for the expansion of hemi-marsh on the property, where intensive water level management and invasive cattail control could provide a more desirable matrix of open water and emergent cover.

The wildlife area has many water level control structures that aid in water manipulation on the flowages and several small ponds. Many of the water control structures have experienced problems with plugging from debris and sedimentation, primarily caused by insufficient structure size. This management obstacle is being remedied by structure replacement in cooperation with the NRCS.

The habitat goals are to re-establish pre-settlement vegetation and provide habitat for rare species and critical native communities. Control of herbaceous invasive species, such as giant ragweed, sweet clover, nettle, phragmites, and nonnative/hybrid cattail is a major activity. Off-site erosion, nutrient loading, and chemical runoff continue to pose serious threat to the quality of the impoundments.

Burning is the primary habitat management tool. The timing and use of burning takes into account the life-history requirements of invertebrates, reptiles and other species found on the property. Chemical and mechanical means along with hand-work are also used to control invasive species and brush for rejuvenation of native species.

This wildlife area supports several Species of Greatest Conservation Need and other rare or declining species tracked by the Wisconsin Natural Heritage Inventory (Table 32). *For a list of rare or declining species of the entire property group, see Table 3 in the SER REA. For a list of rare species by property, see Appendix G in the same document.*

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Birds	2	2	1	5
Fishes	1			1
Herptiles	1		1	2
Plants	1	1		2

## Aquatic Resources

Turtle Valley WA lies in a low saddle at the headwaters of Turtle Creek (a tributary of the Rock River) and Sugar Creek (a tributary of the Fox River). The headwaters of these two streams had been extensively ditched to promote agricultural production. There is a limited warmwater fishery in these streams, primarily pnfish.

## **Soils and Geology**

The soils are predominantly muck and were extensively drained to promote farming. Groundwater is at or near the surface during most of the year. Small pockets of well drained, level to gently sloping silt loams are also present. The property is underlain by Paleozoic sedimentary deposits of dolomite with some limestone and shale.

## **Public Access and Administrative Facilities**

- Parking Lots – six lots (three gravel and three native surface) with capacity for 58 vehicles.
- Roads and Gates – 2.4 miles of closed moderately-developed roads, 1.7 miles of closed lightly-developed roads, 5.6 miles of closed primitive roads and no gates.
- Signs – five entrance signs.
- Water Control Structures, Dikes and Impoundments – twenty two water control structures, eleven dikes (6.5 miles of dikes) and three impoundments. The dikes were constructed from the muck soil spoils and present on-going maintenance challenges and expenses.
- Culverts - 11 culverts.
- Firebreaks – nine firebreaks (~2.4 miles).
- Buildings – six buildings and two grain bins including one heated office/shop and several unheated storage sheds.

The department parking lot off Island Road provides access to the 420 acres of WiDOT wetland mitigation parcels that are open to the public.

## Vernon Wildlife Area

Vernon Wildlife Area (WA) lies north of the Village of Mukwonago in south central Waukesha County (**Map Series J**). This land was initially leased for hunting by the Wisconsin Conservation Department in 1946 and the first land purchase was made in 1950. Land purchases at this property have been assisted by donations from Wetlands for Wildlife and other conservation organizations.

Fee Title Ownership:	4,330 acres
Current Acreage Goal:	4,935 acres
Current Project Boundary:	5,820 acres

The flowages, refuges and adjoining grasslands and woodlots on this property provide excellent cover for wildlife, particularly migrating and nesting waterfowl and waterbirds

### Recreation

The wildlife area provides excellent hunting opportunities for waterfowl, turkey, deer, squirrel, and rabbit. Pheasant hunting on the property is supported by the department pheasant stocking program. Grassland restoration efforts are improving the quality of the cover for pheasant hunting. The property also contains a 41 acre Class 2 dog training ground. Trapping muskrat, beaver and otter is also popular.

Both open water and ice fishing are popular at Vernon WA, particularly the flowage off of Benson Road. Two Fox River tributaries, Pebble and Mill Brook, have limited access for angling.

This wildlife area has nearly 5.2 miles of dike that are used by hikers, birders, naturalists and photographers. A popular Fox River canoe route begins at the CTH I bridge and ends just past the wildlife area at the CTH ES bridge. Geocaching is also an increasingly popular activity on the property. A snowmobile trail maintained by a local snowmobile club enters the southeast corner of the property off of STH 83 and exits at CTH NN.

### Habitat and Vegetative Cover

The Fox River is the central feature of the Vernon WA. The river is surrounded by an extensive mosaic of Emergent Marsh dominated by narrow-leaved and hybrid cat-tails that gives way to a wetland complex of varying quality Wet-mesic Prairie, Southern Sedge Meadow, Southern Tamarack Swamp (rich) and Shrub-carr. Small patches of native species like big bluestem, prairie cordgrass, woolly-fruit sedge, bluejoint grass, slender willow and pussy willow are found in the wetlands. Invasive reed canary grass and common reed grass is found throughout the wetlands.

Small areas of Southern Dry-mesic Forest located in the northeast portion of the property are dominated by 12-18 inch dbh white oak along with lesser amounts of red oak, white ash, black cherry, American basswood, sugar maple, shagbark hickory, prickly-ash, hop-hornbeam and common buckthorn. Old fields on the property have been seeded and planted to prairie grasses and forbs. The cover types on the wildlife area are summarized in Table 33.

The five flowages on the property are managed to achieve hemi-marsh conditions (50% emergent vegetation; 50% open water). During migration at least one flowage is drawn down and maintained as mud flats for foraging by migrating shorebirds. Past disturbance (e.g., ditching) has contributed to the wide distribution of non-native invasive species on the property.

Cover Type	% Cover
Agriculture	3
Grassland	4
Upland Shrub	1
Aspen	5
Upland Hardwood	2
Oak	6
Upland Conifer	<1
Emergent Vegetation	52
Non-Forested Wetland	5
Lowland Shrub	13
Bottomland Hardwood	2
Swamp Conifer	<1
Water	6
Developed	<1
<b>Total</b>	<b>100</b>

**Forest Resources**

Oak is the primary forest type and covers 36% of the forested area on the wildlife area. The oak is being managed to sustain this cover type. A 47 acre stand had a shelterwood harvest to promote oak savanna and oak forest. Another 33 acre oak stand has had the black locust harvested or killed to promote the oak timber type. A third oak stand proposed for harvest will cut the aspen to promote oak and central hardwood forests type. The remaining oak stands are scheduled for harvest over the next 10 years.

Aspen covers 33% of the forested area. A portion of one of the stands was clearcut to encourage natural regeneration of the aspen. Another stand with 23 acres is currently sold but not yet harvested. This stand will also be clearcut to promote aspen regeneration.

Northern hardwoods are found in one stand, but oak has a strong presence in the stand as well. This stand was harvested a few years ago with a combination selection/shelterwood harvest, to promote the northern hardwood mix or the oak component when it was present.

Bottomland hardwoods cover 74 acres on this wildlife area. Small stands of white pine and tamarack types are present on the site. All of the forest cover types are summarized in Table 34.

<b>Forest Types</b>	<b>Stands</b>	<b>Acres</b>
Oak	8	234
Aspen	5	213
Northern Hardwoods	1	99
Bottomland hardwoods	3	74
Tamarack	2	20
White pine	2	8
<b>Total</b>	<b>21</b>	<b>648</b>

**Primary Sites**

The **Vernon Fen Primary Site** (13 acres) is located in the southern part of the property. This Primary Site contains a Calcareous Fen that supports several rare plants and springs that form the headwaters of a small stream that feeds the Fox River. Fens are a globally rare natural community occurring primarily in southeast Wisconsin and elsewhere in the glaciated Upper Midwest.

This Calcareous Fen at this Primary Site is called a “hanging fen”. A hanging fen is an area of peat soils that forms on moderate slopes above a hydrologic upwelling (i.e., a spring). The bubbling springs and braided spring runs from this fen coalesce downslope to form a small, clear, fast-flowing stream. The fen is densely vegetated with a sparse to moderate shrub layer of glossy buckthorn and shrubby cinquefoil, and gives way to herb-dominated marl flats near the spring runs.

*For detailed descriptions of the natural community types and the Primary Site see page 24 and Appendix F of the Southern Kettle Moraine Region (SKMR) Rapid Ecological Assessment (REA).*

**Wildlife Resources and Habitat Management**

Vernon WA supports populations of waterfowl, turkey, deer, squirrel, rabbit, muskrat, and beaver. Pheasant are stocked on this property as part of the department pheasant stocking program during the fall hunting season. Abundant wetlands support a number of marsh birds, including sora, Virginia rail, marsh wren, and yellow-headed blackbird. In addition, a variety of snakes, turtles, and frogs can be found here. The habitat management goals are geared toward establishing pre-settlement vegetation with allowance given to global and statewide priorities for rare species and critical habitat.

This wildlife area has two No Entry waterfowl refuges, about 365 and 305 acres respectively that are closed during the fall migratory period from September 1 through December 31. These refuges are centered on the flowages that are managed to provide forage and resting areas for migrating waterfowl.

Vernon WA also provides the following significant conservation opportunities:

- Wetland conservation,
- Marsh bird conservation and
- Herptile conservation.

Other opportunities include grassland, oak savanna and oak woodlands management. Stands with open-grown white and bur oak can be managed as oak openings, but the invading woody species must be addressed as part of the restoration.

Control of woody and herbaceous invasive species, such as buckthorn, honeysuckle, black locust, non-native/hybrid cat-tail, spotted knapweed, and sweet clover is a major activity too. Off-site erosion, nutrient loading, and chemical runoff continue to pose serious threat to the quality of the impoundments and the Fox River.

Prescribed burns are the primary habitat management tool on the grasslands and some wetlands. The timing and use of burning takes into account the life-history requirements of invertebrates, reptiles and other species found on the property. Chemical and mechanical means along with hand-work are also used to control invasive species and brush for rejuvenation of native species.

Common carp on Vernon WA have been managed through a controlled fish kill in the Frog Alley flowage. This area historically produced quality opportunities for northern pike and bluegill fishing.

Vernon WA supports Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory as shown in Table 35.

Table 35 Rare or Declining Species - Vernon WA				
Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Birds	2		1	3
Fishes	2			2
Herptiles	2			2
Insects	3			3
Mammals	1			1
Plants	2	4		6

### Aquatic Resources

The Fox River flows north to south through the property and is the dominant aquatic resource. Streams on the property include Pebble Brook, which flows northeast into the Fox River, and Mill Brook, a class 3 trout stream, flows into the property from the east. Mill Brook has little opportunity for trout habitat or recreational access improvement on the wildlife area given the low gradient and lack of accessibility. Mill Brook is an excellent refuge for trout with its natural meanders, good cover and cool water.

The wildlife area also has five flowages. A series of ditches and dikes, especially in the western and southern part of the property, are found on the property.

### Soils and Geology

The soils at this wildlife area primarily consist of poorly drained to very poorly drained mucks and silt loams in lower wetter areas. Adjacent uplands are moderate to gently sloping well drained loams and sandy loams. The property is underlain by Paleozoic sedimentary rocks of the including shale, dolomitic shale, dolomite and limestone.

### **Public Access and Administrative Facilities**

- Parking Lots - eleven lots (ten gravel and one asphalt) with capacity for 97 vehicles.
- Roads and Gates – 0.5 miles of moderately-developed, open road, 0.3 miles of lightly developed, seasonally open road, 2.6 miles of lightly developed, closed roads and 6.9 miles of primitive, closed road, and four gates (three cable gates and one pipe gate).
- Boat Launch – a gravel launch with ramp off the Frog Alley parking lot.
- Signs – seven entrance signs.
- Water Control Structures, Dikes and Impoundments – 11 water control structures, eight dikes (about 5.2 miles) and five flowages.
- Culverts - 17 culverts.
- Firebreaks – four firebreaks (about 1.7 miles)
- Buildings - An unheated storage and shop building is the primary shop and storage area for the Waukesha based department field technicians.

Heavy recreational use has resulted in rutting and potholes on the public access roads and parking lots. Road repair and renovation is a significant management concern at this property. Vandalism is also a significant issue. Frequent maintenance projects are needed to maintain these areas for quality access.

Aging water control structures are making water level manipulation increasingly difficult. The water control is used to manage cat-tails and encourage native emergent and submergent vegetation.

## Kenosha County Fish and Wildlife Habitat Parcels

About 955 acres of fish and wildlife habitat parcels have been acquired in western and central Kenosha County. These fee title lands were purchased with statewide acquisition programs to provide scattered nature based recreation opportunities for local users, habitat for wildlife and protect native communities and rare species. These properties are minimally developed with most having a parking lot, but have little to no additional habitat or access infrastructure. The habitats on these properties primarily consists of cat-tail marshes, Miscellaneous hardwoods and Bottomland Hardwoods, and grasslands/prairies.

### George Lake Habitat Area (Map Series K)

**George Lake Habitat Area** is a 161 acre fee title property located three miles southeast of Bristol and just east of George Lake. This land was acquired in 1970 through the Extensive Wildlife Habitat program. The property does not have a parking lot or walk in access and can only be reached via the Dutch Gap Canal or along North Mill Creek. This property has 2,900 feet of frontage along North Mill Creek.

This habitat area consists of a variety of land covers including 44 acres of non-forested wetlands, 35 acres of lowland shrub, 36 acres of upland hardwoods, 13 acres of oak, and 27 acres of cropland.

### Silver Lake/Hooker Lake Fishery Areas & Paddock Lake Habitat Area (Map Series L)

**Silver Lake Marsh Fishery Area** is located along the north shore of the lake. This fishery area has a project boundary of 35 acres and 35 acres in fee title have been acquired. The fishery area was established in 1961 and has over 3,600 feet of lake frontage. A 0.4 mile portion of the Kenosha County Icehouse Bike Trail crosses through the northern boundary of the property. This property has a parking lot and boat launch off CTH B. The property is covered by 14 acres of bottomland hardwoods, six acres of emergent wet meadow, five acres of oak and minor amounts of open water and the parking area. The wet meadow provides valuable spawning habitat, especially for northern pike. Invasive brush in the uplands is controlled through chain sawing, spot herbicide application, and prescribed burning.

Silver Lake is a 516 acre lake with a maximum depth of 44 feet. The lake supports a diverse fishery, including panfish, walleye, northern pike, muskellunge, smallmouth bass, largemouth bass, channel catfish, white bass, white sucker, lake chubsucker, longnose gar, bowfin, gizzard shad, banded killifish, common carp and various forage species.

**Hooker Lake Marsh Fishery Area** is located on the northwest shore of the lake and has a project boundary of 54 acres. Acquisition began in the early 1960's and 46 acres of fee title land have been purchased to date. The property has 3,200 feet of lake frontage and 1,100 feet of stream frontage. This property is accessible via a parking lot and village boat launch off 78th Avenue or by boat.

This fishery area is completely covered by emergent wet meadow. This wet meadow provides some of the only spawning habitat on the lake for northern pike.

Hooker Lake is a 103 acre lake with a maximum depth of 24 feet. The lake supports a diverse fishery, including panfish, walleye, northern pike, smallmouth bass, largemouth bass, yellow bass, white sucker, spotted sucker, lake chubsucker, longnose gar, bowfin, common carp and various forage species.

The Hooker Lake Management District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

**Paddock Lake Habitat Area** is a 5 acre property acquired in 1964 through the Remnant Fishery program. It is essentially a five acre island of emergent vegetation and lowland shrub located in a bay off the southwest shore of Paddock Lake. The area provides valuable spawning habitat for northern pike and other fish. The parcel is accessible via boat from the public boat launch off 248th Avenue.

Paddock Lake is a 128 acre lake with a maximum depth of 32 feet. The lake supports a diverse fishery, including panfish, northern pike, largemouth bass, yellow bass, white sucker, spotted sucker, lake chubsucker, bowfin, common carp and various forage species.

The Paddock Lake Protection and Restoration District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

## **Camp Lake Fishery and Habitat Areas (Map Series M)**

**Camp Lake Fishery Area** has two units along the west and southwest shore of the lake. This fishery area has a 134 acre project boundary and most of the acquisitions occurred in the 1960's. Ninety-three acres of fee title land lie within the project boundary and an additional 12 acres of fee title land have been acquired through the Fishery Area (6 acres) and Statewide Habitat Area (6 acres) programs outside the project boundary. The area is accessible via a department managed carry-in launch site off 286 Avenue and the department managed Camp Lake Fishery Area boat launch off 113th Street. A town boat launch is located off 106th Place.

The southwest unit consists of 53 acres divided among many parcels acquired along channels that were excavated in the wetlands. The west unit contains one 40 acre parcel. The two units have a combined lake frontage of 3,700 feet and thousands of feet of water frontage along the channels and drainage ditches. Camp Lake FA is largely covered by emergent wet meadow with minor amounts of bottomland hardwoods. These wetlands provide spawning habitat for northern pike and other fish.

Camp Lake is a 439 acre lake with a maximum depth of 19 feet. The lake supports a diverse fishery, including panfish, walleye, northern pike, largemouth bass, white bass, white sucker, lake chubsucker, longnose gar, bowfin, banded killifish, common carp and various forage species.

The Camp and Center Lakes Rehabilitation District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

**Camp Lake Habitat Area** is comprised of three units, a 254 acre unit along the Fox River, a 56 acre property west of Camp Lake, and a 65 acre area south of the Camp Lake Fishery Area. These lands were acquired through the Extensive Wildlife Habitat program between 1980 and 1985. Parking lot access for the Fox River unit is off 296th Avenue and Tuttle Road; the unit southwest of Camp Lake is accessible from a lot off CTH C, and the south unit is accessible from a lot off CTH C and 122nd Street. The estimated cover types on these parcels include 173 acres of emergent vegetation, 70 acres of lowland shrub, 50 acres of grassland, 50 acres of bottomland hardwoods, 13 acres of oak, minor amounts of upland hardwoods and the remainder as open water.

**Peat Lake Habitat Area** is located on the Illinois state line just south of Camp Lake. The property consists of 228 fee title acres and was purchased from The Nature Conservancy with funds from the Extensive Wildlife Habitat and the Statewide Wildlife Habitat programs. The entire property is also a state natural area (See the State Natural Areas chapter).

Peat Lake is surrounded by a cat-tail marsh and a sedge meadow that is heavily used by a variety of waterfowl and marsh birds. Game birds that nest at this habitat area include mallard, blue winged teal, wood duck, and American woodcock.

This property is accessible via a parking lot on 280th Street. A field road divides separates the cropped fields from the lake and wetlands.

The estimated land cover includes 100 acres of emergent vegetation, 42 acres of upland hardwoods, and 25 acres of grasslands and 19 acres of cropland. The wetlands are actively managed using cutting, brushing and fire to mimic natural disturbance patterns, promote native species and control trees and shrubs. Other allowable activities include control of invasive plants and animals, maintenance of existing service roads for management access.

Peat Lake has a surface area of about 42 acres, but the lake is shallow (maximum depth of five feet) with very low water levels in most years. The bottom is muck with occasional marl mounds. Peat Lake has a limited fishery supporting only carp.

The share cropped fields at the site will be restored to wet-mesic prairie using locally collected seed.

This entire property is open to the public from January 1 through August 31 for hunting, fishing, trapping and other traditional nature based pursuits. From Sept 1-Dec 31 the majority of this site is a "No entry wildlife refuge" and closed to the public except during the gun deer hunting (NR 15.024). However, the easternmost 50 acres is open year-round.

## Recreation

These properties provide opportunities for waterfowl, deer, turkey, and small game hunting, but seasonal restrictions on use may apply to portions of these properties. Fishing is also available at properties along lakes and rivers. Trapping of beaver and muskrat is a secondary activity on these areas. All of these properties provide opportunities for bird watching and wildlife viewing, especially at **Peat Lake SNA**.

## Land Cover and Habitat Management

The Camp Lake FA, Hooker Lake FA, Silver Lake FA and Paddock Lake HA provide fish and wildlife habitat with allowance given to rare species and critical habitat. All of these wetlands are passively managed, but they provide opportunities for the maintenance and restoration of valuable scattered wetlands. While minimal management is conducted on the wetlands, control of woody and invasive herbaceous species is a priority on some of the upland habitats. Soil erosion, nutrient loading and chemical runoff pose a threat to the quality of wetlands, streams, and lakes adjacent to these properties.

## Forest Resources

Most properties have no forest with only five stands (170 acres) typed as forest. About 48% (80 acres) is typed as Miscellaneous deciduous forest (i.e., low quality box elder and brush) and another 45% (77 acres) is typed as Bottomland Hardwoods. A 13 acre mature oak stand is located in the Fox River unit of the Camp Lake Habitat Area. No harvest or treatments are scheduled for these stands.

## Wildlife Resources and Natural Heritage Inventory

These properties support waterfowl, turkey, deer, squirrel, rabbit, muskrat, and beaver. The abundant wetlands support a variety of marsh birds and a number of herptiles. Six species of rare fishes tracked by Wisconsin Natural Heritage Inventory are present (Table 41).

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Fishes	3	1	1	6

## Soils

Nearly 90% of the property acreage is classified as very poorly drained, poorly drained, or somewhat poorly drained, with the majority being mucks and silt loams, sometimes with high clay content. Since these properties are centered on lakes, streams, and wetlands the uplands are generally limited to small inclusions on the margins of the parcels. These upland soils are loams and silt loams on level to gently sloping terrain.

## Public Access and Administrative Facilities

- Parking Lots – Six lots (gravel surface) with capacity for 15-20 vehicles.
- Roads and Gates – Several properties have short sections of primitive, closed (service) roads. Three cable gates.
- Signs – One informational sign.
- Boat Launches – one launch site with ramp.

## Racine County Fish and Wildlife Habitat Parcels

Statewide fish and wildlife habitat acquisition programs were used to acquire 1,075 acres of scattered fee title and easement lands in the western half of Racine County. These properties were purchased under statewide acquisition authority to provide opportunities for dispersed, nature based recreation for local users, provide habitat for wildlife, and protect native communities and rare species. These properties are minimally developed, most have a parking lot and some provide improved and/or unimproved boat launch access. Otherwise there is little to no additional habitat or access infrastructure on these properties.

The habitats primarily consist of cat-tail and reed canary marshes, sedge meadow, lowland shrub and bottomland hardwoods. The uplands are a mixture of oak and other hardwoods, grasslands, planted prairies and an occasional remnant native prairie.

### Burlington Group (Map Series N)

**Fox River Habitat Area** is a 46 acre fee title property located 2.2 miles southeast of downtown Burlington off STH 83. This property was acquired through the Statewide Habitat Area program in 2007. This habitat area contains a 19-acre sharecropped agricultural field, is largely covered by scrub forest, brush and emergent wet meadow. This property is bounded on the east by the Fox River and the west by an active railroad and the city wastewater plant. The only access is by water from the Fox River.

**Hoosier Creek Habitat Area** is a 227 fee title acre property acquired through the Statewide Habitat Area program in 2006. The property is located 2.2 miles east of the City of Burlington along Hoosier Creek as it flows south from Browns Lake to the Fox River. The property contains several small ponds, 146 acres of wet grasslands, 50 acres of upland shrub, 22 acres of non-forested wetlands, and minor amounts of upland hardwoods and open water. The property has 0.54 miles of frontage on Hoosier Creek.

The property is under a NRCS Wetland Reserve Program (WRP) easement and the restoration (i.e., ponds, tile breaks, etc.) work on the property was done through the WRP program. The property is stocked with pheasants as part of the department pheasant stocking program.

A 0.5 mile snowmobile trail runs north to south through the middle of the property. This trail is maintained by the local snowmobile club. This property is bounded by the Burlington to Kansasville State Trail on the south. Access to the property is gained by a gravel road and parking area off STH 11/CTH EL

**Burlington Habitat Area** is a wildlife property acquired through the Extensive Wildlife Habitat (138 acres) and Scattered Wildlife (26 acres) programs from 1972 through 1980. The property is located 4.4 miles southeast of the City of Burlington. The property contains 159 acres of fee title land and 5 acres of easement. It is accessed via a parking lot at the end of Hoosier Creek Road and walk-in access off Wheatland Road. This property is covered by 106 acres of non-forested wetlands, 28 acres of lowland shrub, 13 acres of grasslands and minor amounts of emergent vegetation and upland hardwood. An unnamed tributary stream that has been ditched and straightened runs through this property.

### Dover Group (Map Series O)

**Eagle Lake Fishery Area** is located in south-central Racine County. The first parcels were acquired in 1959 and this property has a project boundary of 210 acres divided into four units that include most of the undeveloped shoreline on Eagle Lake. A total of 96 acres of fee title and one acre of easement have been acquired to date in the northwest and southwest units of this habitat area. The acquisitions in the southwest unit include many 0.1 acre parcels creating a checkerboard ownership pattern.

This habitat area is covered by 31 acres of emergent vegetation, 29 acres of upland hardwoods, and 24 acres of lowland shrub and 11 acres of grassland. The wetlands are often inundated in the spring, providing spawning habitat for northern pike. A five acre prairie was planted in the northwest unit and is managed through mowing, chain sawing, spot herbicide application, and prescribed burning.

Eagle Lake is popular with both regional and local users. Access to this property and Eagle Lake are provided through the following: 1) a county run boat ramp off Eagle Lake Park Road is located in the northeastern unit; 2.) a department parking lot off Church Road and a town run boat ramp off Minnetonka Drive are located in the northwestern unit; and 3.) walk-in access to the southwestern unit is available with on-road parking along Lakeshore Drive and LaFollette Drive.

Eagle Lake is the second largest natural lake in Racine County. The lake is relatively shallow with 21% of its water area less than three feet in depth. The average depth is 7 feet and the maximum depth is 12 feet. The lake supports a fishery of panfish, largemouth bass and northern pike.

The Eagle Lake Management District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

**Dover Habitat Area** is a 90 acre property located two miles northeast of Eagle Lake. The first fee title purchases (80 acres) occurred in 1967 through the Scattered Wildlife program with an additional 10 acres purchased in 2007 through the Statewide Wildlife Habitat program. The habitat consists of 45 acres of emergent vegetation, 25 acres of upland shrub, a 15 acre prairie planting, and a small amount of shrub carr. Patches of wet-mesic prairie are also found on this property. The wetlands on this property are part of the headwaters of the Goose Lake Branch-Wind Lake Drainage Canal. This property is managed using prescribed burns, mowing, chain sawing, and spot herbicide applications. The property is closed to all public access from September 1st to December 31st as a wildlife refuge except it is open for the gun deer seasons. Access is provided by a small gravel parking area off STH 20.

### Wind Lake Group (Map Series P)

**Wind Lake Fishery Area** has a 62 acre project boundary divided into three units along the west, north and east shores of Wind Lake. The only unit with any department ownership is a 14 acre fee title parcel that includes most of a small island off the west shore of Wind Lake. Access to the island is by boat from a public access boat launch off South Wind Lake Road on the southwest shore of Wind Lake. Access to Wind Lake is also provided by commercial launching and rental facilities.

Wind Lake Fishery Area is largely covered by cattail marsh, shrub-carr and swamp hardwood forest. Spring flooding provides spawning habitat for northern pike on this property.

Wind Lake is a 936-acre lake with a mean depth of 9.6 feet and maximum depth of 52 feet. Muck and marl cover about 85% of the lake bottom.

There are no public beaches on the shoreline of Wind Lake. The majority of the lakeshore is privately owned and developed and several of the remaining undeveloped and environmentally sensitive areas are contained within the project boundary. The Wind Lake Management District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

**Wind Lake Habitat Area** was acquired through the Scattered Wildlife and Statewide Habitat Areas programs. The first parcels were purchased in 1970 and 261 acres of fee title land and a less than one acre easement have been acquired to date. This property has a small parking lot on a narrow access road off East Wind Lake Road and difficult walk in access from the east off 6 mile Road. This property is bounded by former agricultural drainage ditches. This unit is covered by 220 acres of lowland shrub, 32 acres of grassland and minor amounts of non-forested wetlands and upland hardwoods. Several 2.5 acre shallow scrapes were constructed in the wetlands on the west side of the property.

**Norway Habitat Area** is a wildlife property acquired through the Scattered Wildlife program between 1970 and 1978. Eighty five acres in fee title have been acquired to date. This property is bounded by the Wind Lake Canal on the south and east and a subdivision on the north side. Access to the property is by boat off the canal or walk-in access off Palmer Drive with parking on Palmer Drive and Legend Lane. This habitat area is covered by 50 acres of lowland shrub and 35 acres of scrub upland hardwoods.

**NOTE:** 92 acres of Streambank Protection Fee lands are described in the Honey Creek SBP property description in the Walworth County Fish and Wildlife Habitat Parcels.

### Recreation

The habitat areas along lakes, rivers and streams provide opportunities to fish for panfish, largemouth bass, walleye, northern pike, channel catfish, redhorse, white sucker and common carp. The scattered uplands provide opportunities for waterfowl, deer, turkey, and small game hunting. Occasional beaver and muskrat trapping opportunities also exist. All the habitat areas provide opportunities for passive recreation such as bird watching and wildlife viewing.

## Land Cover and Habitat Management

Wetlands are the dominant cover type on these properties. The habitats include cat-tail marsh, sedge meadow, shrub-carr, and hardwood swamp. Hardwood swamps were formerly tamarack swamps that have converted to red maple and native and non-native shrubs (e.g., glossy buckthorn). Occasional areas of wet-mesic prairie also occur. Uplands are a mixture of shrubby oak forest and planted prairies.

Management is focused on providing habitat for game fish and animals with allowances for rare species and critical habitats. Except for the prairie plantings most of these parcels are passively managed though several properties provide opportunities for the maintenance and restoration of wetlands, grasslands, oak woodlands and wet-mesic prairies.

Control of woody and herbaceous invasive species is a priority on some sites, and could be expanded as resources allow. Chemical and mechanical means along with hand-work are also used to control invasive species and brush for rejuvenation of native species.

Prescribed burns are the primary habitat management tool. The timing and use of the burns takes into account the life-history requirements of invertebrates, reptiles and other species found on the property.

## Forest Resources

The five fishery and habitat areas are predominately non-forested wetlands. Only six stands (148 acres) are typed as forest with red maple making up 76% (112 acres) of the total forest resource. Minor amounts of miscellaneous deciduous (primarily box elder and brush), Bottomland hardwoods and Central hardwoods are found on these properties. No harvesting is scheduled in the near future on these stands.

## Wildlife Resources and Natural Heritage Inventory

These habitat areas and fishery areas support populations of waterfowl, turkey, deer, squirrel, rabbit, muskrat, and beaver. Abundant wetlands support a variety of number of marsh birds, and a variety of herptiles can also be found here.

The wetland portions of the Burlington FA, Eagle Lake FA and Wind Lake FA are passively managed.

The Racine County Scattered Wildlife Habitat Areas, Fishery Areas, and State Natural Areas also support Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory, including one state endangered species, one state threatened species, and three species of special concern; these include herptiles, fishes and plants (Table 40).

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Herptile	1			1
Fishes	1	1	1	3
Plants	1			1

## Soils

The majority of the soils are classified as very poorly drained, poorly drained, or somewhat poorly drained as most properties are centered on lakes, streams and wetlands. Houghton muck and other mucks as well as a variety of low-lying mineral soils ranging from loams to silt loams to silty clay are most common. Upland soils are comprised of silt loams, loams, and gravelly loam complexes on level to moderately sloping terrain often limited to small inclusions or along the margins of the properties.

### **Public Access and Administrative Facilities**

- Parking Lots – Five lots (all gravel surfaced) with capacity for 15-20 vehicles.
- Roads and Gates – Several properties have short sections of primitive, closed (service) road. Four gates.
- Signs – Four Informational signs.
- Culverts - Seven culverts.

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## Walworth County Fish and Wildlife Habitat Parcels

Statewide fish and wildlife habitat acquisition programs were used to purchase 3,661 acres of fee title and easement parcels in Walworth County. These lands provide opportunities for dispersed, outdoor recreation for local users, habitat for wildlife, and protect native communities and rare species. The properties are minimally developed and with management ranging from active grassland and woodland management in the uplands to passive management of most wetlands. Most have a parking lot, but have little to no additional habitat or access infrastructure.

The habitats primarily consist of wetlands, including cat-tail marsh, sedge meadow, and lowland shrub and bottomland hardwoods. Occasional areas of Calcareous Fen, Southern Tamarack Swamp and Bog Relict also occur in areas of unique hydrology. Uplands are a mixture of oak and mixed hardwoods, grasslands, planted prairies and an occasional, remnant native prairie.

### Honey Creek Streambank Protection Area (Map Series Q)

The Honey Creek Streambank Protection Area (SBPA) has a project boundary of 2,867 acres in Walworth and Racine counties. The project boundary stretches for about 13 miles along Honey Creek from the Village of East Troy to Honey Lake. The purchase of parcels along Honey Creek began in 1966 with a substantial increase in acquisitions, initially as easements, occurring from 2009-2012. The easements involved collaboration between the Conservation Fund, NRCS and the department.

To date 507 acres in fee title (92 acres are located within Racine County) and a one acre easement have been acquired. Acquisitions include 393 acres in fee title within the project boundary and 114 acres of fee title and one acre of easement outside the project boundary.

About 200 acres are under 30 year NRCS Wetland Reserve Program easements. The wetland and grassland habitats on these easements have been restored by NRCS. The department now manages the land, but the easements require consultation with and approval from the NRCS on habitat and infrastructure management actions.

The Wisconsin Department of Transportation owns a 265 acre wetland mitigation site adjacent to this property. Previous NRB green sheets indicated this land was to be transferred to the department after the habitat restoration effort was completed. This mitigation land is currently not open for public recreation. This transfer would bring the total fee title acreage for this property to slightly over 770 acres.

The habitat on this property consists of approximately 235 acres of lowland shrub (e.g., shrub carr and willow), 235 acres of nonforested wetlands (e.g., lowland grass), 24 acres of oak forest, 5 acres of emergent marsh vegetation, 7 acres of open water and several acres of developed land.

These lands provide access for hunting, fishing, trapping and nature based recreation opportunities. Other benefits include:

- nesting habitat for waterfowl, grassland birds and rare reptiles (i.e., Blandings Turtle);
- improved fish habitat;
- enhanced water quality, and
- moderated water flows to the creek.

The habitat goal seeks to establish a 4:1 ratio of uplands to wetlands in this project boundary.

Access to the east unit is via canoe/kayak along Honey Creek or parking lots off Hill Valley Road and Bell School Road. The western most parcel in the Village of East Troy is accessed by a narrow grass strip off Buell Road. An isolated seven acre parcel has a one story, wood frame, metal sided building that provides meeting space and storage for equipment for department staff.

An active rail line runs through the property along the county line making access to the eastern portions of this property difficult.

Honey Creek SPBA provides opportunities for wildlife viewing and shore fishing. Honey Creek supports a diverse fishery, including panfish, northern pike, smallmouth bass, largemouth bass, channel catfish, white sucker, northern hog sucker, redhorse, stonecat, bowfin, common carp and various forage species.

The habitat is managed following the objectives and prescriptions included in the NRCS easements.

### **Beulah Lake and Potters Lakes Habitat Areas (Map Series R)**

The 21 acre Beulah Lake HA was purchased in 1974 as part of the Fish Management REM program. This isolated parcel consists of Southern Tamarack Swamp located along an unnamed stream flowing into Lake Beulah. Access is difficult and the property may be reached by water from the unnamed tributary stream with boat access provided by the public boat landing on the southwest side of Beulah Lake. This site does not have a parking lot, but walk in access to this wetland is available off Deer Path Road. The department is offering this parcel for sale.

Lake Beulah is an 812 acre lake with a maximum depth of 58 feet. The lake supports a diverse fishery, including panfish, walleye, northern pike, largemouth bass, brown trout, rainbow trout, bowfin, and various forage species.

The Lake Beulah Management District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

Potters Lake HA is a 37 acre parcel located four miles northeast of the Village of East Troy. This parcel was purchased in 1974 through the Extensive Wildlife Habitat program. It is located along a ditched outlet stream southeast of Potters Lake. This ditch is part of the Honey Creek watershed and the habitat area has about 1,560 feet of stream frontage.

Potters Lake HA has 23 acres of lowland brush-willow, 9 acres of lowland grass, 5 acres of upland brush, and less than one acre of open water. Parking is provided at the Potters Lake Public Access parking lot off CTH L on the north.

### **Troy Habitat Areas (Map Series S)**

Troy Habitat Areas is located approximately five miles west of the Village of East Troy and five miles north of the City of Elkhorn. The majority of these parcels were acquired between 1967 and 1980 as part of the Extensive Wildlife Habitat (512 acres) and Scattered Wildlife (154 acres) programs. There are five habitat units containing a total of 666 acres of fee title land. The largest unit contains 435 acres while the smallest unit, a 6 acre parcel, is being offered for sale by the state. These units have over 10,000 feet of ditched stream frontage, primarily within the Honey Creek watershed.

The cover types on these units include 125 forested acres (94 acres of oak woods), 290 acres of lowland grass, 188 acres of lowland brush, 55 acres of grassland and minor amounts upland brush, water and parking areas.

### **Clover Valley Habitat Area and Clover Valley SIATA (Map Series T)**

The two units of the Clover Valley Habitat Area and the Clover Valley State Ice Age Trail Area (SIATA) are located 3.5 miles south of the City of Whitewater. The habitat area includes 637 acres of fee title lands and 19 acres of easement acquired through the Scattered Wildlife (535 acres) and the Ice Age Trail (102 acres) programs. These properties contain approximately 1.65 miles of primitive, native surface trail. About one mile of trail is located on the Ice Age Trail parcel and 0.65 miles on Scattered Wildlife land. These parcels were purchased from the 1950's to the early 1970's. There were 294 acres of Voluntary Public Access lands adjacent to the habitat area as of 2015, but the leases will expire in 2017. These public access parcels will be retained if the lease program is funded and the lease is renewed.

The Clover Valley State Ice Age Trail Area is described in more detail in the State Ice Age Trail section.

The cover types on these units include 230 acres of lowland grass dominated by reed canary grass, 200 acres of lowland brush, 120 acres of grasslands, 47 acres of forest and 20 acres of cropland. There is over 11,000 feet of ditched stream frontage in the Bluff Creek and Whitewater Creek watersheds.

### **Sharon Habitat Areas (Map Series U)**

Sharon Habitat Area is located two miles south of the Village of Darien. This 166 acre fee title property consists of two units, 96 acres and 70 acres respectively, that were purchased in the mid-1970's. These parcels were acquired through the Scattered Wildlife (142 acres) and Extensive Wildlife Habitat (24 acres) programs. The east unit has about 2,640 feet of stream frontage along Darien Creek. Access to these units is provided from parking lots off Shady Lane and CTH C. The cover types include 100 acres of grasslands, 39 acres of cropland, and 15 acres of lowland shrub and 12 acres of upland hardwoods.

### **Delavan Lake and Lake Como Habitat Areas (Map Series V)**

Delavan Lake HA is an isolated 11 acre parcel located on a bay northeast of Lake Delavan. The habitat area is south of Mound Road about five miles east of the City of Delavan. This parcel was purchased in 1971 through the Fishery Remnant program and has slightly over 1,000 feet of lake frontage. The land cover consists of seven acres of non-forested wetlands along the open water and four acres of lowland shrub moving inland. This habitat area is part of an extensive wetland complex dominated by cat-tail marsh with some good quality shrub-carr and sedge meadow. The area is often inundated and provides spawning habitat for northern pike and other fish. Access to this parcel is by boat from one of the public launch sites on Delevan Lake.

Delavan Lake is a 1,905 acre lake with a maximum depth of 52 feet. The lake supports a diverse fishery, including panfish, northern pike, walleye, muskellunge, largemouth bass, smallmouth bass, channel catfish, white bass, white sucker, redhorse, common carp and various forage species.

The Delavan Lake Sanitary District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

Lake Como HA is a 183 acre property located on the east and southeastern shores of Lake Como between the villages of Como and Lake Geneva. These parcels were purchased between 1972 and 1980 through the Fish Management Statewide Habitat Area program. Walk-in access is provided via Dam Road off CTH H as well as by boat from Lake Como. This property has about 8,100 feet of lake frontage and 2,100 feet of frontage on Como Creek. Cover types on this parcel include 146 acres of non-forested wetlands on the lake side that grades into 37 acres of lowland shrub habitat inland. The property borders a portion of the popular Duck Lake Nature Trail which runs between Schoefield Drive and Edgewood Drive on the southeast side of the lake.

Lake Como is a 955 acre lake with a maximum depth of 9 feet. The lake and Como Creek support diverse fisheries, including panfish, northern pike, largemouth bass, white sucker, common carp and various forage species.

### **Lyons Habitat Areas (Map Series W)**

Lyons HA is located about four miles northeast of Lake Geneva. Access is provided from a parking lot off Buckby Road on the north side of the property. This 134 acre property was purchased between 1962 and 1974 through the Extensive Wildlife Habitat program. The estimated cover types include 70 acres of non-forested wetlands, 40 acres of upland and lowland brush, 19 acres of woodlands (primarily aspen) and 5 acres of mixed warm and cool season grasses. The property has about 2,200 feet of frontage on the White River and another 1,150 feet along Como Creek on the southern end of the property.

### **Bloomfield and Ivanhoe Habitat Areas (Map Series X)**

The Bloomfield Habitat Area is located between Lake Geneva and Genoa City along Highway 12. This habitat area consists of two units totaling 1,108 acres acquired between 1964 and 1985 through the Scattered Wildlife (562 acres), Extensive Wildlife Habitat (526 acres) and the Statewide Wildlife Habitat (20 acres) programs. Public access is provided from five gravel parking lots. These units have 10 ponds and nearly six miles of ditched stream frontage along the headwaters of two streams - Spring Valley Creek (which drains toward Lake Ivanhoe) and Bloomfield Creek. Both of these streams are tributaries of the White River. A narrow band of remnant Wet-mesic Prairie is located along an abandoned railroad bed in the western unit. A small Southern Tamarack Swamp is also located in this unit.

Ivanhoe Habitat Area is a grouping of three small units containing a total of 159 acres around Lake Ivanhoe. These lands were purchased between 1972 and 1974 through the Scattered Wildlife ( 81 acres) and Statewide Habitat Areas (78 acres) programs. These units have 2,700 feet of lake frontage and about 4,500 feet of stream frontage along Spring Valley Creek. This habitat area is about five miles east of the City of Lake Geneva. These units are accessed via a parking lot off Dunbar Road, roadside parking off Lyons Road and Dusable Drive, or the water via the boat launch on Lake Ivanhoe.

The estimated cover types include 450 acres of lowland shrub, 304 acres of non-forested wetlands, 212 acres of emergent vegetation, 132 acres of grassland, 115 acres of cropland, 37 acres of oak and minor amounts of open water, aspen, bottomland hardwoods, developed areas.

### **Peterkin Pond Game Refuge (Map Series Y)**

This wildlife refuge, no hunting or trapping is allowed, is located two miles southeast of Lake Geneva. The land was purchased through the Scattered Wildlife program from the Nature Conservancy in 1990. This property includes 131 fee title acres, a one acre management access easement off STH 120 and a less than one acre public access easement and small parking lot is located off CTH B. The property provides valuable foraging and resting habitat for migratory waterfowl and birds. The cover types include 41 acres of mixed lowland grass-shrub carr, 40 acres of emergent marsh, 24 acre seepage lake, and 16 acres of grassland.

### **Recreation**

These areas provide opportunities for deer, turkey, pheasant, and small game hunting while the fishery focused areas emphasize angling opportunities for panfish, bass, northern pike and other species. Several of the properties offer beaver and muskrat trapping as well. Hunting is allowed on the Clover Valley SIATA except for 100 yards on either side of the centerline of the trail.

Specific recreation opportunities are found at the following sites:

- **Honey Creek Streambank Protection Area** provides canoeing opportunities.
- **Peterkin Pond Wildlife Refuge** provides excellent birdwatching, especially for waterfowl, marsh birds and migratory birds.

### **Land Cover and Habitat Management**

These properties provide opportunities for the maintenance and restoration of grasslands, wetlands, oak woodlands, and wet-mesic prairie habitats that support these game and non-game species. Habitat management goals seek to provide abundant game populations with allowance given to protect rare species and communities.

While minimal management is conducted on most of these parcels, prescribed burning is the primary and most cost effective management activity used to maintain habitats. Chemical and mechanical means along with hand-work are used to control invasive species and brush. The timing and use of these management tools takes into account the life-history requirements of invertebrates, reptiles and other species found on the properties.

### **Forest Resources**

No forested habitat is found on the Potters Lake HA, Delevan Lake HA, Lake Como HA and Peterkin Pond. Table 36 summarizes the forested acres found on the other habitat and state natural areas

Property / Forest Type	Oak	Central Hardwoods	Bottomland Hardwoods	Tamarack	Aspen	Other
Beulah HA				25		
Clover Valley HA	16		21		10	
Troy HA	94	8	15			8 *
Lyons HA					19	6 **
Bloomfield/Ivanhoe HA	37		3		3	
Sharon HA						13 ***
<b>TOTAL</b>	<b>145</b>	<b>8</b>	<b>39</b>	<b>25</b>	<b>32</b>	<b>27</b>

\* white pine plantation, \*\*walnut, \*\*\* miscellaneous deciduous (box elder and other scrub species)

### Wildlife Resources and Natural Heritage Inventory

These properties support deer, turkey, waterfowl, small game, pheasants as well as marsh birds, reptiles, frogs and some rare species. Muskrat and beaver are located on some of these habitat areas.

Beulah Bog SNA harbors at least six species of insectivorous plants and one state-threatened plant. The bog lake also provides habitat for several dragonfly species and invertebrates. The number of Species of Greatest Conservation Need and other rare or declining species tracked by the Wisconsin Natural Heritage Inventory on these properties are shown in Table 37.

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
Herptiles	1			1
Fishes	3		1	4
Mussels	1	1		2
Plants	5	3	1	9

### Soils

Over 80% of the soils for this group are mucks with the remainder mostly low-lying silt loams that are classified as very poorly, poorly, or somewhat poorly drained. The upland soils are mostly well drained loams and silt loams on gentle to moderately steep slopes on the periphery of the property.

### Public Access and Administrative Facilities

- Parking Lots – 19 lots (primarily gravel covered with a few native surface lots) with a capacity for 80-90 vehicles.
- Roads and Gates – Several properties have short sections of primitive, closed (service) roads. Five cable gates.
- Signs – Nine informational and entrance signs.
- Water Control Structures, Dikes and Impoundments – One water control structure, one dike and one impoundment at Bloomfield.

## Waukesha County Fishery and Habitat Areas

Statewide fish and wildlife habitat acquisition programs purchased 644 acres of fee title and easement parcels in Waukesha County. Seventy four acres are located within the Paradise Valley WA project boundary. These properties were acquired to provide nature based recreation opportunities for local users, habitat for wildlife and protect native communities and rare species. Several properties offer opportunities to maintain and/or restore wetlands, oak woodlands and wet-mesic prairies. These lands are minimally developed except for having one or more parking lots, several provide boat launch facilities and some have habitat infrastructure (e.g., constructed ponds with dikes and water control structures).

### Oconomowoc Group (Map Series Z)

**Ashippun Lake Habitat Area** is a 36 acre property acquired by the Wisconsin Conservation Commission in 1962 through the Remnant Fishery program. The property is located on the west side of Ashippun Lake and is accessed off McMahan Road. The habitat area has 2,500 feet of lake frontage and consists of 12 acres of emergent marsh along the lake, 22 acres of young conifer forests and 2 acres of developed land. A conifer thinning was recently conducted and another harvest is scheduled in 10 to 15 years.

An agreement approved in 1967 between the department and Waukesha County maintains state ownership of the 36 acres and responsibility for managing the habitat, but the county was provided a permanent lease for 20 acres and the county is responsible for the management of the recreational access infrastructure (i.e., paved parking lot, boat launch, restrooms and picnic facilities) on the property. Waukesha County Ashippun River Park (294 acres) lies adjacent to the state land.

Ashippun Lake is a 94 acre lake with a maximum depth of 35 feet. Fish include panfish, largemouth bass, northern pike and walleye. The lake's water is moderately clear.

The Ashippun Lake Protection and Restoration District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

**Oconomowoc Habitat Area** consists of three units north of the City of Oconomowoc. The three units are 41, 75 and 103 acres in size and were acquired through the Extensive Wildlife Habitat and Scattered Wildlife Land programs between 1976 and 1984. Except for one acre of easement at the northern unit, 219 acres were purchased in fee title. The northernmost unit includes 15 acres that lie in Dodge County. The two southern units have off road parking and are accessed from STH 67 or Sondag Road. The northern unit has walk-in access via the narrow easement with parking along O'Neill Road.

These units contain a total of 219 acres and the estimated land cover is 65 acres of lowland shrub, 60 acres of grasslands, 25 acres of upland forest, 20 acres of bottomland forest, 15 acres of cropland, 15 acres of emergent vegetation and minor amounts of open water and swamp conifers. Several small, permanent and ephemeral ponds are located on these units. One unit west of Ashippun Lake has two dikes and water control structures.

**Lac La Belle Habitat Area** is a 23 acre property located on the east shore of Lac La Belle within the city limits of Oconomowoc. Access is via boat from a city boat landing or walk in access off Blackhawk Drive, Beggs Island Drive or Mainland Drive. This parcel was acquired in 1982 through the Statewide Habitat Area program. This property has about 850 feet of frontage on Lac la Belle and 1,650 feet of frontage on Rosenow Creek. The estimated cover types are 12 acres of bottomland hardwoods, nine acres of emergent vegetation and two acres of lowland shrub. Rosenow Creek is a Class 2 trout fishing stream that supports a self-sustaining brook trout population in its upper reaches.

The Lac La Belle Management District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

### Waukesha Lakes Group (Map Series AA)

**Lake Keesus Fishery Area** is a 37 acre property on the west shore of Lake Keesus. The land was acquired between 1967 and 1970 through the Remnant Fishery program. It has 1,600 feet of lake frontage and consists of 21 acres of emergent vegetation, 10 acres of shrub wetlands and six acres of oak. Due to the wetlands no off road parking is provided, but the property can be reached from the water via the town boat launch. No recent forest management has been done on this property.

Lake Keesus is a 235 acre lake with a maximum depth of 42 feet and has moderately clear water. A public boat landing provides access to the lake. Fish in the lake include panfish, largemouth bass, northern pike and walleye. A low hazard dam with five feet of total structure height is located on the habitat area. This dam adds one foot to the normal lake level. Lake Keesus drains into the Oconomowoc River and flows into North Lake.

The Lake Keesus Management District is listed in the UW Extension Wisconsin Directory of Lake Organizations.

**Lisbon Habitat Area** is a 17 acre property located about a mile south of the Washington County border between STH 164 and CTH Y. This property was acquired in 1964 through the Scattered Wildlife program. This property has 14 acres of swamp hardwood and 3 acres of upland hardwoods. This property has no legal public access and is being offered for sale by the state.

**Lower Nemahbin Habitat Area** is a 23 acre property located in west central Waukesha County. The land was acquired in 1978 through the Statewide Habitat Area program. The property has 1,700 feet of frontage on the northwest shore of Lower Nemahbin Lake and contains emergent wet meadow and marsh vegetation. Parking access is provided at the town boat landing and water access is gained from the town boat landing and the department carry in boat site.

The outlet for Lower Nemahbin Lake flows through this property. This outlet is a continuation of the Bark River which is classified as a warm water sport fishery. This river is only partially meeting that use due to polluted urban and rural runoff entering the river and its tributaries.

Lower Nemahbin Lake is a 239 acre drainage lake with moderately clear water. The lake has a maximum depth of 36 feet and the gamefish in the lake include panfish, largemouth bass, smallmouth bass, northern pike and walleye.

**Nagawicka Lake Habitat Area** is a 27 acre property located on the north end of Nagawicka Lake in west central Waukesha County. This property was acquired in 1974 through the Statewide Habitat Area program. The property has about 2,200 feet of lake frontage. Walk in access is provided by the department parking lot off Rasmus Road. Water access is available from the 34 acre City of Delafield public boat landing in Nagawaukee Park adjacent to this habitat area. The habitat area has 11 acres of emergent wetlands, five acres of tamarack, 10 acres of upland forest that contains many large oaks and a small developed area. No recent forest management has been conducted and none is planned for the near future.

Nagawicka Lake is a 981 acre lake and has a maximum depth of 90 feet. Fish species found in Nagawicka Lake include panfish, largemouth bass, smallmouth bass, northern pike and walleye. The lake's water is moderately clear.

### **Milky Way Habitat Area (Map Series BB)**

The **Milky Way Habitat Area** is located about 4.5 miles southeast of the City of Waukesha off of Milky Way Road. This 35 acre property (32 acres fee title and 3 acres of easement) was acquired in 2010 through the Scattered Wildlife program. The property was a WiDOT wetland mitigation property and it contains 10 acres of emergent wet meadows, six acres of low-diversity shrubby wetlands, and 16 acres of prairie plantings.

### **Mukwanago River Habitat Area (Map Series CC)**

**Mukwonago River Habitat Area** is a 91 acres fee title parcel that was purchased in 1998 through the Statewide Habitat Area program. Access is provided by two parking lots off CTH LO on the north side of the property. Water access is available east of the property from a Town of Mukwonago unimproved carry in canoe launch off CTH I.

This property has about 3,800 feet of frontage along the Mukwonago River. The river is designated an Exceptional Resource Water between Eagle Spring and Phantom Lakes. The river has clear, warm water and a maximum depth of two feet.

The land cover includes 30 acres of emergent wet meadows, 20 acres of oak, 10 acres of grassland, 10 acres of pine plantations, eight acres of shrub carr wetlands and minor amounts of Central Hardwoods, brush, one small pond. The oak stands were shelterwood harvested several years ago to promote oak with follow-up shelterwood harvests due within the next 10 years. The pine plantation, 5 acres each in red pine and white pine, was thinned and another thinning is due within ten years.

Two smaller parcels, 24 acres total, about six miles upstream were also acquired through the Statewide Habitat Area in 1992. The parcels are located east of Eagle Spring Lake off CTH E and are part of the Lulu Lake/Rainbow Springs master planning effort. This master planning effort will consider the recreation and habitat management objectives and prescriptions recommended in the Lulu Lake/Rainbow Springs master plan.

### Recreation

In general, these properties provide opportunities for hunting, fishing and trapping as well as a variety of nature based activities such as hiking, bird watching, cross country skiing and nature enjoyment. Game species include deer, turkey, small game, waterfowl and pheasant. Properties with frontage on lakes and streams have a wide variety of species ranging from brook trout to panfish, largemouth bass, smallmouth bass, northern pike and walleye. Occasional beaver and muskrat trapping can also be enjoyed.

### Land Cover and Habitat Management

As noted on the property descriptions wetlands, including cat-tail marsh, sedge meadow, shrub-carr, and bottomland hardwood forests are the predominant habitats on these smaller properties. Several properties also have small areas of Calcareous Fens, Southern Tamarack Swamp and Bog Relict. The uplands are typically a mix of oak forest, pine plantations, old fields planted to grasslands and prairies and the occasional, remnant native prairie.

The majority of these properties are passively managed. Burning is the primary habitat management tool to rejuvenate native species. Burning takes into account the life-history requirements of invertebrates, reptiles and other species found on the property. Control of woody and herbaceous invasive species is a priority on the natural areas, grasslands and woodlands. Chemical and mechanical means along with hand-work are also used to control invasive species and brush.

### Forest Resources

Of the 607 acres of fee title land in this property grouping, about 189 acres are typed as forests. The forest cover types are summarized Table 38.

Property/ Forest Type	Oak	Bottomland Hardwoods	Central Hardwoods	Aspen	Northern Hardwoods	Pine <sup>1</sup>	Tamarack
<b>Mukwanago River HA*</b>	20		7			10	
<b>Waukesha Lakes HA*</b>	19	15			3		6
<b>Oconomowoc HA**</b>		33	6	18	5	5	3
<b>Total</b>	<b>39</b>	<b>48</b>	<b>13</b>	<b>18</b>	<b>8</b>	<b>15</b>	<b>9</b>

\* No forests on several units

\*\* A combination of Swamp and Bottomland Hardwood forests

<sup>1</sup> includes white and red pine

## Wildlife Resources and Natural Heritage Inventory

These scattered properties support populations of waterfowl, turkey, deer, squirrel, rabbit, muskrat, and beaver. The abundant wetlands also support a wide variety of marsh birds and a variety of herptiles. Habitat goals are geared toward providing game fish and wildlife habitat with allowance given to global and statewide priorities for rare species and critical habitat.

The lower reaches of the Mukwonago River supports at least 53 species of fish, including the State Threatened longear sunfish and State Endangered starhead topminnow. The two-mile stretch of river from the natural area downstream to its confluence with the Fox River contains the last known self-sustaining longear sunfish population in Wisconsin. Among the other fish inhabiting the stream are grass pickerel, rosyface shiner, sand shiner, banded killifish, tadpole madtom, rainbow darter, and brook silverside. Longnose gar are often seen patrolling the waters.

The lower Mukwonago River is one of the most biologically-rich mussel habitats in the state. Sixteen species are found here, including Wisconsin's only remaining viable population of a State Endangered species. Rare dragonflies known from the stream are the fragile forktail and the double-striped bluet.

These properties also support Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory, including eight state endangered species, seven state threatened species, and 15 species of special concern; these include birds, herptiles, fishes, mussels, insects and plants (Table 39).

Species Guild	State Status			Total
	Special Concern	Threatened	Endangered	
<b>Birds</b>	1		2	3
<b>Herptiles</b>	2			2
<b>Fishes</b>	3	2	3	8
<b>Mussels</b>	1	2	1	4
<b>Insects</b>	3		1	4
<b>Plants</b>	5	3	1	9

## Soils

Soils of these properties are predominantly wet, with over 60% of the total acreage classified as very poorly drained, poorly drained, or somewhat poorly drained mucks and low-lying silt loams. Uplands are a wide variety of sandy loams, loams, and silt loams on level to moderately sloping terrain, with occasional steep slopes (up to 45%) present.

### Public Access and Administrative Facilities

- Parking Lots – seven lots with gravel surface with capacity for 30 vehicles. Several properties are adjacent to a DNR or a county/town access points or boat landing with parking for 50-55 vehicles.
- Roads and Gates – Several properties have short sections of primitive, closed (service) road. Two cable gates.
- Signs – Four entrance signs.
- Water Control Structures, Dikes and Impoundments – Two water control structures, two dikes and two impoundments.

## State Ice Age Trail Areas (SIATA)

There are four State Ice Age Trail Area (SIATA) segments in this planning group. Three of the properties are located in Waukesha County and one in Walworth County. They contain 195 fee title acres and 25 acres of easements. The common recreation and trail management elements are noted below. The individual property descriptions provide details about the unique character of each area.

### Recreation

Hiking and backpacking are the primary recreational activities of these SIATA. The trail and properties also offer opportunities for sight-seeing, wildlife viewing and bird watching along with seasonal activities such as non-groomed cross country skiing and snowshoeing.

Hunting and trapping are prohibited on the entire Kettle Moraine Railroad unit. Hunting and trapping are permitted on the Genesee, Ottawa and Clover Valley units except for 100 yards on either side of the centerline of the trail.

### Trail Management

The trail generally follows natural contours and is constructed of local native materials. The trail and trail corridors are signed and maintained to provide year-round use, promote recreation and nature enjoyment, and protect or restore ecologically sensitive lands.

Trail maintenance and vegetation management along the trail is performed in accordance with the Ice Age National Scenic Trail (IANST) Stewardship Notebook. Management and maintenance of the trail duties are shared between department Parks and Recreation staff and volunteers from the Ice Age Trail Alliance, a nonprofit partner supporting the IANST. A significant majority of the vegetation management and trail maintenance is conducted by volunteers.

The Ice Age Park and Trail Foundation of Wisconsin (now the Ice Age Trail Alliance) has been a valuable partner in acquiring trail properties and assisting with trail design, installation and maintenance.

A growing concern is the spread invasive species. Boot brushes or other best practices may be employed to limit the spread of invasive species introduced by users.

### Land Cover and Habitat Management

Though small these corridors contain a variety of land covers. The cover types range from wetlands, grasslands, small amounts of cropland, brush cover and a number of forest types. Management activities focus on restoration of pre-settlement communities and managing invasive species.

### Administrative Facilities and Access

The typical infrastructure includes the trail, bridges, wayfinding signs and perhaps a small parking lot.

### Cultural Resources

No cultural resources have been identified on or adjacent to these four SIATA.

### Kettle Moraine Railroad SIATA (KMRR SIATA)

In 2004, 175 acres of fee simple land were acquired by the Ice Age Trail program for the Kettle Moraine Railroad State Ice Age Trail Area (Map Series DD). The portion of the trail in this planning group is about 13 acres. The trail follows the level grade of the former railroad right-of-way. This 1.5 mile trail segment connects with the Bugline Recreational Trail and is part of the IANST's Merton Segment.

**Trail Management** - An easement was granted to Waukesha County in 2010 to develop, operate and maintain a recreational trail on this property. The County plans to extend the Bugline Recreational Trail and may seek to pave the trail on this SIATA. The easement requires the County to conduct public meetings to gather input on the proposed development, management and uses of the trail. The county plan must also be consistent with the standards of the Ice Age Trail.

Management and maintenance of the trail are under the purview of Waukesha County with the department retaining ownership and certain management rights for the parcel. The department and its agents retain the rights to layout, design, construct, maintain, relocate and certify the trail, including the portion located coincident to the Bugline Trail. Any vegetation management along the trail is performed in accordance with the IANST Stewardship Notebook.

**Land Cover and Habitat Management** - This is a typical railroad corridor with grassy areas, shrubby patches and low quality woods, especially on the west end toward the Oconomowoc River. This parcel has not been evaluated for forest resources.

**Wildlife Resources** - Three rare fish and one rare mussel have been identified in the Oconomowoc River that flows along the west end of this trail segment. No terrestrial or wetland Species of Greatest Conservation Need were identified on the property itself.

**Soils, Geology and Hydrology** - The former rail bed crosses over an outwash terrace of sand and gravel. Most of the corridor is covered by a layer of silt loam soil with little slope except at its western end near the Oconomowoc River. There are also small areas of palustrine soils along the corridor. The soils of the western side of the SIATA are underlain by Ordovician shale and dolomite, while the eastern side is underlain by Silurian dolomite. This property lies in the Oconomowoc River watershed.

**Administrative Facilities and Access** - The only site infrastructure is the rail bed and primitive trail. Access to the property is available from Dorn Road, CTH W and CTH E. No parking is available adjacent to the KMRR SIATA, but there is parking on East Kilbourne Road near the SIATA's western boundary.

### Town of Genesee SIATA

The department acquired 25 acres of fee simple land in 1999 as a donation from the Ice Age Park and Trail Foundation of Wisconsin (now the Ice Age Trail Alliance). This acreage constitutes the Town of Genesee State Ice Age Trail Area (Genesee SIATA). The Genesee SIATA lies within the IANST's Lapham Peak Segment (Map Series DD).

**Land Cover and Habitat Management** - The eastern 75% of this parcel is composed of emergent vegetation dominated by reed canary grass. The remaining 25% consists of an east facing slope covered with brush (i.e., dogwood, honeysuckle) on the toe of the slope grading into a small area of low quality southern dry-mesic forest composed of oak with other deciduous hardwoods and scattered pines.

**Wildlife Resources** - No Species of Greatest Conservation Need have been identified on the property.

**Soils, Geology and Hydrology** - The majority of the Genesee SIATA soil are poorly drained silt loam soils lying along Scuppernong Creek. The northwestern corner of the SIATA, however, is steep and well-drained. Silurian dolomite underlies the soils.

**Administrative Facilities and Access** - The only site infrastructure is the 0.2 miles of primitive, native surface trail. The property is accessible from the north via the IAT Lapham Peak Unit of the Kettle Moraine State Forest and from the south via the Glacial Drumlin State Trail. Parking is available about two miles to the west along the Glacial Drumlin trail.

### Ottawa SIATA

The Ottawa SIATA includes 80 acres within the IANST's Waterville Segment (Map Series DD). The property is accessible from the north from Waterville Road or south from CTH D. Parking is available on the north from the UW-Waukesha Field Station. In 1994, the department Ice Age Trail program acquired 55 acres of fee title and 25 acres of access and conservation easement as a donation from the Ice Age Park and Trail Foundation of Wisconsin .

**Land Cover and Habitat Management** - The northern portion of this property lies along the Niagara Escarpment. This upland is covered with deciduous forests and the canopy consists of bur oak, white oak, shagbark hickory and black cherry that is losing its oak and succeeding toward dry or dry-mesic forest. Beneath the canopy is a dense understory shrub layer of prickly ash, common buckthorn and bush honeysuckle. Savanna indicator plants still persist in canopy gaps and along deer paths. Restoring the Oak Openings and Oak Woodlands is an important habitat management activity.

The southern portion of the property consists of emergent narrow and broad-leaved deciduous wetlands. The invasive non-native reed canary grass is common in some of the area's open wetlands. Garlic mustard and Japanese hedge parsley are also concerns in the Ottawa SIATA.

The vegetation consists of approximately 65% oak woodlands, 12% grasslands, 10% upland brush, 9% cropland and 4% central hardwoods.

**Wildlife Resources** - Several bird Species of Greatest Conservation Need were noted during breeding bird surveys of 2010, both forest interior and early successional species. Restoration of the Oak Openings and Oak Woodlands are globally rare natural communities.

**Soils, Geology and Hydrology** - Well-drained loams occupy the slopes and hilltops of the northern part of the Ottawa SIATA which follows along the Niagara Escarpment. The soils of the southern portion of the SIATA, however, are silt-loam and muck, and are very poorly drained. Much of the southern portion of the SIATA is a mixture of broad-leaved forested and shrub wetlands. The underlying bedrock is composed of Ordovician shale and Silurian dolomite, with some of the Niagara Escarpment dolomite exposed in a few places on the property. This property lies in the headwaters of Scuppernong Creek watershed. Two unnamed streams run across the southern half of the property.

**Administrative Facilities and Access** - The only infrastructure is the 1.25 miles of primitive, native surface trail.

### Clover Valley SIATA

The Clover Valley SIATA is located within the IANST's Clover Valley Segment (Map Series T). In 2001-02, the department acquired 103 acres of fee simple land for the trail. Access is provided from parking areas off Island Road and STH 89.

**Land Cover and Habitat Management** - This property consists of emergent wet meadows and wet prairie at the lower elevations that grade into old fields and oak-dominated hardwoods on and along the uplands. The wetlands are dominated by reed canary grass with small wet-mesic prairie and southern sedge meadow remnants.

The property is dominated by grasses (84%). There are small patches of aspen (2%) with woody invasives in the understory with scattered, large open grown bur oak also present. The property contains an oak dominated forest (14%) with white oak, elm, and black cherry. Woody invasives such as honeysuckle and buckthorn are present throughout the property.

**Wildlife Resources and Habitat Management** - There is one rare reptile recorded on this property.

**Soils, Geology and Hydrology** - Silt loam soils underlie most of this property. This SIATA lies in a drumlin field and the trail climbs several of the drumlins in the area. Underlying rock includes Ordovician dolomite and limestone. This property is part of the headwaters of the Spring Brook watershed

**Administrative Facilities and Access** - The only infrastructure is approximately one mile of primitive, native surface trail, an information kiosk at the Island Road parking lot and a footbridge over Spring Brook.

## State Natural Areas (SNA)

There are two stand alone state natural areas in this planning group and they contain 128 fee title acres. The Natural Heritage Conservation (NHC) program seeks to protect and/or restore the highest quality native communities through the state natural areas program. To establish an SNA, field inventories are conducted to evaluate the natural communities at a site. Assessments take into account a site's overall quality and diversity, extent of past disturbance, long-term viability, context within the greater landscape, and rarity of features on local and global scales. Sites are considered for potential SNA designation in one or more of the following categories:

- Outstanding natural community;
- Critical habitat for rare species;
- Ecological benchmark area;
- Significant geological or archaeological feature; and/or
- Exceptional site for natural area research and education.

These assessments also determine whether the communities meet or exceed forest certification requirements, further ecosystem/species preservation objectives, offer research opportunities, and help meet the education goals of the program. These natural communities were identified as Primary Sites in the *Rapid Ecological Assessment (WDNR 2011)*. Some of the Primary Sites may be recommended for State Natural Area status in the draft master plan.

### Community Management

For some natural communities, the best management prescription is to allow nature to take its course. Natural processes and their subsequent effects will proceed without constraint (i.e., passive management). In most circumstances in southeastern Wisconsin, some level of direct and active management is required to maintain and/or restore the biological integrity of the natural communities. These actions typically include prescribed fires and control of invasive species. In some cases the reintroduction of native species may also be pursued.

### Recreation

Public use of SNAs is channeled in two directions: scientific research and compatible recreation. Natural areas serve as excellent outdoor laboratories for environmental education and formal research on natural communities and their component species. A permit issued by the department is required to conduct studies or collect specimens on SNAs. Natural areas are not appropriate for intensive recreation such as camping or mountain biking, but they can accommodate low-impact activities such as hunting, fishing, hiking, bird watching and nature study. As such, many SNAs contain few or no amenities such as parking areas, restrooms, or maintained trails.

Specific properties may offer excellent recreational opportunities. For example, Peat Lake SNA is particularly popular birdwatching property. Beulah Bog SNA provides hiking, nature exploration, botanizing and an opportunity to visit a bog community. A 0.3 mile long non-designated trail leads from the parking lot to a boardwalk that terminates at the edge of a bog lake. The bog and surrounding communities also are excellent for research and small educational group use.

### Peat Lake SNA (Map Series EE)

**Peat Lake SNA** is located on the Illinois state line just south of Camp Lake. This 228 natural area is embedded within the Scattered Wildlife and Extensive Wildlife Habitat parcels acquired from The Nature Conservancy. The property was designated a state natural area in 1973. The lake is surrounded by a cat-tail marsh and a sedge meadow that provides nesting habitat for mallard, blue winged teal, wood duck, great-blue and green-backed herons, Virginia and king rails, sora, American woodcock, swamp sparrow, common yellowthroat, American and least bitterns, and four swallow species. The lake and surrounding wetlands are used by a variety of migrating waterfowl and marsh birds too.

This property is accessible via a parking lot on 280th Street. A field road divides separates the cropped fields from the lake and wetlands.

The estimated land cover in this SNA includes 97 acres of emergent vegetation, 42 acres of upland hardwoods, 25 acres of grasslands and 20 acres of cropland.

Peat Lake has a surface area of about 42 acres, but the lake is shallow (maximum depth of five feet) with very low water levels in most years. The bottom is muck with occasional marl mounds. Peat Lake has a limited fishery supporting only carp.

This site is managed as an aquatic reserve, wetland protection area, and as an ecological reference area. The native aquatic species are managed passively which allows natural processes to determine the structure and composition of these communities. The wetlands are actively managed using cutting, brushing and fire to mimic natural disturbance patterns, promote native species and control trees and shrubs. Other allowable activities include control of invasive plants and animals, maintenance of existing facilities, and access to suppress wildfires. Soil disturbance is minimized to the extent possible. The share cropped fields at the site will be restored to wet-mesic prairie using locally collected seed.

This entire property is open to the public from January 1 through August 31 for hunting, fishing, trapping and other traditional nature based pursuits. From Sept 1-Dec 31 the majority of this site is a "No entry wildlife refuge" and closed to the public except during the gun deer hunting (NR 15.024). The easternmost 50 acres is open year-round. This site presents unique opportunities for research, education and bird watching on high quality aquatic and wetland ecosystems.

### **Mukwonago River SNA (Map Series FF)**

**Mukwonago River SNA** is located in Waukesha County just south of the Village of Mukwonago. This property is bounded by STH 83, Holz Parkway and I-43 on the west, south and east. About 58 acres were acquired from WiDOT through the Statewide Wildlife Habitat program in 2004 and 41 acres were designated a State Natural Area in 2005. A number of small Wildlife Management easements are located on the southern and western periphery of the state natural area.

This property has over 3,200 feet of frontage on the Mukwonago River. Access is provided by boat or walk-in access from a small parking lot and a park and ride lot off Holz Parkway. The land cover consists of 18 acres of high quality emergent wet meadow and lowland shrub, 15 acres of bottomland and swamp hardwoods, six acres of aspen and minor amounts of grasslands.

The Mukwonago River is among the least disturbed and most biologically diverse streams in southeastern Wisconsin. It provides critical habitat for a number of rare, threatened, and endangered species of fish and invertebrates. Beds of coontail and other submerged aquatics are common in the stream, while the banks contain bulrushes, sedges and other emergent plant species. The lower reaches of this river contains diverse fish, mussel and insect populations.

The SNA is managed as a reserve for stream and springs, as an aquatic reserve, a wetland protection area, and as an ecological reference area. The property and stream are passively managed except for control of invasive plants and animals. The stream and adjacent wetlands primarily provide opportunities for research and education as well as some fishing.

### **Genessee Oak Opening and Fen State Natural Area (Map Series FF)**

This SNA is located a mile and a half south of Genessee Depot and west of STH 59. This site was acquired from The Nature Conservancy through the Statewide Natural Area program and designated a State Natural Area in 1979. The property is accessed from a small pull-off along STH 59 and then walking west 0.2 miles along the access lane to the natural area.

This 51 acre property contains an 18 acre classic bur oak opening on rolling, interlobate morainal topography, with open-grown, scattered young trees of moderate size. Numerous small, dry to dry-mesic prairies occur in scattered openings throughout the savanna, filled with side-oats grama, big and little blue-stem, pasque flower, rough blazing-star, Indian grass, prairie dock, needle grass, prairie-smoke, and white camas. A considerable amount of work has been done in the main oak stand to maintain the oak opening character. Management includes prescribed burns, brush cutting and invasive weed control.

A 20 acre non-forested wetland with many uncommon plant species is also located on the property. The remaining habitat consists of disturbed lowland shrub. The South Branch of the Genessee River passes through the southern portion of the property and along the eastern boundary. The riparian areas provide habitat for uncommon reptiles and amphibians including pickerel frogs.

Genessee Oak Opening and Fen SNA provide opportunities for hiking, nature exploration, botanizing and other recreational pursuits. It also provides opportunities for research and education on a high quality native oak openings and wetlands. There also are good hunting opportunities for turkey and deer.

### Beulah Bog SNA (Map Series FF)

Beulah Bog SNA (78 acres) is located about three miles north of the Village of East Troy in Walworth County. This site was designated a State Natural Area in 1975. The estimated cover types include 42 acres of oak, 24 acres of Northern Wet Forest, 10 acres of grassland and about two acres of open water. The bog habitats are high quality while the grasslands and oak stand have been disturbed by human activity. This property is accessed via a parking area off Stringers Bridge Road on the western boundary.

This SNA contains four kettle holes, each occupied by different successional stages typical of northern bog communities including a shallow bog lake, an advancing, quaking sedge/sphagnum mat, a Northern Wet Forest and a wet open moat surrounding the main bog. Natural communities represented include a hard water bog lake, bog relict and tamarack swamp (rich). Undisturbed bogs in southern Wisconsin are exceedingly rare and this site harbors many species (e.g., dense cotton grass, large and small cranberry, and small bladderwort) outside of their typical range.

Beulah Bog SNA harbors at least six species of insectivorous plants and one state-threatened plant. The bog lake also provides habitat for several dragonfly species and invertebrates.

### Wildlife Resources and Natural Heritage Inventory

The habitat and species protection goals for the natural areas are intended to support Wildlife Species of Greatest Conservation Need and other rare or declining species tracked by Wisconsin Natural Heritage Inventory. Meeting global and statewide priorities for protecting rare species and critical habitat is the highest priority with allowance for game fish and wildlife habitat.

Abundant wetlands support a variety of number of marsh birds, and a variety of herptiles can often be found on these natural areas. In particular, the **Peat Lake SNA** supports mallard, blue winged teal, wood duck, great-blue and green-backed herons, Virginia and king rails, sora, American woodcock, swamp sparrow, common yellowthroat, American and least bitterns, and four swallow species.

The lower reaches of the Mukwonago River supports at least 53 species of fish, including the State Threatened longear sunfish and State Endangered starhead topminnow. The two-mile stretch of river from the natural area downstream to its confluence with the Fox River contains the last known self-sustaining longear sunfish population in Wisconsin. Among the other fish inhabiting the stream are grass pickerel, rosyface shiner, sand shiner, banded killifish, tadpole madtom, rainbow darter, and brook silverside. Longnose gar are often seen patrolling the waters. Rare dragonflies known from the stream are the fragile forktail and the double-striped bluet.

### Forest Resources

The SNAs have limited forest cover and are managed for species and ecosystem protection (Table 42).

Property/Forest Type	Oak	Bottomland Hardwoods	Aspen	Tamarack
Genessee SNA	18			
Mukwonago SNA		15	6	
Beulah Bog SNA	42			24
<b>Total</b>	<b>60</b>	<b>15</b>	<b>6</b>	<b>24</b>

## Findings and Conclusions

**Individuals interested in learning more about these properties and the underlying ecological context are encouraged to read the supporting material in the *Rapid Ecological Assessment for the Southern Kettle Moraine Region* (WDNR ER-829, May 2011). This document can be viewed on the web at [dnr.wi.gov](http://dnr.wi.gov) key words “master planning” and then look for Southeast Region Planning Group.**

This Findings and Conclusions summarize the major recreational, habitat and ecological challenges and opportunities identified in this document. The goal of the master planning process is to develop management strategies so the properties can continue to provide quality nature-based outdoor recreational experiences in lightly developed to primitive settings in an increasingly fragmented and populated landscape.

The properties in this planning group are predominately located in western Racine and Kenosha counties, Waukesha County and Walworth County, with small portions in Rock County, Jefferson County and Milwaukee County. This region is connected by an extensive road network and the properties are currently within an hour drive of more than 2,000,000 people in the metropolitan areas of Milwaukee, Waukesha, Racine, Kenosha and northern Illinois. Milwaukee County alone is expected to exceed one million people by 2035 and Kenosha is expected to be the third largest city in Wisconsin by 2020.

These properties provide a substantial portion of the publicly available hunting, fishing and outdoor recreation land in a part of the state that is below the state average for state recreation lands on a per capita basis.

Increased recreational demand for non-traditional activities and an aging population is creating challenges on several properties. Population growth is expected to lead to increased use and a greater diversity of users. Development on the property boundaries could affect the recreational pursuits within the boundaries as well as the habitat management activities.

Invasive species are a significant challenge for all of the properties. Examples include zebra mussels, Eurasian watermilfoil and Starry stonewort in aquatic systems, reed canary grass and purple loosestrife in wetlands, and buckthorn and garlic mustard in the uplands. Emerald Ash borer is anticipated to cause significant mortality in the ash populations in the forested areas over the next 10-20 years. These challenges will adversely affect the integrity of the ecological systems, habitat quality and the recreational experiences on these properties. These invasives will also affect the cost of managing these properties.

Off-site erosion, nutrient loading, and chemical runoff pose a threat to the quality of wetlands, streams, rivers and lakes. These changes will affect the amount and quality of the ground and surface waters flowing to these resources. These changes are also expected to impact the character and quality of the user experiences.

Some of these challenges can be met with improved management techniques and by collaborating with federal and local government partners. Other valuable partners in meeting the challenges of land conservation and management noted above are dedicated sporting groups, non-profit organizations and private landowners.

## Recreational Needs, Opportunities and Capacity

### Recreational Access Lands

The department has made significant investments in acquiring land to provide public access for hunting, fishing, trapping and other nature based recreation in this region. The properties in this planning group contain 20,947 acres in fee title and easements, with easements (200-300 acres) being only a small part of the total.

The acres acquired by program include 14,361 acres on nine larger wildlife areas, 4,485 acres on scattered wildlife lands, 1,752 acres on fishery lands, 129 acres at two state natural areas and 220 acres at four state Ice Age Trail areas.

An additional 2,476 acres of leased lands through the Voluntary Public Access program provide public hunting opportunities on working farm lands and undeveloped parcels in the planning region. About 180 acres of Managed Forest Land are also available for hunting and nature enjoyment.

The following agencies, units of government and private entities have or may in the future collaborate with and complement Department efforts to provide conservation lands for hunting, fishing, trapping and other nature-based pursuits as well as protect habitat for game and non-game wildlife and native communities:

- US Natural Resource and Conservation Service (NRCS) floodplain and wetland restoration funding and easements.
- County open space lands.
- Land trusts (Seno Kenosha/Racine Land Trust Conservancy, The Prairie Enthusiasts, Caledonia Conservancy, etc.).
- Interested parties including Ducks Unlimited, National Wild Turkey Federation, Wisconsin Waterfowl Association, Pheasants Forever, Trout Unlimited, Racine County Conservation League, many local sporting clubs and engaged land owners have assisted with land purchases and collaborative land management activities.
- Wisconsin DOT wetland mitigation lands

The percentage of department conservation and recreation land as a proportion of land in each county is as follows: Racine County has 1.9%, Kenosha County has 4.0%, Walworth County has 4.4%, and Waukesha County has 5.9%. These counties all fall within the bottom third of Wisconsin counties in terms of the availability of state recreational land on a per capita basis. Despite the relatively small amount of public land for the population, over 15% of the deer harvested in these counties is harvested from public lands indicating these lands are heavily used by deer hunters.

### Hunting

Residents in these counties purchased over 30,500 gun deer licenses, 12,600 archery licenses, 8,500 small game licenses, 4,100 pheasant stamps, 7,400 turkey licenses, 5,600 waterfowl stamps, 11,800 goose permits and 890 trapping permits annually from 2009-2012. In addition, about 7,800 resident conservation patron and sports licenses were sold annually in these counties.

The larger properties offer the greatest potential to provide quality hunting experiences. They consist of larger blocks of habitats that can sustain more diverse wildlife populations and natural communities. The larger properties currently provide quality deer, turkey, pheasant, small game, woodcock, and/or waterfowl hunting opportunities.

Larger properties often have more access points and are less likely to become overcrowded though this remains an issue on opening day of deer, waterfowl and pheasant hunting seasons. They are also less costly to manage on a per acre basis and are more efficient to manage.

Vernon, Paradise Valley, Big Muskego, Turtle Creek, Turtle Valley and Tichigan wildlife areas are known for their waterfowl habitat and hunting opportunities. A number of the properties are stocked to enhance the pheasant hunting opportunities. About 15-30 acres of dove fields and adjacent wheat fields provide habitat for dove hunters. The scattered wildlife and fishery parcels primarily provide hunting opportunities for local users and complement the recreational opportunities uses on the larger properties.

Providing satisfying hunter experiences in the future will require abundant, sustainable populations of game species on good to high quality habitats with reasonable public access. These experiences and habitats can be provided on state owned properties, easements and leased lands, and by partnering with private land owners and other parties (e.g., federal/ local government, land trusts and sporting groups).

Conflicts between hunters and non-hunters currently are minimal as most non-hunters are aware of the hunting seasons and most hunters abide by hunting restrictions near trails, closed areas and adjacent homes. However, the potential for conflict is increasing as the regional demand for nature based outdoor activities is likely to increase given the anticipated increase in the population and users.

### **Dog Training**

The following properties provide Class 2 dog training sites: Vernon WA (Waukesha County - 41 acres), Troy Habitat Area (Walworth County - 63 acres), Tichigan WA (Racine County - 60 acres), and Bong Recreation Area (Kenosha County - 473 acres). The Ottawa Unit of the Southern Kettle Moraine State Forest and the Bong Recreation Area also offer Class 1 dog trial and training grounds.

### **Shooting Ranges**

McMiller Sports Center in southwest Waukesha County provides a regional target shooting range for the public. NR 45.09 (5) states firearms may only be discharged on fish and wildlife areas in Waukesha, Walworth, Racine and Kenosha counties while hunting in season, when dog training with a permit or at a designated shooting range on the property. The addition of a second shooting range will be considered in the phase 2 draft master planning process. An old quarry site owned by Payne and Dolan property adjacent to the Honey Creek Wildlife Area has been mentioned as a possible location for a shooting range. However, there are homes and a monastery near the site, which may reduce its attractiveness for hosting a shooting range. Rock County is not included in NR 45.09 (5) and the public may target shoot on the fish and wildlife properties in this county without a permit and out of season.

### **Fishing**

About 81,000 resident fishing licenses and over 12,500 non-resident fishing licenses were sold annually between 2009-2012 in Kenosha, Racine, Walworth and Waukesha counties. In addition, about 7,800 resident conservation patron and sports licenses were sold annually in these counties. Over 7,800 resident inland trout stamps were purchased annually during this time period as well.

Many of the properties offer warmwater sport fishing opportunities for northern pike, bass, walleye and panfish. A number of the larger lakes and rivers are stocked to enhance the size of the gamefish population and the reproduction to sustain their populations. Big Muskego Lake has been managed using "biomanipulation" practices that consist of heavy and repeated stocking of game fish and restrictive catch limits to foster a greater number and size of game fish.

Trout fishing is offered on a limited number of streams in this planning group. In Waukesha County, short portions of three Class 2 trout streams (Mill Brook, Mukwanago River and Rosenow Creek) flow through or adjacent to a fish or wildlife property. Palmer Creek, a Class 3 trout stream, flows through the New Munster WA and is the only trout stream in Kenosha County. Tichigan Creek, a Class 3 trout stream, flows through the Tichigan WA and is the only trout stream in Racine County. These streams provide angling opportunities for brown and brook trout with the occasional stocked rainbow trout taken as well. Several of these streams may have limited potential to provide self-sustaining trout fisheries in the future.

Continued efforts to improve water quality, in-stream habitat and angler access to these warmwater resources and coldwater streams have the potential to improve game fish abundance and enhance user experiences. Continued collaboration with Trout Unlimited will enhance both the in-stream and habitat and angler access to these streams.

## **Trapping**

Over 1,350 resident trapping licenses were purchased in the counties in 2012. Trapping is occurring on a number of these properties and a high price for furs provides an impetus for maintaining these activities. Beaver removal is especially desired along trout streams and in some agricultural areas as well. Ongoing efforts to improve habitat quality in and along the streams, and restore wetlands should provide an abundant and sustainable supply of furbearers.

## **Boating and Water-based Activities**

Turtle Creek, Vernon, New Munster, Tichigan and Big Muskego wildlife areas are valued locally as access points for canoeing and kayaking on local streams, rivers and lakes. The Village of Waterford is seeking the National Park Service's Water Trail Designation for the Fox River which borders Tichigan Wildlife Area. Other user groups are also seeking a water trail along Turtle Creek.

Developing informal water trails can be explored as options for promoting an awareness of these properties and aquatic recreational opportunities.

## **Birding, Photography and Wildlife Viewing**

Birding and wildlife viewing are increasingly popular on the Vernon, Big Muskego, Paradise Valley, Turtle Creek, Turtle Valley, Tichigan and New Munster wildlife areas. Some of these properties are noted in the Southern Savanna Region of the Great Wisconsin Birding and Nature Trail (WDNR 2008) as offering quality bird observation sites. The eBird web site lists 4,518 check lists with 291 species observed in Walworth County and 10,435 checklists and 314 species observed in Waukesha County. Vernon Marsh is one of the most heavily visited sites by bird watchers.

The informal paths, dikes and service roads provide excellent opportunities for bird and wildlife viewing. Additional roadside pull outs, viewing blinds and educational signage should be explored to increase access and appreciation of nature enjoyment.

## **Camping**

Camping is not allowed on these properties. Camping has not been identified as a need on these properties given the availability of camping on other state, county and private facilities in the region.

## **Hiking, Cross Country Skiing and Snowshoeing**

Hiking, walking and sightseeing are popular activities in the region as noted by the SCORP analysis and user numbers for the Ice Age Trail. The IAT is the premier hiking venue in the region and is the only designated hiking trail in the planning group.

Cross country skiing and snowshoeing occur on most of these properties and these uses are expected to increase as the population of the region expands.

Many of the properties have limited potential to host longer loop trails (e.g., greater than 3 miles) because of their small size, the non-contiguous nature of the upland parcels, and the amount of wet soils. Longer trails are desirable as destination trails for a broader regional population of users.

## **Motorized Sports**

There are over 600 miles of snowmobile trails in these counties and connector trails cross the following properties - Tichigan, Honey Creek, Vernon, Turtle Valley, Turtle Creek and Big Muskego Lake wildlife areas and the Oconomowoc and Hoosier Creek habitat areas. The trails and associated infrastructure (e.g., bridges) are part of regional trail systems and are maintained by the local snowmobile clubs.

ATV use is prohibited on all properties except for individuals with permits for personal mobility devices. These properties are not suitable for ATV use due to the combination of wet or erodible soils and sensitive ecological communities. ATV and other off-road vehicle uses are generally not compatible with the primary purpose of these wildlife and fishery areas. Unauthorized ATV use on the snowmobile trail has been an issue in the past at Vernon WA. About 4.3 miles of ATV trails are provided at the Bong Recreation Area in Kenosha County.

## **Horseback Riding and Mountain Biking**

Horseback riding and mountain biking are not authorized uses on the properties. There have been occasional issues with horseback riding on the properties from adjacent landowners. Mountain biking has not been an issue on these properties. Biking on the dikes has been allowed seasonally at certain properties in Waukesha County. Use of these properties for horse and bike interests is limited by the requirement (NR 1.51) that non-primary uses not significantly detract from the primary purposes of the property which is hunting, fishing, trapping and other nature based outdoor recreation.

Equestrian trails and mountain biking trails are provided at other regional public and private facilities. Southern Kettle Moraine SF provides 87 miles of horse trails and 30 miles of off road biking trails. The Bong Recreation Area offers 13 miles of equestrian trails and 17 miles of mountain biking trails.

## **Geocaching**

According to the geocaching web map there are approximately 80 caches on properties (source). The most popular is Vernon WA with nearly 40 caches followed by New Munster WA and Tichigan WA.

## **Other Recreational Activities**

These properties also provide opportunities for gathering wild edibles (e.g., mushroom and berry picking) when in season. Dog walking has become an increasingly popular use by local residents. The properties in Waukesha County, especially Vernon WA, are popular with walkers and dog walkers. Dog walking in the fall when the Tichigan Refuge is closed to entry is an issue. Unleashed dogs during the ground nesting bird season (April 15 – July 31) and spring turkey hunting have occasionally caused problems.

## **Accessibility**

The larger properties are currently served by a variety of parking lots, pull-offs along the road, boat landings and, in some cases, by access points provided by other agencies or local units of governments. Most of the properties have adequate access given their size though several of the smaller extensive and scattered habitat lands have limited to no access. Some modest adjustments to improve accessibility may be needed to accommodate the expected growth in population and users to these properties.

Birders have expressed a desire for wildlife viewing blinds at Vernon and Big Muskego wildlife areas.

There are handicapped accessible blinds at Vernon WA and Paradise Valley WA. With the aging of the population and the department goal to improve accessible recreational opportunities some infrastructure improvements for hunting, fishing and wildlife viewing will be considered in the master planning process.

Bong has one accessible cabin and one wildlife viewing station that meets ADA design standards. There are three waterfowl blinds and one turkey blind that provide access for mobility impaired hunters, but the blinds do not meet all ADA design standards.

The Kettle Moraine State Forest – Southern Unit also provides an accessible cabin and nature trail that meet ADA design standards.

## **Lake Management Districts and Local Units of Government**

Due to the intensive development in the southeastern counties, department staff often collaborates on conservation and recreation initiatives with lake management districts, local units of government and regional planning interests. These collaborations have protected and or restored valuable resources in all four counties. These local initiatives often utilize both local funds and other grant sources to conduct their activities. A notable example of an on-going department-local collaboration is at Big Muskego Lake with the Big Muskego Lake/Bass Bay Protection & Restoration District.

Department staff will continue to collaborate with local and regional interests as resources allow.

## Ecological Significance and Capability of the Property

### Regional Context

The western properties are representative of the Southeast Glacial Plains Ecological Landscape. The landscape consists of high ground formed from glacial moraines surrounded by expanses of rolling ground moraine and relatively flat glacial outwash plains. The eastern portion of the planning group lies in the Southern Lake Michigan Coastal Ecological Landscape, which is generally flatter and dominated primarily by ground moraine.

Historically, the region was characterized by a mosaic of forests, savannas, prairies and wetlands. Some of these original habitats still remain, though often in degraded condition. Today the remaining natural communities lie in a landscape that is highly fragmented and are interspersed within a matrix of cropland, pastures, roads and development. Numerous lakes dot the landscape, and an abundance of rivers and streams flow through the region. Wetland habitats figure prominently in the region, including some that are common (e.g., Shrub-carr, Southern Sedge Meadow) and some that are very uncommon (e.g., Wet Prairie, Calcareous Fen). The majority of the department wildlife and fishery acreage is located in Walworth and Waukesha Counties.

The properties lie in a complex mix of agricultural and developed landscapes. There has been rapid exurban development in the north, east and south of the planning group with relatively less growth in the more sparsely populated and agricultural landscapes in the west.

These properties present opportunities to conserve and restore various habitats especially open wetlands, as well as grasslands, upland forests, and savannas. Restoring this landscape mosaic, especially along riparian corridors, lakeshores, and adjacent wetlands, will benefit the game fish and wildlife species as well as the numerous and diverse non-game and rare species.

Priority activities in this region include identifying, restoring and expanding open wetlands, lowland forests, and grasslands at a landscape scale, as well as protecting and restoring remnant prairies and oak savannas at a local scale. Managing for a continuum of oak forest, oak savanna, and native or surrogate grassland is desired to meet the life history needs of numerous rare and declining species.

This planning group straddles two major watersheds, the Illinois - Fox River and the Rock River basins, both of which eventually flow into the Mississippi River. Other significant hydrologic features of the region include numerous springs and groundwater fed streams and lakes. The rivers and streams include both high-quality (trout streams) and degraded waters on the impaired (303(d)) list.

### Property Opportunities and Challenges

Collectively, the properties have many ecologically significant opportunities including:

- Significant areas of open and forested wetlands that provide important habitat for game and non-game species, including birds, reptiles and amphibians
- Cold and warmwater streams that support, to varying degrees, diverse wetland and aquatic communities, herptiles, and both game and non-game fish
- Remnant oak savanna, prairie, and planted grasslands that provide habitat for grassland birds and other wildlife

However, major threats to this biodiversity include habitat fragmentation by agriculture, infrastructure and built environments such as cities and scattered housing, non-native invasive species, altered ecological processes (e.g., fire suppression and shrub invasion into fire-dependent habitats), changes in surface and groundwater systems (e.g., dams, ditching and tiling), and ecological simplification. Challenges to protecting surface water quality and quantity, especially in maintaining the trout streams, include minimizing soil, nutrient and herbicide runoff from agricultural operations and urban areas. Protecting groundwater quality and flows to local streams and rivers will also contribute to the long-term biological integrity and productivity of these waterbodies.

The following discussion focuses first on the most significant regional opportunities for protecting high quality and/or rare ecological landscapes with the goal of protecting and restoring the needed habitat at the landscape level to provide habitat for the widest variety of species.

The discussion then describes opportunities for threatened, rare and endangered species and closes with the threats posed by invasive species. The major ecological attributes of the landscapes and the plant and animal communities to be addressed during the master planning process are summarized below.

### **Wildlife Habitat**

The properties provide needed habitat for both common wildlife species as well as rare and sensitive species. Primary game species include white-tailed deer, wild turkey, waterfowl, small game and ring-necked pheasants. In addition, beaver and muskrat are trapped on many of the properties. These properties have significant potential for improved habitat quality and increased capacity to support both game and non-game species.

Adverse habitat factors include the loss of Conservation Reserve Program (CRP) grassland habitat. In Wisconsin, these lands have declined from a high of more than 713,000 acres in 1994 to less than 320,000 acres in 2013. CRP enrollment in this planning area has declined over 70% from about 25,000 acres in the mid-1990s to less than 7,000 acres in 2013.

Collaborating with partners to conserve wetlands, grasslands, and a mosaic of oak communities (i.e., savanna to woodlands to closed canopy forests) will enhance wildlife habitat on and adjacent to these properties.

### **Riparian and Aquatic Habitat**

The Mukwonago River and Turtle Creek are two of the highest quality streams in southeast Wisconsin. These streams provide important aquatic habitat for fishes and aquatic invertebrates such as mussels, mayflies, dragonflies and damselflies as well as numerous amphibians, turtles, and snakes. The streams flow through the Mukwonago Habitat Area and State Natural Area, and the Turtle Valley and Turtle Creek wildlife areas, respectively. The cat-tail marsh that borders the Fox River and Tichigan Lake at the Tichigan WA is also an important resource. This marsh is designated a Natural Area-2 by the Southeastern Wisconsin Regional Planning Commission and is the largest emergent marsh in Racine County. The area supports various amphibians, turtles, and birds (i.e., white pelicans, bitterns, terns).

The Mukwonago River corridor is a mosaic of natural communities including forest, savanna, wetlands, and lakes that are home to a wide array of native plants and animals and is an important stopover site for a number of Neotropical migratory birds. This river is among the most biologically diverse streams in southeastern Wisconsin. It provides critical habitat for a number of rare, threatened and endangered fish and invertebrates. The river is designated an Exceptional Resource Water between Eagle Spring and Phantom Lakes.

Bat surveys were not conducted during the Rapid Ecological Assessment, but riparian corridors are known to be frequently used by foraging bats. Maintaining diverse cover types (i.e., sedge meadows, forests, and marshes) in close proximity to water can help to protect bats in the planning area.

The trout streams on these properties in need of greatest management and or protection include the Class 2 Rosenow Creek and the Class 3 Palmer Creek and Tichigan Creek. The potential of several more streams, Karcher and New Munster, are being assessed as potential trout waters.

### **Open Wetlands**

Non-forested wetlands are the major land cover on these properties. They vary in quality, but typically occupy large areas. These wetlands minimize flooding, filter nutrients and pollutants, provide flow during low water periods or droughts, and provide migration corridors for wildlife. Although Southern Sedge Meadow is the dominant natural community type, Calcareous Fen, Wet Prairie, Wet-mesic Prairie, Shrub-carr, and Emergent Marsh often inter-grade with these sedge meadow.

High-quality open wetlands occur at Honey Creek WA, Vernon WA, Turtle Creek WA, Turtle Valley WA, Tichigan WA and Karcher Marsh WA. A large hemi-marsh (50% emergent vegetation and 50% open water) and floating-leaved marsh is located at Big Muskego Lake WA.

All of these wetlands provide important stopover sites for migratory birds and breeding habitat for grassland and marsh birds, turtles, amphibians and invertebrates. The high-quality wetlands in the planning group have been minimally impacted by invasive species and previous drainage activities. However, most of the wetlands have been heavily impacted by non-native invasives, hydrological modification and grazing. Regardless of their condition, the priority order for protecting and/or restoring open wetlands is as follows:

1. Protect the highest quality wetlands, especially those designated as Primary Sites, or other sites identified as having high restoration potential. Retain or obtain conservation ownership of these lands to prevent further disturbance,
2. Restore hydrological conditions and native plant communities as practicable.
3. Control invasive species and remediate past disturbances to the extent practicable. Eradication may not be feasible, particularly for species like reed canary grass. Opportunities exist to improve many wetlands by limiting the dominance and spread of invasive species, targeting early detection-rapid response efforts, and limiting future system disturbances.

### **Oak Savannas**

Opportunities exist to restore two types of oak savanna (Oak Opening and Oak Woodland), both of which are globally rare communities. Restoration and expansion of oak savanna remnants can enhance the habitat for numerous threatened and endangered species and Species of Greatest Conservation Need (SGCN). The best conservation and management opportunities are present at Tichigan WA and Honey Creek WA. Other opportunity areas include Vernon and Big Muskego wildlife areas.

### **Bird Habitat**

These properties provide important opportunities for conservation of grassland birds, marsh birds and colonial waterbirds. Grassland birds are exhibiting the most significant declines of any suite of bird species in Wisconsin and across the Midwest. Managing from a landscape perspective can better accommodate the complex habitat needs of a greater number and variety of grassland birds. This includes remnant prairie, old or fallow fields, planted prairies as well as open wetlands and shrub habitats. The three properties with the best potential for managing for grassland birds include Tichigan WA, Turtle Creek WA and the Turtle Valley WA.

Emergent marshes are among the most productive of all habitats for waterfowl and other waterbirds. Opportunities to promote stopover habitat for migrating land birds, waterfowl, waterbirds and raptors also exist on these properties. Properties with the best potential for conserving marsh birds, colonial waterbirds and waterfowl include Big Muskego, New Munster, Karcher Marsh, Tichigan and Vernon wildlife areas.

### **Reptile and Amphibian Habitat**

These properties provide some of the most significant habitat for rare and common frogs, snakes and turtles in all of southeastern Wisconsin. Reptile and amphibian populations have declined significantly in Wisconsin over the last few decades due in large part to habitat modification and fragmentation. The wetlands provide basking, foraging and overwintering habitat for numerous rare or uncommon amphibians and reptiles. In particular, the planning group supports the extremely rare queensnake, documented from only three locations in the state in the past 25 years. Other rare species include the eastern Massasauga, the Plains gartersnake, and the Blandings turtle. Management that supports rare herps includes restoring or maintaining natural hydrology, managing wetland complexes and adjacent uplands to maintain a variety of natural community types and combating non-native invasive species.

Properties with the best potential for conserving herps include Turtle Creek WA, Turtle Valley WA and the Vernon WA.

## Primary Sites and Species of Greatest Conservation Need

Nine ecologically important sites, or “Primary Sites,” were identified within the Southeast Region Rapid Ecological Assessment (REA). These sites warrant protection / restoration consideration during the development of the master plan. Primary Sites encompass the best examples of

- 1) rare and representative natural communities,
- 2) documented occurrences of rare species populations, and/or
- 3) opportunities for ecological restoration or connections.

Sixty-five rare animal species are documented for the properties in this planning group. They include five State Endangered, 14 State Threatened, and 46 Special Concern species. Nineteen rare plant species are documented, including three State Endangered, six State Threatened, and 10 Special Concern species. For a list of rare or declining species of the entire property group see Table 3 in the REA. For a list of rare species by property see Appendix G in the same document.

## Non-native invasive Species

Non-native invasive species are a current and growing threat to the natural plant and animal communities in this planning group. If not controlled, they have the potential to significantly harm the wildlife value of the habitats on all of the properties. Future management efforts should prioritize surveys to assess the areal extent of invasives, limiting their spread, and stress early detection and rapid control of new and/or small infestations.

The major invasive terrestrial species currently on the properties include: glossy buckthorn, common buckthorn, Eurasian bush honeysuckle, garlic mustard, and phragmites and reed canary grass. Emerald Ash Borer also poses an immediate threat to ash trees in the region and has been documented in all counties of the planning group.

Invasive species, such as phragmites, spiny starwort, Eurasian milfoil and Zebra mussels will continue to provide a major management challenge on the aquatic habitats. Other challenges include non-point source pollution from soil erosion, nutrient loading, and chemical runoff that continue to adversely affect the quality of the wetlands, streams, and lakes in the region and on these properties. A major management challenge on these properties is minimizing the adverse impacts of invasive species on the native aquatic and terrestrial habitats.

## Summary

With continued population growth, expanding infrastructure needs and increasing row cropping there has been increasing fragmentation of the natural landscapes in southeast Wisconsin. There are increasingly diverse sets of recreational users on our public lands too. Thoughtful planning and management will be needed to maintain quality wildlife and fishery habitat while also providing for the broader array of recreational experiences desired by an increasing number of users.

Increased collaboration with partners and efficient management of the planning group properties by department staff will be needed to provide quality habitat for game and non-game species as well as providing satisfying recreational experiences for users.

The properties contain important opportunities to protect and enhance many ecologically significant communities including diverse cold and warmwater fisheries, open wetlands, upland and lowland forests, savannas, prairies and grasslands. The habitats provide regionally significant opportunities for outdoor recreation, particularly for deer, turkey, waterfowl and pheasant hunting. The properties have the potential to continue to provide rich opportunities for watching waterfowl, shorebirds and grassland birds.

From a regional perspective, these properties can continue to provide high quality natural communities and habitats for both game and non-game species. Importantly, these properties are well-suited to continue providing lightly developed, non-motorized recreation experiences in rustic settings for years to come.

In conclusion, the highest priority habitat and conservation opportunities include:

**Protecting the Turtle Creek, Mukwonago River and Fox River corridors** – Protect and enhance the recreational, habitat and ecological opportunities provided by the properties along these corridors.

**Protecting the existing open wetlands and grasslands** – The emphasis should be on the communities in the existing natural areas and in the Primary Sites.

**Restoring Native Communities** – The priority communities include Oak Savanna, Oak Openings, Oak Woodlands and Open Wetlands.

**Protecting Cold/Cool Water and Warmwater Communities** – The priority cold water streams include Rosenow Creek that supports a naturally reproducing brook trout population. Palmer Creek, Tichigan Creek and other streams with the potential to support trout. The warmwater communities are along the Mukwonago River, Turtle Creek and the Fox River.

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## References

- Association of Wisconsin Snowmobile Clubs (ASWC), 2015 ([www.awsc.org/Clubs/Club-Listing.aspx](http://www.awsc.org/Clubs/Club-Listing.aspx))
- Big Muskego Lake/Bass Bay Protection and Rehabilitation District. Big Muskego Lake and Bass Bay Management Plan (June 2004). <http://www.cityofmuskego.org/index.aspx?NID=544>
- Cleland, D. T., P. E. Avers, W. H. McNab, M. E. Jensen, R. G. Bailey, T. King, and W. E. Russell. 1997. National Hierarchical Framework of Ecological Units. Pages 181–200 *in* M. S. Boyce and A. Haney, editors. Ecosystem Management Applications for Sustainable Forest and Wildlife Resources. Yale University Press, New Haven, CT.
- Ecosystem Management Planning Team [EMPT]. 2007. Table of Opportunities for Sustaining Natural Communities by Ecological Landscape. Madison, Wisconsin.
- Eldridge, J. 1990. Ecology of northern prairie wetlands. *In* Cross, D.H., compiler, 1988-1993, Waterfowl Management Handbook: U.S. Fish & Wildlife Service, Fish and Wildlife Leaflet 13.
- Geocaching web map - <https://www.geocaching.com/map/#?ll=43.18317,-88.48018&z=12>
- Ice Age Trail Alliance. (n.d.). Ice Age National Scenic Trail – Trail Stewardship Notebook. <http://atfiles.org/files/pdf/Ice-Age-Trail-Stewardship.pdf> Accessed January 2014.
- Land Trusts in Wisconsin – Gathering Waters web – <http://gatheringwaters.org/about-land-trusts/find-a-local-land-trust/>
- Martin, L. 1974. The Physical Geography of Wisconsin. Third Edition. University of Wisconsin Press, Madison, WI.
- Williams, Richard, et. al., 2004. Outdoor Recreation Participation of People with Mobility Disabilities: Selected Results of the National Survey of Recreation and the Environment. Journal of Park and Recreation Administration. Volume 22, Number 8. Summer 2004. pp. 85-101.
- U.S.D.A. 2014. Farm Service Agency - Conservation Reserve Program Website. <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=rns-css> Accessed Jan. 2014.
- Walworth County 2035 Comprehensive Plan  
<http://www.co.walworth.wi.us/Government%20Center/Land%20Use%20and%20Resource%20Management/pdfs/2035%20Plan/2035%20Cover.pdf>
- Waukesha County 2035 Comprehensive Plan:  
[https://www.waukeshacounty.gov/uploadedFiles/Media/PDF/Parks\\_and\\_Land\\_Use/Land\\_Information/Development\\_Plan/Chapter%207%20Land%20Use%20print%20ready.pdf](https://www.waukeshacounty.gov/uploadedFiles/Media/PDF/Parks_and_Land_Use/Land_Information/Development_Plan/Chapter%207%20Land%20Use%20print%20ready.pdf)  
[http://www.waukeshacounty.gov/uploadedFiles/Media/PDF/Parks\\_and\\_Land\\_Use/Planning\\_and\\_Zoning/Comp\\_Dev\\_Plan/Park%20and%20Open%20Space%20Plan%20with%20Bicycle%20Plan%20Revisions%202012%20final.pdf](http://www.waukeshacounty.gov/uploadedFiles/Media/PDF/Parks_and_Land_Use/Planning_and_Zoning/Comp_Dev_Plan/Park%20and%20Open%20Space%20Plan%20with%20Bicycle%20Plan%20Revisions%202012%20final.pdf)
- Waukesha County Park, Open Space and Boat Launch Facilities  
<http://www.waukeshacounty.gov/DefaultWC.aspx?id=39501>  
<http://www.waukeshacounty.gov/defaultwc.aspx?id=39534>
- Racine County 2035 Comprehensive Plan -  
<http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-301-comprehensive-plan-for-racine-county.pdf>
- Kenosha County 2035 Comprehensive Plan -  
<http://www.co.kenosha.wi.us/DocumentCenter/Home/View/86>
- SEWRPC Staff Memorandum. AN AQUATIC PLANT MANAGEMENT PLAN UPDATE FOR WATERFORD IMPOUNDMENT, RACINE COUNTY, WISCONSIN: 2012. December 1, 2012.  
<http://waterfordwwmd.com/wp-content/uploads/2013/09/WWMD-APM-Plan-Update-2012-00209665.pdf>

Wisconsin Department of Natural Resources [WDNR]. 2006a. The 2005–2010 Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP). Madison, WI. Publication number PR-026-2006.

Wisconsin Department of Natural Resources [WDNR]. 2006b. Wisconsin Land Legacy Report: an inventory of places critical in meeting Wisconsin's future conservation and recreation needs. Madison, WI. Publication No. LF-040 2006

Wisconsin Department of Natural Resources [WDNR]. 2006c. Wisconsin Wildlife Action Plan. Madison, WI. Pub-ER-641 2005.

Wisconsin Department of Natural Resources [WDNR]. 2007. Important Bird Areas of Wisconsin: Critical Sites for the Conservation and Management of Wisconsin's Birds. Madison, WI.

Wisconsin Department of Natural Resources [WDNR]. 2008. Great Wisconsin Birding and Nature Trail: Southern Savanna Region. Wisconsin Department of Natural Resources, Publication Number ER-662 2008, Madison, WI. Publication Number ER-662 2008.

Wisconsin Department of Natural Resources [WDNR]. 2010. Regional Profile: Region 9. A report submitted to the Wisconsin Department of Natural Resources by the University of Wisconsin-Madison Applied Population Laboratory (UW-Madison).

Wisconsin Department of Natural Resources [WDNR]. 2011. Natural Heritage Inventory Working List. Madison, WI.

Wisconsin Department of Natural Resources [WDNR]. 2012. The 2011–2016 Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP). Madison, WI. Publication number PR-027-2012.

Wisconsin Department of Natural Resources [WDNR]. 2013. Rapid Ecological Assessment for the Wildlife and State Natural Areas of the Southern Kettle Moraine Region. Madison, WI. Publication No. PUB-ER-829 2011.

Wisconsin Department of Natural Resources [WDNR]. 2014. The Ecological Landscapes of Wisconsin: an assessment of ecological resources and a guide to planning sustainable management. Chapter 17, Southeast Glacial Plains Ecological Landscape. Madison, WI.

Wisconsin DNR web information sources: enter *dnr.wi.gov* in th web browser and then search under key words - "fishing stocking database", pheasant stocking".

## Species Lists

The following table lists the species referred to by common name in the report text.

Table 37 Species Lists for the Planning Group	
Common Name	Scientific Name
<b>Plants</b>	
angelica	<i>Angelica atropurpurea</i>
big bluestem	<i>Andropogon gerardii</i>
black cherry	<i>Prunus serotina</i>
black oak	<i>Quercus velutina</i>
black willow	<i>Salix nigra</i>
blue-joint grass	<i>Calamagrostis canadensis</i>
bog bean	<i>Menyanthes trifoliata</i>
bog birch	<i>Betula pumila</i>
box-elder	<i>Acer negundo</i>
broad-leaved cat-tail	<i>Typha latifolia</i>
burr oak	<i>Quercus macrocarpa</i>
buttonbush	<i>Cephalanthus occidentalis</i>
cat-tails	<i>Typha</i> spp.
common buckthorn	<i>Rhamnus cathartica</i>
cottonwood	<i>Populus deltoides</i>
dogwoods	<i>Cornus</i> spp.
Dutchman's breeches	<i>Dicentra cucullaria</i>
Eastern red cedar	<i>Juniperus virginiana</i>
Eurasian bush honeysuckle	<i>Lonicera</i> spp.
fowl manna grass	<i>Glyceria striata</i>
garlic mustard	<i>Alliaria petiolata</i>
green ash	<i>Fraxinus pennsylvanica</i>
Indian grass	<i>Sorghastrum nutans</i>
Japanese hedge-parsley	<i>Torilis japonica</i>
lake sedge	<i>Carex lacustris</i>
leather-leaf	<i>Chamaedaphne calyculata</i>
linear-leaved aster	<i>Aster linariifolius</i>
little bluestem	<i>Schizachyrium scoparium</i>
maples	<i>Acer</i> spp.
paper birch	<i>Betula papyrifera</i>
Pennsylvania sedge	<i>Carex pennsylvanica</i>
prairie dock	<i>Silphium terebinthinaceum</i>
pussy willow	<i>Salix discolor</i>

<b>Table 37 Species Lists for the Planning Group</b>	
<b>Common Name</b>	<b>Scientific Name</b>
red oak	<i>Quercus rubra</i>
red-osier dogwood	<i>Cornus stolonifera</i>
red pine	<i>Pinus resinosa</i>
red trillium	<i>Trillium recurvatum</i>
reed canary grass	<i>Phalaris arundinacea</i>
Riddell's goldenrod	<i>Solidago riddellii</i>
seven-angled pipewort	<i>Eriocaulon aquaticum</i>
side-oats grama	<i>Bouteloua curtipendula</i>
silver maple	<i>Acer saccharinum</i>
slippery elm	<i>Ulmus rubra</i>
spiderwort	<i>Tradescantia ohiensis</i>
stiff goldenrod	<i>Solidago rigida</i>
swamp white oak	<i>Quercus bicolor</i>
sweet-flag	<i>Acorus calamus</i>
tamarack	<i>Larix laricina</i>
turk's-cap lily	<i>Lilium michiganense</i>
tussock sedge	<i>Carex stricta</i>
water-shield	<i>Brasenia schreberi</i>
white mulberry	<i>Morus alba</i>
white oak	<i>Quercus alba</i>
white snakeroot	<i>Eupatorium rugosum</i>
white water-lily	<i>Nymphaea odorata</i>
willow spp.	<i>Salix spp.</i>
wiregrass sedge	<i>Carex lasiocarpa</i>
yellow pond-lily	<i>Nuphar advena</i>
<b>Animals</b>	
American woodcock	<i>Scolopax minor</i>
Bell's vireo	<i>Vireo bellii</i>
brook trout	<i>Salvelinus fontinalis</i>
brown trout	<i>Salmo trutta</i>
common raccoon	<i>Procyon lotor</i>
creek chub	<i>Semotilus atromaculatus</i>
eastern cottontail	<i>Sylvilagus floridanus</i>
eastern wild turkey	<i>Meleagris gallopavo</i>
eastern gray squirrel	<i>Sciurus carolinensis</i>
gray partridge	<i>Perdix perdix</i>
mottled sculpin	<i>Cottus bairdii</i>

**Table 37 Species Lists for the Planning Group**

<b>Common Name</b>	<b>Scientific Name</b>
mourning dove	<i>Zenaida macroura</i>
mucket	<i>Actinonaias ligamentina</i>
northern bobwhite	<i>Colinus virginianus</i>
prothonotary warbler	<i>Protonotaria citrea</i>
ring-necked pheasant	<i>Sylvilagus floridanus</i>
ruffed grouse	<i>Bonasa umbellus</i>
white sucker	<i>Catostomus commersonii</i>
white-tailed deer	<i>Odocoileus virginianus</i>
wood duck	<i>Aix sponsa</i>

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**Table 44 Rare Species of the Southeast Region Planning Group and Associated Natural Communities**

Numbers 1, 2 and 3 denote degree of association within the Southeast Glacial Plains Ecological Landscape per Wisconsin's Wildlife Action Plan (WDNR 2006): 3 = significant association, 2 = important association, 1 = low association. An "X" denotes habitat associations for species that were not identified as Species of Greatest Conservation Need in the 2006 Wildlife Action Plan; specific degrees of association not available.

		Associated Natural Communities Occurring at Southeast Region Planning Group																													
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie	
<b>Mammals</b>																															
Big Brown Bat	<i>Eptesicus fuscus</i>	2013	THR		Wide variety of habitats, especially edge habitat near water and farmland.																										
Prairie Deer Mouse	<i>Peromyscus maniculatus</i>	2013	SC/N					X	X						X				X							X					
Eastern Pipistrelle	<i>Perimyotis subflavus</i>	2013	THR				X								X	X					X	X					X	X			
Eastern Red Bat	<i>Lasiurus borealis</i>	2013	SC/N		2		2	3			2	2				2	2		2		2	2	2	1	2			2	2		
Hoary Bat	<i>Lasiurus cinereus</i>	2013	SC/N		2		2	3			2	2				1	1		2		1	1	2	1	2			2	2		
Little Brown Bat	<i>Myotis lucifugus</i>	2013	THR		Commonly roost in human-made structures, but also found in the summer under tree bark, in rock crevices, and in tree hollows, all close to water (they forage over open water or near shorelines and along edge habitat).																										
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	2013	THR		2		2	3			2	2				1	2		2		2	2	2		2			2	2		
Prairie Vole	<i>Microtus ochrogaster</i>	2013	SC/N						3	3						2				3						2					
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	2013	SC/N						X	X										X						X					

Regional and Property Analysis for the Southeast Region Planning Group

					Associated Natural Communities Occurring at Southeast Region Planning Group																											
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie		
<b>Birds</b>																																
Acadian Flycatcher	Empidonax virens	2013	THR									2										1	3									
American Bittern	Botaurus lentiginosus	2009	SC/M							3									1				2			1					1	
American Woodcock	Scolopax minor	2013	SC/M		2		2					1			2	1				3		1			2		1				1	
Bald Eagle	Haliaeetus leucocephalus	2013	SC/P										3		2										2			3				
Bell's Vireo	Vireo bellii	2013	THR					2	2							1			2	2						2				2	2	
Black-billed Cuckoo	Coccyzus erythrophthalmus	2013	SC/M									2			2	1				3				2							1	
Black Tern	Chlidonias niger	2013	SC/M								3												1		2							
Black-crowned Night-heron	Nycticorax nycticorax	2013	SC/M								X												X								X	
Blue-winged Teal	Anas discors	2013	SC/M					1	2	3	2									1			2		2	2	1		2	2		
Blue-winged Warbler	Vermivora pinus	2013	SC/M		2							2			1	2	2			2		2	2		2							
Bobolink	Dolichonyx oryzivorus	2013	SC/M				1			3						1							2			3			3	3		
Brown Thrasher	Toxostoma rufum	2013	SC/M					2	2						3	3				3						2				1		
Cerulean Warbler	Dendroica cerulea	2013	THR									3					2					1	3									

Regional and Property Analysis for the Southeast Region Planning Group

Associated Natural Communities Occurring at Southeast Region Planning Group																															
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie	
Common Nighthawk	Chordeiles minor	2013	SC/M						X						X	X				X											
Dickcissel	Spiza americana	2013	SC/M						1	3					1	1										3			1		
Eastern Meadowlark	Sturnella magna	2013	SC/M			1			2	3						2				2			2			3			2	1	
Field Sparrow	Spizella pusilla	2013	SC/M						3	2					2	3				3						2			2		
Grasshopper Sparrow	Ammodramus savannarum	2013	SC/M						3	3					2	1				3						3					
Henslow's Sparrow	Ammodramus henslowii	2013	THR							3						2							1			3			2	2	
Hooded Warbler	Wilsonia citrina	2013	THR																			3									
Kentucky Warbler	Oporornis formosus	2013	THR									3										2									
Lark Sparrow	Chondestes grammacus	2013	SC/M						2						3					3											
Least Flycatcher	Empidonax minimus	2013	SC/M									2					1		1		1	1									
Loggerhead Shrike	Lanius ludovicianus	1987	END						2	2					2	1				2						3			1		
Northern Bobwhite	Colinus virginianus	2012	SC/M						2	2						2	1			1						3			2		
Northern Harrier	Circus cyaneus	2013	SC/M			1			2	2	1				2				1	1			2			3			3	2	
Prothonotary Warbler	Protonotaria citrea	2013	SC/M									3																			

Regional and Property Analysis for the Southeast Region Planning Group

Associated Natural Communities Occurring at Southeast Region Planning Group																															
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie	
Red-headed Woodpecker	Melanerpes erythrocephalus	2013	SC/M									2			2	3	3				2	2									
Red-shouldered Hawk	Buteo lineatus	2013	THR									3										2		1							
Veery	Catharus fuscescens	2013	SC/M									2					1		3			2		1							
Vesper Sparrow	Poocetes gramineus	2013	SC/M						3	2					3	2				3						1					
Whip-poor-will	Caprimulgus vociferus	2013	SC/M		2							1					3				3	3									
Willow Flycatcher	Empidonax traillii	2013	SC/M		2	2		1	2			1				1			3	1			2	1		2			2	2	
Wood Thrush	Hylocichla mustelina	2013	SC/M									2					2				2	3		1							
Yellow-billed Cuckoo	Coccyzus americanus	2013	SC/M									3					1		2		1	2		1							
Yellow-breasted Chat	Icteria virens	2013	SC/M		Dense upland and lowland shrub																										
Yellow-crowned Night-Heron	Nyctanassa violacea	1989	THR								2	3							2						2			2			
Yellow throat Warbler	Dendroica dominica	2013	END									3										2									

Regional and Property Analysis for the Southeast Region Planning Group

		Associated Natural Communities Occurring at Southeast Region Planning Group																												
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie
<b>Amphibians</b>																														
American Bullfrog	Lithobates catesbeianus	2013	SC/H				X					X													X		X	X		
Northern Leopard Frog	Lithobates pipiens	2013	SC/H		X					X		X																		
Pickereel Frog	Lithobates palustris	2013	SC/H				2	3		3	2								2				3		3		3	3	3	3
<b>Reptiles</b>																														
Blanding's Turtle	Emydoidea blandingii	2013	THR				2	3	2	3	2				3	3	2		2	3		2	2	2	3		2	2	2	3
Eastern Massasauga Rattlesnake	Sistrurus catenatus catenatus	1982	END	C		3		3	3	3	3				3				3	3		3							3	3
Ornate Box Turtle	Terrapene ornata	2013	END					3	2							3	3			3	3	3								
<b>Fishes</b>																														
American Eel	Anguilla rostrata	1974	SC/N				X																				X	X		
Black Buffalo	Ictiobus niger	2004	THR																								2			
Least Darter	Etheostoma microperca	1965	SC/N																								2	2		
Silver Chub	Macrhybopsis storeriana	2007	SC/N																								X	X		
Starhead Topminnow	Fundulus dispar	2010	END																								3	3		
Weed Shiner	Notropis texanus	1974	SC/N																								X	X		



Regional and Property Analysis for the Southeast Region Planning Group

		Associated Natural Communities Occurring at Southeast Region Planning Group																														
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie		
<b>Ants, Wasps and Bees</b>																																
Rusty-patched Bumble Bee	Bombus affinis	2013	SC/N		Habitat generalist																											
<b>Plants</b>																																
Azure bluets	Houstonia caerulea	1998	SC						2	2							2															1
Beak Grass	Diarrhena obovata	2013	END									3																				
Glade Mallow	Napaea dioica	1987	SC									2											3									
Kentucky Coffee-tree	Gymnocladus dioicus	2013	SC									3																				
Kitten Tails	Besseyia bullii	2008	THR						2								3	3				3	3									
Nodding Rattlesnake-root	Prenanthes crepidinea	2005	END																			2										
Pale Purple Coneflower	Echinacea pallida	1991	THR						3	3																						
Prairie Indian plantain	Cacalia tuberosa	1991	THR						3																					3	3	
Prairie Milkweed	Asclepias sullivantii	1957	THR																											3		
Prairie Straw Sedge	Carex suberecta	1957	SC		2		3																2									
Purple Meadow-parsnip	Thaspium trifoliatum var. flavum	1958	SC							1							3	2	1											3		

Regional and Property Analysis for the Southeast Region Planning Group

Associated Natural Communities Occurring at Southeast Region Planning Group																															
Common Name	Scientific Name	Last Observation	State Status	Federal Status	Bog Relict	Central Lake Michigan Coastal	Calcareous Fen	Coolwater streams	Dry Prairie	Dry-mesic Prairie	Emergent Marsh	Floodplain Forest	Inland lakes	Moist Cliff	Oak Barrens	Oak Opening	Oak Woodland	Pine Relict	Shrub Carr	Sand Prairie	Southern Dry Forest	Southern Dry-mesic Forest	Southern Sedge Meadow	Southern Tamarack Swamp (rich)	Submergent Marsh	Surrogate Grasslands	Warmwater rivers	Warmwater streams	Wet-mesic Prairie	Wet Prairie	
Rough Rattlesnake-root	<i>Prenanthes aspera</i>	1948	END						3	3										1											
Round fruited St. John's wort	<i>Hypericum sphaerocarpum</i>	2013	THR									2										2							2	2	
Short's Rock-cress	<i>Arabis shortii</i>	2013	SC									1		3								2									
Small White Lady's slipper	<i>Cypripedium candidum</i>	1930	THR				3																					3	3		
Smooth Black-haw	<i>Viburnum prunifolium</i>	2013	SC									2																			
Spreading Chervil	<i>Chaerophyllum procumbens</i>	2013	SC									3																			
Sycamore	<i>Platanus occidentalis</i>	2013	SC									3																			
Wafer-ash	<i>Ptelea trifoliata</i>	2013	SC						2			2									2	2									
Yellow Giant Hyssop	<i>Agastache nepetoides</i>	1996	THR													2	3					2									

## Appendix A - Management Practices

This appendix provides background information on typical management practices on department fish and wildlife lands, and to a certain extent, natural areas. These practices may change based upon the habitat and recreation objectives developed for the master plan. Department staff will work with willing landowners, especially adjacent to state lands to implement farmland and other conservation practices by utilizing existing federal, state, and non-profit grant programs, such as the Conservation Reserve Program (CRP) and Managed Forest Law (MFL). These habitat enhancement programs benefit wildlife and fish as well as many people that reside in the surrounding area.

### Active and Passive Management

Habitat and recreation management in the property descriptions refers to both active and passive forms of management.

**Active Management** includes the direct manipulation of the plant and animal communities or providing infrastructure to promote a recreational activity. Habitat examples include seeding a parcel to re-establish grasslands, conducting prescribed burns, harvesting timber, stocking fish and pheasants, and manipulating in-stream and riparian zone habitats along trout streams. Recreation examples include providing parking lots and designated trails for users. Active management activities span a significant range of time scales. Fish may be stocked every year, prescribed burns may occur every three to five years while timber harvests may occur on 15-50 year cycles or even longer.

**Passive Management** indicates no or very limited direct action is taken to manage a habitat. Passive management is often used on parcels with the following characteristics:

- Size - management activities may be too expensive or difficult to conduct due to small size
- Location – isolated or difficult to reach habitats (such as small islands),
- Habitat quality - Units with good to excellent habitat may be stable thus requiring little to no intervention, or it may be an infestation (i.e., an expansive reed canary grass infestation in a disturbed wetland) of such size and complexity that the tools and/or resources required for restoration are not currently available.

More commonly, some active management is conducted on a property or habitat unit (e.g., prescribed burns, timber harvests, controlling invasive species and adjusting water levels), but the plant communities are allowed to evolve based on natural succession. For example, grasslands may be burned, but the species composition is allowed to evolve based on the competitiveness of the grasses and forbs at the site. Passive management seeks to promote stable and productive natural communities while minimizing the need for unnecessary and potentially expensive human intervention.

### Wetlands

All of the larger properties contain wetlands, including some rare wetland types that provide both breeding and migratory habitat for birds. Often wetlands are the most important and dominant habitat on many of the properties. These wetlands provide habitat for wildlife reproduction, food and shelter as well as stopover habitat for migratory birds to feed and rest. Traditionally, wetland management has focused on enhancing waterfowl and furbearer habitat, but it has also benefited shorebirds, wading birds, reptiles and amphibians.

The primary management goal is to enhance the natural communities by improving cover and food conditions. This goal can be achieved using a combination of prescribed fire, mechanical equipment, herbicides and/or drawdowns to improve the ratio of emergent vegetation to open water in shallow and deep water wetlands, and to control invasive species. Water levels and plant communities in flowages can be manipulated to enhance feeding, resting and nesting habitats for waterfowl and waterbirds, and to provide overwinter habitat for muskrat, mink, otter and amphibians.

Moist soil management seeks to provide attractive feeding areas for migratory birds including waterfowl, shorebirds and wading birds. This type of management is usually conducted on shallow emergent wetlands and wet meadow wetlands where water control structures and dikes allow property managers to manipulate water levels.

These manipulations involve lowering water levels in spring and during the growing season to establish forage plants as a food source in the fall. This promotes large increases in invertebrate populations and attractive feeding areas (e.g., plentiful seed sources) for waterfowl and shorebirds.

Water level manipulations can also aid invasive species control efforts. For example, water can be drawn down in areas dominated by reed canary grass. These areas can be mowed late in the growing season, typically through a farm agreement, and then flooded during late summer and fall.

Restoration of previously drained wetlands has occurred on several of the properties. Wetlands are usually restored by removing or disabling subsurface drain tiles and plugging drainage ditches and sometimes enhanced by scraping deeper areas to increase water depths to habitat diversity.

Other wetland types are relatively stable over time and can be passively managed. Shrub-carr wetlands dominated by wetland tolerant shrub species like willow, dogwood and tag alder are found on most of the properties. This habitat type provides important cover and food for both game and non-game wildlife. Game species include deer, woodcock and pheasants while non-game species include willow flycatchers and black-billed cuckoos. However, active management may be needed periodically to rejuvenate them. Tag alder areas can be rejuvenated to younger thicker cover by mowing. Drier sites can be burned, cut and/or chemically treated to setback woody vegetation and invasive species.

In emergency circumstances, such as the drought of 2012, marsh hay cutting may be allowed on these properties.

### **Grasslands and Upland Areas**

These habitats provide valuable food and cover for a variety of wildlife species. Traditionally these areas were managed to provide nesting cover for pheasants and ducks with benefits to grassland songbirds as well. Wild pheasant populations have declined throughout this area due to landscape scale changes in land-use and habitat types (i.e., a significant loss in permanent grass cover) that severely limits nesting cover. Pheasant stocking is needed to sustain hunting opportunities on these properties.

Grassland songbirds and some reptiles benefit from larger blocks of grassland cover and ducks benefit from nesting cover near wetland brood habitat.

A variety of grasslands and prairies are found on these properties. They consist of existing grasslands and remnant prairies as well as cool and warm season grasslands established by seeding former agricultural lands. Grasslands are often rejuvenated by plowing and cropping a parcel for three to five years and then replanting to the desired grasses and forbs. Cool season grass/hay fields under a farming agreements can provide valuable nesting habitat for waterfowl and grassland birds yet still provide a crop by allowing a harvest later in the growing season. Warm season grasslands need to be burned or mowed on a regular basis to keep them in grass cover. Former agricultural lands designated for prairie or grassland cover typically have the former tree lines and rock fence-lines removed to create larger blocks of contiguous habitat, to minimize edge habitat, reduce perches for avian predators, and travel lanes for terrestrial predators (e.g., foxes, coyotes, raccoon, etc.).

**Agricultural Lands and Practices** – Cropland on these properties varies year to year, but an estimated 1,000 acres are cropped annually. This is about 5% of the total acres under state fee title ownership in the planning group. About 25% of the non-forested uplands are cropped on these properties.

Cropping is typically a short term management practice (e.g., 3-5 years) used to provide food plots for doves and pheasants as well as aiding habitat restoration. Some fields acquired in fee title are maintained in agricultural use through farming agreements until funds are available to convert them to permanent forest or grass cover types. The land cover on small fields (e.g., less than five acres) may be allowed to naturally convert to grassland, brush and eventually to forest.

## Forest Management

Forests on fish and wildlife properties are principally managed to provide sustainable habitats needed for game and non-game fish and wildlife species rather than being managed as a timber resource. This goal benefits both present and future generations by providing long-term benefits such as healthy, productive habitats for a variety of wildlife and attractive recreational settings for users and neighbors.

These management practices can also yield forest products (e.g., firewood, pole and saw timber) for the local and state economies. The long-term benefits are wide ranging and include public hunting, outdoor recreation, habitat for aquatic and terrestrial wildlife, protecting native biological diversity, protection of soil and water resources, production of recurring forest products, and aesthetics.

Typical management practices often include thinning and regeneration harvests, the planting of tree seedlings to re-forest harvested areas or create a new forest on open or brush lands, and suppressing invasive plant species.

Forest management seeks to maintain species diversity, while improving the vigor of desirable species that provide cover, denning cavities, produce mast crops (oaks, hickories, beech), berries (hackberry and black cherry) or provide other benefits on these properties. Forest food crops are important to sustain populations of both game and non-game species such as white-tailed deer, turkey, squirrels, and other furbearers. It is also aimed at maintaining healthy forests by managing high risk species (e.g., ash mortality from emerald ash borer infestations) or other high risk trees such as those with obvious infections or decline so as to maintain a healthy, dynamic ecosystem. Enhancing tree vigor can reduce losses from both native and non-native forest pests such as gypsy moth.

Early successional forests dominated by shade intolerant species (e.g., birch and aspen) provide valuable habitat for deer, grouse and woodcock. As these stands reach their rotation age, the forests are either regenerated through harvests or managed to develop into moderately shade tolerant forests (e.g., oak, ash, elm or hackberry) or shade tolerant northern hardwoods such as maple and basswood. These latter forests can provide long-lived forests with closed canopies desired by forest interior bird species.

Sustainable forest management requires the protection of archeological or historical sites, sensitive species and communities, water resources, such as wetlands, streams, or ephemeral pools, wildlife trees both standing and downed, and legacy trees.

Planting tree seedlings can supplement natural seeding to regenerate forests after a harvest or catastrophic mortality from fire, flooding or blow-downs. Plantings can also aid the conversion of conifer plantations to native hardwood forests, or the afforestation of open lands. The latter is often aimed at creating early successional forest types, expanding forest stands to create larger blocks that are rare in southern Wisconsin and provide significant habitat for a wide range of threatened and endangered species, including forest interior birds.

Wisconsin's public forests are managed under the principles of sustainable forest management and are dual certified under the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI) programs. Certification means that the forests are managed according to strict environmental, social, and economic standards.

## Coldwater Streams

Coldwater streams are dominated by groundwater inputs and can sustain fish communities adapted to cold, oxygen rich, flowing water conditions. They can support native brook trout or the introduced brown trout and rainbow trout as well as other native species such as white sucker, mottled sculpin and various minnow species. Coldwater streams often support diverse communities of invertebrates as well as environmentally sensitive mayflies, stoneflies and caddis flies.

Habitat management can increase the carrying capacity, growth and natural recruitment of trout as well as improve access for anglers and other users. Coldwater streams often rely on external sources of energy (e.g., leaves and grasses adjacent to the stream) to sustain the aquatic food web. Managing riparian vegetation can increase stream productivity by increasing sunlight and vegetative inputs to the stream thus increasing the production of algae and phytoplankton and subsequently the invertebrate and fish populations. This management also needs to maintain stream temperatures suitable for trout.

Most trout streams are actively managed and the following activities are typically conducted:

- Plant or manage for the desired woody and herbaceous species in the riparian zone.
- Remove tag alder, aspen, box elder, black willow and invasive species to minimize bank erosion, excessive stream shading and/or degraded habitat quality.
- Stabilize banks to minimize bank erosion.
- Enhance in-stream habitat and cover by installing and maintaining current deflectors, lunger structures and boom cover installations.
- Remove beaver dams to maintain the free flowing environment.
- Stock trout in Class 2 and 3 streams that support limited to no natural reproduction.

### **Warmwater Streams, Rivers and Lakes**

Lakes, flowages and larger rivers and streams on or adjacent to these properties provide an abundant, sustainable warmwater game fishery and habitat for diverse semi-aquatic and aquatic plant and animal communities. Currently, a number of the lakes are stocked, but little to no stocking is occurring in the warmwater rivers and streams. Habitat management for the warmwater fisheries is typically limited to volunteer efforts due to limited funding. However, in cases such as restoration efforts at Big Muskego Lake, some habitat enhancements and/or restoration projects may be conducted (e.g., carp control).

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## Appendix B - State and Local Plans

### Land Legacy Report

The *Wisconsin Land Legacy Report (WDNR, 2006)* identified important resource areas to protect that will help meet Wisconsin's conservation and recreation needs over the next 50 years. The report provides information for use by landowners, nonprofit conservation groups, local governments, state and federal agencies, and other parties interested in decision-making about land protection and management in the vicinity of the identified legacy places.

**Walworth County** - The study identified five legacy places in Walworth County: the Sugar Creek Valley, the White River and the Bloomfield area. Other areas of interest included Troy Wildlife Area and Lake Beulah Bog.

**Waukesha County** -

**Racine County** - The legacy places associated with the planning group include Big Muskego Lake, and the Illinois Fox River. Other areas of interest included Honey Creek, Wind Lake Swamp, and Eagle Lake Wetlands.

**Kenosha County** - The inventory identified five legacy places including the Illinois Fox River and the Des Plaines River Floodplain and George Lake Wetland.

### Local Land Use Plans

Kenosha, Racine, Walworth and Waukesha counties have comprehensive and open space plans developed in collaboration with the Southeast Wisconsin Regional Planning Commission (SEWRPC). Rock County also has a comprehensive management plan similar in character to the SEWRPC plans.

All of these plans identified and recommended the preservation of primary and secondary environmental corridors and isolated natural resource areas for the following reasons:

- Protection of high quality native communities, including woods, wetlands and grasslands
- Maintenance of surface and groundwater quality and the reduction of soil erosion and chemical pollutants to these waters
- Attenuation of flood flows and maintenance of base flows in streams
- Maintenance of groundwater recharge areas
- Provision of fish and wildlife habitat and wildlife travel corridors
- Protection of plant and animal diversity
- Protection of rare and endangered species
- Maintenance of scenic beauty
- Abatement of air and noise pollution
- Provision of opportunities for nature based recreational, educational, and scientific pursuits.

Protection of these environmental corridors and isolated natural resource areas provides many conservation benefits and also helps avoid serious and costly problems from poorly suited developments.

**Primary Environmental Corridors** are primarily located along major river and stream valleys, around major lakes, and/or encompass areas with substantial topographic relief. These corridors often contain the largest blocks and highest quality woodlands, wetlands, and wildlife habitat areas in these counties.

**Secondary Environmental Corridors** are generally smaller in size and located along smaller perennial and intermittent water features, wetlands and topographic features within these counties. These corridors often contain pockets of good to somewhat degraded natural resource features (e.g., wetlands affected by drainage activities, and fragmented woodlands and grasslands) and provide some measure of the benefits listed above.

**Isolated Natural Resource Areas** often contain small pockets of wetlands, woodlands, surface water, or wildlife habitat that are separated from the environmental corridors by urban development or agricultural use. Although separated from the environmental corridors these isolated natural resource areas can have significant value. Typically they are widely scattered throughout the counties and they may provide the only available wildlife habitat in an area. They also can provide local recreation and habitat opportunities and lend unique aesthetic character and natural diversity to an area.

The current department land holdings and a significant majority of the project boundaries for the properties within this planning group are located within the primary and secondary environmental corridors, the isolated natural resource areas and/or the 100 year floodplain delineation. These holdings help the governmental units within these counties achieve the desired open space, recreation and environmental services recommended in these approved plans.

### **Joint Department, Regional and County Planning Efforts**

The department and SEWRPC have collaborated on open space and critical habitat inventories dating back to the 1980's. For example, all remaining high-quality natural areas and critical species habitat within the region were systematically identified and inventoried. The local planning efforts designated these areas as "natural areas" (NA) and were classified as NA-1 (highest quality), NA-2 sites and NA-3 sites. In addition, critical species habitat sites have been identified both inside and outside the natural areas. A rating system was also used for assessing the value of wildlife habitat areas (Class 1 – high; Class II - medium-value; and Class III - significant remnant areas) in the region. Department staff have used and will continue to use this information during this planning process

The various county comprehensive and open space plans indicate there are lands with desirable natural resource features such as wetlands, forests and natural areas that should be protected by, or in collaboration with, the county, department, local municipalities or nonprofit conservation organization or through public land use regulation. There are lands that should be placed in protective zoning districts (e.g., environmental corridors to protect sensitive uplands, parcels with steep slopes, and to minimize incompatible developments. Land use regulation may include actions such as dedications, conservation easements and preservation statements. When open space lands, particularly lands within primary environmental corridors, become available for acquisition and use for public open space purposes, it is recommended that the appropriate public agency consider the acquisition of such lands.

The county planning documents acknowledge the department lands as valuable open space sites. Certain outdoor preservation elements of their plans include lands which have been acquired or lands that lie within the project boundaries of the department properties. Project boundaries have been developed by the department and approved by the Wisconsin Natural Resources Board. The Waukesha County planning efforts recommend that the department continue to acquire additional land within the approved project boundaries for open space or outdoor recreation purposes.

It is further recommended in the Waukesha County planning documents that there should be coordinated efforts (e.g., Paradise Marsh WA) to adequately provide a variety of nature-based recreational activities while minimizing duplication of services. Provisions contained in the Waukesha County Development Codes require landowners proposing development of lands within a department project boundary to contact the department to discuss and negotiate a land purchase where appropriate.