



Patrick Marsh Project Plan

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I. INTRODUCTION

Patrick Marsh has become an area of increasing public and private interest in recent years; interests ranging from potential residential development to preservation of all remaining open space lands around the marsh. Preservation and restoration of the marsh is not a new concept. The City of Sun Prairie requested Patrick Marsh be included in the 1990-95 Dane County Parks and Open Space Plan, however, there was not consensus regarding how lands should be preserved and consequently it was not included during that planning effort. In 1991, the Wisconsin Department of Transportation (DOT) purchased approximately 225 acres of land that would become the state's first wetland bank site. DOT then transferred ownership and management responsibility to the Wisconsin Department of Natural Resources. (DNR)

During the public input process to complete the 2001-2005 Dane County Parks and Open Space Plan, residents and local officials from the City and Town of Sun Prairie, the Town of Bristol and the DNR, again suggested including Patrick Marsh as a resource protection project. After several public meetings, Patrick Marsh was adopted into the 2001-2005 Dane County Parks and Open Space Plan as a new natural resource site study area. The existing DNR Patrick Marsh Wildlife Area consists of prairie and oak opening restoration efforts, a deep-water marsh, and small woodlots. Hydric soil areas outside of the DNR property southwest and southeast of the marsh offer potential for future shallow marsh restoration efforts that could provide flood storage, phosphorous reduction, and wildlife habitat. The area offers outstanding bird watching opportunities.

The purpose of completing this project plan is to provide guidance to Dane County, stakeholder units of government and other conservation organizations regarding lands that may be considered for future preservation efforts. These lands may then be eligible for Wisconsin Stewardship or Dane County Conservation Fund dollars, however, preservation of land is entirely dependent on willingness of property owners to sell their property or easements for conservation purposes and the County or other government/non-profit agency's ability to procure funds for acquisition.

II. PROJECT LOCATION

Patrick Marsh is located immediately northeast of the City of Sun Prairie and south of USH 151 (see Map 1). The City of Sun Prairie, Town of Bristol, and Town of Sun Prairie jurisdictions are all included within the Project Plan Study Area boundary.

III. PROJECT BOUNDARY

The proposed project boundary is shown on Map 2. The boundary encompasses approximately 785 acres that is comprised of about 400 acres of lowland/surface water and 385 acres of adjacent uplands. Approximately 250 acres are currently in public ownership by the Department of Natural Resources and the Patrick Marsh Middle School.

There is a very small area of 100 year floodplain that is also shown on Map 2. The 100 year floodplain is established by the Federal Emergency Management Agency (FEMA) with assistance from the United States Geological Survey. Although the mapped floodplain is only a very small portion of the hydric soil/lowland area southwest of the marsh, air photos from June of 2000 indicate a large portion of the agricultural lands south of Patrick Marsh Middle School have the potential to flood.

The geometry of the recommended project boundary is drawn to include hydric soil areas southwest and southeast of the Patrick Marsh Wildlife Area for possible future wet prairie/shallow marsh restoration projects. Upland slopes east, west, and south of the marsh are included with the hope of providing vegetative buffers and upland nesting habitat around the marsh. Protection of these lands would also preserve viewsheds into and from within the marsh.

The recommended project boundary is meant to serve as a guide. The actual boundary of the future Natural Resource Site may vary based on landowner's willingness to sell all or part of a parcel for conservation purposes and the city and town's future residential land use decisions. Lands included within the boundary may be eligible for federal, state and county grant dollars designated for acquisition and preservation of natural areas.

The proposed project boundary in this plan does not convey right of public access on private land within the boundary. This project plan does not affect rights of development for private property owners within the project area boundary. Participation in grant programs or selling of land for conservation purposes by private property owners within the project area boundary is totally voluntary.

IV. PROJECT OBJECTIVES

1. Preserve lands surrounding the existing Patrick Marsh Wildlife Area to provide continuous and expanded public ownership for future passive recreation, education and trail linkage opportunities.
2. Preserve adjacent hydric soil areas for future shallow marsh restoration efforts that will provide expanded wildlife habitat, flood storage, and water quality benefits.
3. Preserve upland buffer areas adjacent to the resource area and maintain open viewsheds into the marsh.

V. PLANNING PROCESS

Discussions regarding the completion of a Project Plan for the Patrick Marsh study area began in the late summer of 2001. A stakeholder team kick off meeting was held in January of 2002. February through March involved collecting resource inventory data and drafting preliminary project objectives. In April, the purpose and status of the Project Plan planning process was presented to the City of Sun Prairie Plan Commission. Summer and fall of 2002 was spent meeting with stakeholders and the DNR to discuss potential acquisition partnership areas. In January of 2003, a meeting was held for landowners within the project study area boundary to present the purpose of the project and listen to landowner comments and concerns. In February, a public informational meeting was held at Patrick Marsh Middle School. This first draft Project Plan was completed in early March, 2003, with a second edited version completed in early April of 2003. A public informational meeting to discuss the revised draft Project Plan was held on April 10 at Patrick Marsh Middle School. Meeting minutes and comments generated during the planning process are presented under Appendix 1.

VI. HISTORY

The early history of Patrick Marsh has been pieced together from many different sources including letters from early settlers, historical and anecdotal accounts, atlases, topographic maps and land abstracts. The first glimpse of the marsh comes from surveyor Orson Lyon, who laid out the section lines in 1834. Lyon wrote of entering and leaving the “pond”. The landscape around the “pond” consisted of tall prairie grasses and oak savanna. Patrick Marsh was a favorite spot of the Ho-Chunk people, who canoed, camped, trapped and hunted on it’s shores. Bill Wambach learned from Bill Quackenbush, Area IV Lands Specialist for the Ho-Chunk Nation, that the Ho-Chunk refers to this area as *Ega Hocak Hominak Ni*.

In 1841, William W. Patrick settled on the west shore of the pond, which he named “Patrick Lake”. William Patrick served as the first Chairman of the Bristol Town Board in 1846. In 1845, David Brazee settled on the east shore of the marsh. Mr. Brazee wished the marsh to be called by his name, “Brazee Lake”. The marsh has been variously known through the years as Patrick Lake, Brazee Lake, Brazee Swamp, Duscheck’s Marsh, and the Old Lake.

The name the “Old Lake” is thought to have been used because of the fact that the lake disappeared from time to time; drying up to become a marsh. Within the period since the arrival of the first settler, the water has receded, or disappeared five times. It is ironic that wildly fluctuating water of Patrick Marsh led to its demise in 1965 when landowners began draining the marsh. Their action was challenged in Circuit Court, but the landowners prevailed.

For nearly three decades, the marsh ceased to exist, as tiling kept the soil dry. But the expansion of USH 151 from Sun Prairie to Columbus in the early 1990s set the stage for the cooperative restoration of the marsh as part of a wetland mitigation agreement between the DOT and DNR. DOT purchased the drained farmland and adjacent uplands to mitigate the loss of 26 acres of wetlands the DOT destroyed during the widening USH 151.

Because DOT restored more wetland acres at Patrick Marsh than were lost during the widening of the highway, the balance of those wetland acres were “banked” as credits to mitigate other wetland losses due to highway projects only in District 1 or south-central Wisconsin. This “wetland bank” at the Patrick Marsh project was the first of its kind in the state. In 1991, 225 acres including the basin and surrounding lands south of USH 151 were acquired.

The original DOT goal for the project was to disable the drainage system, restore wetland hydrology, and design for passive management. Two objectives were: 1) to ensure the restoration would not cause downstream flooding and 2) produce a mixture of wetland types similar to the 1937 conditions. The restoration project began in the winter of 1991, when DOT disabled the drainage tile and pumping system that had been keeping the marsh dry. With the disabling of the drainage system, the marsh began to fill with water. By April 1992, about 100 acres of water covered the marsh with an average depth of about 18 inches and maximum depth of about three feet. More than 5000 ducks and 200 tundra swans were observed at that time, and 28 species of aquatic plants were found just after it began to fill with water. Virtually all the waterfowl species that migrate through Wisconsin can be found at the marsh in the spring and fall, and the exposed mudflats provide ample opportunity to see many migrant shorebird species as well. In 1992 DOT transferred the property to DNR in fulfillment of their wetland mitigation requirements. Without the banking concept, the willingness of DOT to purchase the land, and most importantly the cooperation of landowners that were willing to sell, Patrick Marsh would not have been restored.

With abundant rainfall in the spring of 1993, the marsh filled to its full pool level of about 160 acres, with an average depth of almost five feet and a maximum depth of nearly eight feet. In the Fall of 1993 an outlet structure was installed on the marsh’s northeastern corner, which controls the maximum water level and directs overflow water to the Maunasha River watershed.

Since 1993 the character of the marsh has changed little. Water levels have remained high and aquatic plant diversity has actually decreased with the high water levels. Very little emergent vegetation appears along the shoreline. In 1994 the wetland was dedicated as Patrick Marsh named for the early settlers in the area.

VII. RESOURCE INVENTORY AND ANALYSES

HYDROLOGY

According to historical accounts, Patrick Marsh ranges from dry land to a deep water marsh of approximately 8-10 feet depth. Major water level fluctuations have occurred 5 times from 1834 to 1966 in unison with natural cycles of about 23 years.

Patrick Marsh is mainly controlled by surface water inflow. Years of little precipitation correlate with corresponding years when Patrick Marsh was dry or at low level. During years of high precipitation, groundwater has discharged at the surface. Historic accounts of Patrick Marsh indicate that springs were used on early homesteads for drinking water, bathing, and for a cooling mechanism in a spring house. It has been observed that after dry periods, precipitation and springs in the basin were responsible for rapidly rising water levels.

It is believed these springs are local discharge points of groundwater which occur during years of high precipitation when the water tables would be higher than normal. During periods of lower precipitation, surface water and groundwater is expected to percolate downward, recharging the regional groundwater supplies.

Prior to tiling and pumping the marsh in 1966, discharges due to high water levels were over the natural outlet located on the west side of the marsh. Overflow from this point would flow southwesterly through Kendall Marsh and into the Upper Koshkonong Creek. More recently, the watershed spillway culvert constructed on the northeast side is set below the natural outlet and sustains the marsh water elevation. The outflow pipe carries water northward under Stone Quarry Road and USH 151 discharging to a wetland north of the highway and into the Maunsha River.

It was believed during planning for the DOT mitigation project that using the natural outlet from the marsh might increase the risk of flooding downstream. Therefore, the outlet on the northeast corner of the marsh was set approximately 1foot lower than the natural outlet to redirect overflows north into the Maunsha River watershed. Although the northeast outlet elevation is designed for flood control, it may not be compatible with wetland restoration goals.

It also seems that the deep water marsh is becoming more nutrient enriched. Water clarity and appearance seemed good until mid-season 1995 when a blue-green algae bloom occurred. If these blooms continue to occur, studies as to the source of nutrient overload and possible solutions should be conducted.

Approximately 100 acres of the Sun Prairie business park, north of USH 151 collects runoff to a wet detention pond before releasing it under the highway through a culvert discharging to the north side of Patrick Marsh. There have been discussions in the past as to the feasibility of re-routing this stormwater to state-owned wetlands on the east instead of through Patrick Marsh. This alternative should be looked at closely as it would allow stormwater to be diverted away from Patrick Marsh and would also allow more time for water to be filtered by overland flow as well as sink into the ground.

The majority of the study area west of the marsh is in the Upper Koshkonong Creek watershed. Koshkonong Creek originates in the business park, where stormwater runoff is collected in a series of wet ponds and released under the highway through a culvert that flows south to become Koshkonong Creek. Streamflow is intermittent through this section of the site. The residential area west of Columbus Street also empties to Koshkonong Creek at the extreme southwest portion of the resource boundary site. (see Map 3)

WETLANDS

Dane County GIS data (based on 1988 Natural Resource Conservation Service Wetland Inventory) indicated one relatively small wetland area near the southwest border of the study area. (see Map 4) In March of 2000, the consulting firm Applied Ecological Services, conducted a routine wetland determination on approximately 170 acres of privately owned land south of Patrick Marsh Middle School.

The results of this investigation identified potential wetland areas over a large part of the hydric soils south and west of the marsh area.

HYDRIC SOILS

Hydric soils are typically darker in color on aerial photographs due to high organic content and generally occur in low-lying areas and drainage ways that may experience seasonal ponding or flooding.

There are two relatively large areas of hydric soils southwest and southeast of the marsh in the study area. Much of the hydric soils have been ditched or drain tiled to allow farming practices to occur; however, it is possible that some native remnant seed banks are still present in these soils based on species found on adjacent non-cultivated lands. Map 5 identifies wetland and hydric soil areas based on Dane County digital soil surveys. Hydric soil lines are based on the U.S. Department of Agriculture Digital Dane County Soil Survey; however, Dane County Land Conservation Department has suggested that the actual boundary should be determined by a soil scientist on a case by case basis.

VIEWSHEDS

Viewsheds into and through natural areas can provide a sense of openness and rural character to an increasingly urban County. Views of the Patrick Marsh Wildlife Area looking south from STH 151 define this sense of openness. Another desirable view that exists is found by looking east from Columbus Street and west off of Town Hall Drive. This view could be enhanced in the future with the addition of prairie restoration.

Viewsheds of the marsh from shoreline areas offer excellent waterfowl viewing opportunities. (see Map 6)

RECREATION

Several forms of passive recreation currently take place at the Patrick Marsh Wildlife Area, including walking, cross-country skiing, birdwatching and fishing. There also appears to be considerable use of the site as an off-leash pet exercise area.

The City of Sun Prairie Master Plan 2020 indicates a proposed bicycle/pedestrian path that extends north/south from Town Hall Drive through the western portion of the Patrick Marsh Wildlife Area, and then on to Patrick Marsh Middle School. The 2001-2005 Dane County Parks and Open Space plan identifies a proposed land based trail connection between Patrick Marsh and the Deansville Marsh. Map 7 illustrates regional linkages.

A more detailed Master Plan for the Patrick Marsh area that involves a public process should be completed before any additional recreational facilities (trails, kiosks, overlook platforms, interpretive signs, etc.) are developed. Universal access guidelines for recreation should also be considered before developing future trails and recreation facilities.

WILDLIFE

Perhaps the most recognizable attribute of the marsh is its value as a bird watching area. Several species of ducks, geese and swans have been observed using the marsh during spring migrations.

Redhead, mallard, and blue wing teal are a few of several waterfowl species found to be nesting in the marsh. In the late 1940's, Patrick Marsh was home to one of the largest colonies of yellow headed blackbirds in southern Wisconsin, according to research by Dr. Robert A. McCabe, Professor of Wildlife Ecology, University of Wisconsin, Madison, who studied nesting birds of the marsh from 1947-1951.

Success and diversity of shoreline nesting birds seems to be largely dependent on marsh water levels. In recent years, high water levels have decreased the amount of emergent vegetation (nesting areas) found around the shoreline of the marsh. There has been discussion by the DOT to lower the marsh outflow device at the northeast end of the marsh to attempt to lower water levels and increase amount and variety of shoreline plants.

Upland nesting cover is currently somewhat of a limiting factor for wildlife at Patrick Marsh. Many species of grassland birds, including mallards and teal, nest in uplands adjacent to wetland areas. The ideal ratio of uplands to wetlands for wetland dependent grassland nesting birds is thought to be 4 acres of uplands for every acre of wetland. That ratio currently does not exist at Patrick Marsh Wildlife Area. The diversity of grassland nesting wildlife using the property could be increased with more upland nesting cover, established primarily as prairie. In fact, some species of birds will only nest in larger tracts of grassland.

Alan Crossley notes in his article "Patrick Marsh Wildlife Area" that a fork-tailed flycatcher was seen at Patrick Marsh in the fall of 2000, only the third time in recorded history that this South American bird has ever been seen in Wisconsin. Local bird watchers, Kevin and Dawn Kearns, compiled a list of 107 bird species observed at the marsh over an 18 month time period.

In addition to birds, several species of small mammals (mice, voles, rabbits, shrews) inhabit grassland areas around the marsh. Deer are also seen feeding in agricultural fields adjacent to the marsh. Painted and snapping turtles were first sighted in 1995. The state threatened Blandings Turtle was reintroduced to the site by DNR biologists.

CULTURAL AND ARCHAEOLOGICAL

Patrick Marsh Wildlife Area today is a glimpse of what William Patrick may have seen in the Sun Prairie area when he settled along the shores of the marsh in 1841: a large wetland, surrounded on the uplands by oak savanna and the prairie landscape that gave Sun Prairie its name. The restoration of the marsh is not only the re-establishment of a natural feature, but also it is the rediscovery of a historic place that has been a large part of the social, political and economic history of the area.

It is important to remember that the marsh and the surrounding countryside were originally the home of the Ho-Chunk people. A major Ho-Chunk village was said to be located on the southwest shore of the marsh and that may have still been used by the Ho-Chunk during the early days of settlement.

Three Native American trails crossed the southern end of the marsh: one through Seminary Springs behind the Schuster farm on the southwest end of the marsh. The second branched off the main trail in Burke and ran directly across the provinces of Burke and Bristol to the Crawfish ford. The third ran from Lake Mills via Patrick Marsh to Lake Winnebago. Part of that trail still exists as the entry road to the marsh off Stone Quarry Road. A more detailed discussion of Native American history in the area can be found in Peter Klein's publication, "Sun Prairie's People, Part I, Shadows and Dreams."

There is a cluster of mounds located on the wooded hilltop south and west of the study area that are largely protected by existing residential development. If additional areas of Native American/cultural significance are documented within the project area boundary in the future, these areas could be amended to the Project Plan.

The Patrick family's homesite was near the site of the Ho-Chunk village that was reported to be on the southwestern side of the marsh. The Patrick's home was a social, cultural and political center of the early settlement period.

According the State Historical Society there are no structures listed in the National Registry of Historic Places located within the project area, nor are they aware of any structures that may be eligible for the Registry. There are three known archaeological sites where artifacts have been found.

TOPOGRAPHY

Patrick Marsh potentially began as a “kettle” formed by buried or partially buried ice left by the receding glacier. The northwest and west uplands are end moraines. The southwest and east upland features are drumlins. Southeast of the basin, the flat or rolling till surface is ground moraine. Additional, more detailed glacial information of the Patrick Marsh area can be obtained by contacting the Wisconsin Geological and Natural History Survey in Madison.

Topography of the study area has very few areas of significant relief or steep topography. There is a steep wooded hillside immediately north of Schuster Road on the Stern property. There is also a fairly significant hilltop area currently in private ownership immediately east of Patrick Marsh Middle School. Hilltops often afford spectacular views or overlook points and they often are the most visible areas of the landscape.

WOODLANDS

The majority of the study area is currently in agricultural or grassland open space. There are two small relatively open oak wooded areas within the Patrick Marsh Wildlife Area on the southeast and southwest shorelines of the marsh. Canopy trees consist primarily of various species of oak, black cherry, and hickory. Understory species include nannyberry viburnum, red and gray dogwood, prickly ash, cranberry viburnum, honeysuckle and buckthorn.

Outside of the DNR property, there is an approximate 9-acre mature oak woodlot of privately owned property on the south side of the marsh that includes two existing homesites.

One other small wooded area exists in the southwest corner of the study area on a steep slope north of Schuster Road and is a mix of larger maple and oak species. This woodlot is also currently under private ownership.

EDUCATION

Patrick Marsh Middle School (PMMS) offers an after school program called the Discovery Club. Kids take part in studying wildlife and water quality of the marsh in an outdoor classroom setting. (visit www.patrickmarsh.org for more information about the Discovery Club). Vegetative management and restoration efforts are also undertaken by students and Scout Troops within the Patrick March Wildlife Area.

Taken from the Discovery Club web page, “...Through its activities, the club hopes to expand community awareness of the Patrick Marsh as an educational resource, to increase the use of the marsh in PMMS curriculum, to provide useful management data to DNR staff and to expose middle school youth to the fun and rigors of field research”.

PRAIRIE/OAK OPENING

There have been some prairie restoration efforts completed within the Patrick Marsh Wildlife Area east and west of the marsh. There has also been some understory removal that has taken place in the wooded area southwest of the marsh.

According to one of the Applied Ecological Services Wetland Delineation reports, a portion of the hydric soil areas southwest of the marsh that have recently ceased cultivation have had “numerous high quality wetland species” emerge from the seedbank. The report goes on to suggest the presence of other potentially remnant native plant communities in the Patrick Marsh Wildlife Area, although “the site was not investigated closely”.

Oak savanna is sometimes defined as one tree per acre. Most of the oak wooded area around Patrick Marsh can be more generally classified as old pasture, open grown oaks, or oak openings.

HISTORIC AND SIGNIFICANT SITES

There are no documented Native American burial mound sites within the project area study boundary. It has been suggested that burial mound site(s) may exist in the wooded area at the south end of the marsh, south of Town Hall Drive on private lands; however the Wisconsin Historical Society does not confirm this. Also, artifacts found at the sites on the south/southwest shoreline of the marsh appear to confirm historical accounts of a Native American campsite or village in this location.

VIII. RESOURCE INVENTORY AND ANALYSIS OPPORTUNITIES AND LIMITATIONS

Opportunities and limitations associated with each resource are presented below.

Hydrology

Opportunities

- ✓ Increase waterfowl habitat and aquatic plant diversity by lowering water levels. Options include lowering the current outlet structure under Stone Quarry Road or diverting stormwater that currently runs south into the marsh from the Industrial Park.
- ✓ Public education regarding effects of stormwater on watersheds.
- ✓ Evaluation of returning the wetland and upland to natural conditions.

Limitations

- ✓ Primarily a surface water controlled feature.
- ✓ Nutrient enrichment and pollutants maybe occurring from the stormwater draining to the marsh.

Hydric Soils

Opportunities

- ✓ Hydric soils offer superior wetland or wet prairie restoration potential that would provide wildlife habitat and storm water treatment.
- ✓ The general layout of hydric soils in the study area provides long term potential for the creation of major prairie/wetland corridor system that would provide habitat and passive recreation opportunities. Long range planning may also include investigating a corridor connection to the Deansville Marsh that would follow hydric soil patterns.

Limitations

- ✓ Future trail development may not be suitable in some areas due to flooding and unstable soils; however boardwalks may be a suitable trail building method in these areas.

Wetlands

Opportunities

- ✓ Private landowners may be able to work under U.S. Army Corps. of Engineers and DNR wetland restoration guidelines to create a wetland mitigation bank site. Exact restoration sites would require further study by a person with appropriate technical expertise to determine the best locations.

Viewsheds

Opportunities

- ✓ Preservation of open space uplands east and west of the marsh will help to maintain natural character of the area.
- ✓ Preservation of east-west views between Columbus Street and Town Hall Drive could provide future wildlife viewing and scenic drive opportunities, if wetland/prairie restoration efforts are completed.
- ✓ Remnant homestead site on the West Shore of the marsh within the state owned lands boundary offers an excellent site for development of a marsh overlook area. (Waterfowl/upland bird nesting experts should be consulted to ensure a proposed overlook would not be intrusive to nesting areas).

Limitations

- ✓ Unmanaged invasive canopy species (boxelder and black locust) or unplanned plantings of street trees and landscape plants may obstruct future views of the marsh.
- ✓ Future residential development around the marsh **MAY** limit desirable viewsheds of the marsh if this planning consideration is not taken into account.

Recreation

Opportunities

- ✓ Acquiring public trail corridor linkages west of the existing DNR property to Patrick Marsh Middle School and south to the Carriage Hill neighborhood would provide excellent access to Patrick Marsh from adjacent neighborhoods.
- ✓ Work with Landscape Architecture intern student under the direction/supervision of the Dane County Parks/Commission to prepare a recreation Master Plan for the Patrick Marsh Natural Resource Site.

- ✓ Expanded public ownership east and west of the Patrick Marsh Wildlife Area could provide outstanding passive recreation (hiking, bird watching, cross-country skiing) opportunities within walking/biking distance of several neighborhoods.
- ✓ Patrick Marsh could provide a universally accessible wildlife viewing area for disabled people. Bird observation areas may include a variety of blinds and platforms with spotting scopes or video cameras. Partnering with groups such as the Audubon Society may help with planning and funding of these facilities.
- ✓ Boardwalk trails may be a low impact means of providing user access to portions of the marsh fringe areas, possibly along the south shore.

Limitations

- ✓ Future trail, recreation facilities must be planned carefully as to not disrupt habitat/nesting areas.
- ✓ Dogs should be leashed from April 15 to July 31 to protect nesting waterfowl.
- ✓ Current designated public access is limited to a small parking area on the north end of the marsh. Limited access to the site can cause negative impacts to the wildlife and vegetation of the marsh by creating high pedestrian traffic that may result in volunteer trails and user congestion near the parking lot.
- ✓ High water levels may restrict future trail connectivity around the entire marsh.
- ✓ Future trail development/access areas should be sensitive to proximity of existing private home sites near the marsh.

Wildlife

Opportunities

- ✓ Patrick Marsh has potential to become a regional bird watching destination.
- ✓ Patrick Marsh could become a University research site.
- ✓ Restoration of shallow marsh areas adjacent to the existing deep water marsh would create superior wildlife habitat and increase specie diversity of shore birds, song birds, mammals, reptiles, amphibians, and aquatic insects.
- ✓ Dr. Daniel K. Young, a professor of entomology from the University of Wisconsin, Madison; has suggested that undisturbed lands immediately north of Town Hall Drive at the south end of the marsh and the wooded area north of Schuster Road may contain important and diverse populations of insects and other invertebrate creatures.

- ✓ Establishment of additional upland nesting cover will increase the overall value of the marsh to grassland nesting wildlife. Future residential development on uplands adjacent to the marsh may include landscape requirements that provide for a buffer of native grasses and shrubs that would provide more continuity and habitat at the transition between developed and undeveloped.

Limitations

- ✓ Higher water levels may decrease nesting species diversity and habitat due to the loss of emergent and submerged wetland vegetation.
- ✓ Limited upland nesting cover limits the diversity and abundance of grassland wildlife that will use the marsh.
- ✓ Invasive, non-native plants, animals, and birds may have negative impacts on native restoration efforts if adequate buffers (300') are not maintained between developed lands and natural areas.
- ✓ Mosquitoes, deer, raccoons, etc. may cause negative issues if existing agricultural lands are converted to wetland habitat adjacent to residential homes.

Cultural and Archaeological

Opportunities

- ✓ Educational and interpretive signage regarding the archaeological history of the area.
- ✓ Interpretation of the historic Native American trail that is now the gravel access road.

Limitations

- ✓ Historic location of the Native American trail may not be compatible with prairie burning management.

Topography

Opportunities

- ✓ The area presents numerous vistas and scenic backdrops.
- ✓ Provides opportunity to interpret the glacial history.
- ✓ If developed, the area identified as low-density, residential on the City of Sun Prairie Master Plan 2020 off Columbus Street may be able to be built at an elevation that would allow the viewshed to remain open over rooftops.
- ✓ Offers wetland restoration opportunities in the lowland areas.

Limitations

- ✓ Development of trails and overlook structures on top of the ridgelines and hilltops would be highly visible and detract from the natural setting and scenic beauty.
- ✓ If future residential development off Schuster Road occurs per the City of Sun Prairie Master Plan 2020, setbacks and buffers should be implemented from the steep wooded hillside north of Schuster Road to minimize erosion and protect the viewshed.

Woodlands

Opportunities

- ✓ The woodlot on the south end of the marsh off Town Hall Drive and the wooded area north of Schuster Road would provide good visual buffers for the Patrick Marsh Wildlife Area from lands to the south that have been identified as future residential development in the City's Master Land Use Plan 2020.

Limitations

- ✓ Invasive species (buckhorn, honeysuckle, mulberry) can overtake native woody and herbaceous understory if not controlled.
- ✓ Relative openness and size of the wooded areas on the southeast and southwest side of the marsh may make it better suited for an oak opening restoration project.

Education

Opportunities

- ✓ Hands-on experience is an excellent way to learn ecological concepts and natural sciences.
- ✓ Educational and interpretive signage.
- ✓ Patrick Marsh has the potential to become a regional outdoor classroom destination for students outside the Sun Prairie area and/or a University research site.
- ✓ Future prairie/wetland restoration efforts southwest of the marsh could be used a demonstration area for how stormwater management is related to hydrology and wetland functions.

Limitations

- ✓ There are no public sidewalks or pedestrian paths from the school to the Patrick Marsh Wildlife Area.

Prairie/Oak Opening

Opportunities

- ✓ Remnant seed banks in hydric soil areas outside the DNR property as well as within the Patrick Marsh Wildlife Area offer superior potential for future restoration and management efforts.
- ✓ Future prairie/shallow marsh restoration efforts throughout lands adjacent the Patrick Marsh Wildlife Area could provide excellent wildlife habitat and stormwater control.
- ✓ Oak woods west of the marsh have oak opening restoration potential.
- ✓ Work with a consultant, volunteer, or student under the supervision of the Dane County Parks/Commission to prepare a vegetative management plan that would recommend restoration strategies.

Limitations

- ✓ Invasive woody species appear to be prolific in the Patrick Marsh Wildlife Area prairie restoration.
- ✓ Reed canary grass and purple loosestrife can potentially outcompete wet prairie/shallow marsh restoration efforts.

Historic and Significant Sites

Opportunities

- ✓ The Patrick and Brazee homestead remnant sites may provide interpretive site opportunities.
- ✓ With landowner permission, possible mound site(s) should be investigated in the woodlot on the south end of the marsh.

Limitations

- ✓ Any future trail developments around the south/southwest shoreline of the marsh should be done with minimal sub-soil excavation.

IX. EXISTING AND FUTURE LAND USE

The land surrounding the Patrick Marsh Wildlife Area is primarily used for agriculture (corn, soybean and hay). A small residential area exists along the marsh's southern border and a stone quarry is located to the northeast outside of the study area boundary. DNR owns most of the shoreline property surrounding the marsh on the west, north and east sides. Currently, 56 percent of the Patrick Marsh study area is comprised of agricultural land. Two percent is residential, two percent is in the Sacred Hearts Cemetery and four percent belongs to the middle school. The remaining 36 percent of the study area is considered natural areas (28 percent part of the state DNR property and 8 percent as private property).

Portions of the land along the drainage ways are mapped as Environmental Corridors and generally are not developable because they are too wet. Protection of these Environmental Corridors is desirable as they often provide water quality protection for rivers and streams. North of USH 151, the Sun Prairie business park (outside the study area boundary) drains to Patrick Marsh and the lowlands south of the middle school. Residential and business park development has been taking place on lands surrounding the study area that was formerly in agriculture use. Map 8 presents existing land use based on County LIO data.

The majority of the land within the project boundary area is within the Town of Bristol or the Town of Sun Prairie's jurisdiction. There are also western portions of the project area that lie within the City of Sun Prairie's city limits. The City's urban service area does extend east across some Town lands and they also have some extra territorial zoning jurisdiction over Town lands. Some of these lands ultimately will fall under the City's land use plans and may be the subject of potential annexations. These land use issues are not within the context of this natural resource project plan.

This plan is meant to serve as a guide for local land use planning authorities as to which lands may be worthy of preservation in open space. The Towns and City will then make their own land use planning decisions regarding which lands are preserved and which may be developed.

X. MANAGEMENT RECOMMENDATIONS

Management issues, such as water levels, stormwater, vegetation, and recreation are often complex and usually do not follow rigid jurisdictional boundary lines (or study area boundary lines!). This Project Plan is intended to provide general management considerations that may apply to future conservation lands purchased from willing sellers within the study area boundary. Recommendations found within the following sections are for discussion and further detailed studies along with intergovernmental memorandum of agreements may become necessary as lands are acquired.

Water Level Management

The marsh is currently at its maximum pool elevation, since it began filling up in 1992. Originally the DNR was interested in keeping the pumping system in place in the marsh to allow for periodic drawdowns during periods of high water. But in the end the decision was made to remove the pumping station and disable the tile so as to allow the marsh levels to fluctuate naturally. The historic accounts and photographs suggest that the marsh did fluctuate from a lake-like state to shallow marsh over the previous 150 years. The question at hand is whether the contributing watershed to the marsh has changed so as to preclude the historic fluctuations from occurring-fluctuations that are critical to making the marsh valuable wildlife habitat. The currently high water levels have persisted since 1993, dramatically changing the character and wildlife use observed in the first couple of years.

If desired, water levels could potentially be lowered several ways. The spillway culvert in the northeast corner of the marsh could be lowered thereby lowering the maximum pool height and creating shallow water areas along shore more conducive to emergent aquatic plants and wildlife use. Sizing of the outfall device could be graduated, establishing the normal water level for a shallow marsh. Peak stormwater events could be directed to the marsh causing intermittent short term flooding or pulsing that would be gradually released downstream. According to DOT, a project such as this would require additional analysis, justification and funding to replace the culvert and a section of Stone Quarry Road.

Another alternative as discussed earlier in the plan may be to investigate methods that would reroute all or some of the stormwater from the development north of USH 151 to the east instead of south into Patrick Marsh. Again, this would require further study and analysis.

Marsh levels have and will continue to fluctuate with varying climatic conditions over time. Rising marsh levels can turn what were once beloved water bodies into the subjects of controversy due to flooding issues. (Fish Lake, Tiedemann's Pond, Yahara Chain of Lakes). It is critical to maintain outflow devices in working condition at all times. Given cost considerations, the possibility the water level may naturally lower itself and an outflow device is currently in place to prevent flooding, it may be a better short-term alternative to focus efforts on acquisition/restoration of the hydric soil areas southwest of the marsh to create shallow marsh habitat.

If these hydric soil areas are lost to future development, the water levels do not naturally lower in times of drought, or landowners do not wish to sell property, human intervention to lower the marsh level may be the next alternative. Patrick Marsh was the first DOT wetland bank site in the state and the original goals of the project should be recognized and carried forward. A wetland ecologist should thoroughly study the effects of lowering the marsh water levels on adjacent hydric soil areas prior to implementing any measures that would manipulate water levels.

Stormwater Management

Stormwater management issues are usually not limited to jurisdictional boundary lines. Such is the case with the Patrick Marsh Natural Resource Site study area; stormwater runoff is contributed to the site from the City and Town of Sun Prairie, as well as the Town of Bristol. The study area includes two separate watersheds, the Maunsha River and Upper Koshkonong Creek.

Poor stormwater management practices can have the single largest negative environmental impact on a wetland/waterbody system. As areas around the marsh develop, the amount of impervious (pavement, rooftops) surface increases. This results in a higher volume of stormwater reaching the marsh at a much faster rate than normal. This rapid delivery of stormwater may result in decreased groundwater recharge, greater incidence of downstream flooding, increased nutrient and pesticide load from lawn maintenance, and direct introduction of other pollutants into the marsh.

Again, as noted under previous sections, the City, DOT and DNR should investigate the possibility of redirecting stormwater from the industrial park east to the state owned wetlands. The additional overland flow would provide beneficial water quality treatment and infiltration as well as help protect Patrick Marsh.

If lands southwest and southeast of the Patrick Marsh are restored to shallow marsh, wet prairie, it will be critical that all jurisdictions practice wise stormwater management practices to insure restoration success. The City of Sun Prairie Master Plan 2020 does indicate future low-density residential development for upland areas adjacent to these potential future restoration sites. If development occurs, open ditch grassed swales, vegetative buffer strips between lowland and upland areas, rain gardens and detention ponds should all be considered to protect the water quality and quantity entering the marsh. Open ditch grassed swales, vegetative buffer strips, and rain gardens that include native prairie species which have deep root systems help promote stormwater infiltration and groundwater recharge. Existing stormwater management practices from the developed areas west and north of the project area should be re-evaluated to determine if additional measures are needed to provide greater water quality protection for stormwater discharging into the marsh.

The City of Sun Prairie has experienced flooding of residential areas downstream of Patrick Marsh in the past. Prairie or wetland restoration efforts over hydric soils southwest of the marsh as previously discussed in this plan may help to alleviate some of these flooding issues.

Recreation Management

Several recreation management issues may arise if public land areas are expanded and use of the site increases.

Off-leash dog walking will be an issue to address as more residential land is developed adjacent to the marsh. The City and Town's should work closely with the DNR to determine acceptable leash restrictions that do not negatively impact wildlife use of the area. Removal of dog waste by dog owners will need to be addressed.

The DNR does not have staffing capabilities to manage passive recreation facilities (trails, overlooks, etc.) developed at Patrick Marsh or to oversee volunteer groups who may donate management services. Day to day operation and maintenance responsibility of future trails and recreation facilities MUST be planned carefully before any recreation facility development takes place.

Future maintenance issues will arise if trails are developed. For example, if cross country skiing is determined to be an allowable use, trail grooming may be necessary. Trail surfaces may require repair or regrading, along with routine trash pick-up.

Restrictions may be necessary regarding whether non-motorized watercraft (canoes, kayaks, sailboards) should be allowed to use the marsh if water levels persist to be high, especially during nesting season.

Hunting currently is not allowed within the Patrick Marsh Wildlife Area. Proximity to existing and potentially future homes as well as previous agreements with landowners excludes hunting as a future viable recreation use of the area. If long range acquisition/conservation efforts were to result in a corridor extending east to Deansville Marsh, portions of those lands may be appropriate for hunting.

Vegetation Management

Vegetative restoration projects are usually only as successful as future management efforts allow them to be. Future wet prairie/shallow marsh restoration efforts must be continually monitored for invasive species such as reed canary grass and purple loosestrife. Unfortunately, there are few management techniques that currently exist to easily eliminate these species. Perhaps the best defense is to invest the time and effort necessary at the start of a restoration project to ensure a strong diverse community can establish itself before invasive species take over.

Existing prairie areas in the Patrick Marsh Wildlife Area seem to have a large number of invasive woody plants (black locust, boxelder, cottonwood and gray dogwood) appearing. Every effort should be made to remove these species at an early stage before they grow to a size that becomes unmanageable for volunteer groups. Burning through all of the Patrick Marsh Wildlife Area would greatly help existing grassland and oak opening communities.

There appears to have been effort made recently to remove woody understory shrubs from the oak woods on the west shore of the marsh including a large amount of native understory. Dogwood and viburnum are outstanding food and cover sources for wildlife. Prickly ash may be desirable to keep because it is an important habitat plant for swallowtail butterflies. Allowing some of this shrub understory to remain in areas intended for oak opening management and removing all shrubs in areas deemed to be prairie or savannah may be a suitable alternative. As mentioned prior in the report, a vegetation management plan should be completed for the area.

If development does occur on uplands surrounding the marsh, perhaps incorporation of a variety of native street trees could enhance the connection to Patrick Marsh.

Dane County Parks Naturalist, Wayne Pauly has visited the site and can be contacted for further suggestions regarding vegetation management.

Management Summary

All of the prior discussed management issues will require tremendous amounts of time and money to address properly, and certainly intergovernmental and agency cooperation. Dane County does not anticipate being actively involved with operations and management issues within the Patrick Marsh Natural Resource Site project area. Instead, the DNR, City, Towns, conservation groups and schools would jointly work out management agreements. In all likelihood, the DNR would have very little involvement with operation and maintenance of the area, and would require (desire) another self-sufficient entity to take on a management leadership role if more intensive use facilities are developed. Perhaps a starting point may involve establishing stakeholder management committees for each issue presented. Formal agreements or understandings (MOA's or MOU's) between different managing entities may be necessary. Creation of friends groups and involvement of schools and other conservation groups will be critical to successfully managing the site.

XI. ACQUISITION RECOMMENDATIONS

Dane County does not anticipate purchasing the majority of lands acquired for conservation purposes within the project area boundary. Instead, it is recommended the Wisconsin Department of Natural Resources continue to work on expanding public ownership of the existing Patrick Marsh Wildlife Area. In some circumstances, the County would be willing to take the lead role in acquiring parcels if the landowners were reluctant to work with other government or non-profit entities.

Dane County will consider cost sharing with the WDNR on upland parcels adjacent to existing publicly owned lands around the marsh. These lands should be purchased in fee title if possible to allow future public access and trail development.

Remaining lands within the project area that are desired to be preserved would be acquired through acquisition efforts of the city, towns, school, and conservation groups. Acquiring some type of trail corridor that connects the Patrick Marsh Middle School with the Patrick Marsh Wildlife Area, as well as a corridor south to Town Hall Drive should be considered a priority by these groups. Dane County's role would be to provide technical assistance and coordination for grant applications made to the Dane County Conservation Fund program. State Stewardship dollars may also be available to assist groups in future acquisition.

Preservation of these lands may take the form of fee title acquisition or purchase of preservation easements or agricultural easements. These easements are deed restrictions that compensate landowners for keeping their private property in open space or agricultural use. Easements may or may not include public access, depending on seller preferences. It should be noted that it is not the intent of this project plan to discourage or terminate any existing farm operations within the project boundary. Dane County Parks would prefer to see agricultural land uses and would encourage farm operations to continue.

Buffer widths may vary from the recommended 300' width depending upon the situation and reviewed on a case by case basis by the appropriate planning authority. This buffer zone reduces the potential for exotic plant and animal invasives to be introduced from adjacent developed areas. Negative impact examples include household pets hunting birds in natural areas and aggressive landscape plants spreading into restoration areas. Encroachment by adjacent residential landowners is often an issue as well. Often times property owners will mow beyond lot line boundaries to expand back yard area and also use adjacent natural areas for outdoor storage. In some instances a 4' woven wire fence may be installed to establish boundaries.

Local land use decisions and site specific conditions may result in varying buffer widths. In some circumstances, Dane County Parks has negotiated buffer zones be included in lot landscape requirements. Buffer zone setback recommendations found in this plan are expected to be flexible and subject to negotiation.

All public acquisitions, whether fee simple or easements, follow established state laws and guidelines to assure compensation is at fair market value. Dane County and the DNR only purchase property from willing sellers.

Proposed Acquisition Areas

Priority One

These are lands that are intended to expand the existing DNR Wildlife Area based on the following criteria:

- 1) Upland slopes east and west of the marsh could provide expanded grassland nesting habitat areas.
- 2) Preservation to the top of the slope east and west of the marsh would preserve and enhance the viewshed of the marsh from US STH 151.
- 3) Preservation of lands south of the marsh are intended to provide future accommodation of some type of continuous trail system that would travel around the entire perimeter of the marsh. Corridor widths would be negotiated on a case by case basis, depending on landowner preferences and actual site conditions.

Priority Two

This land would provide a connection between the Patrick Marsh Middle School and the Patrick Marsh Wildlife Area. The wildlife area is utilized by the school as an outdoor classroom, and obtaining some type of off-road trail connection to the marsh would be beneficial.

Priority Three

The majority of these lands could provide outstanding wetland restoration opportunities because they are classified as hydric soils and also appear to periodically flood in times of heavy rainfall. Conversion of these lands from agricultural use to wet prairie/grassland could provide flood mitigation for the City of Sun Prairie and protection of water quality in the Koshkonong Creek watershed.

This area also includes a steep wooded hillside north of Schuster Road that would serve as a buffer to existing and proposed wetland areas at the foot of the hill. The mature trees may also provide a visual buffer to existing and proposed development south of the marsh. Steep slopes (12.5%>) are desirable for preservation as disturbing them may cause negative erosion and stormwater issues unless extensive stormwater management practices are implemented.

Priority Four

These lands are primarily in existing agricultural use and should remain so if landowners desire. If farming becomes a non-desired land use due to economic constraints, these lands could be converted to prairie. Hydric soils southeast of the marsh could provide future wetland restoration potential. Eventually, some type of corridor that would extend east to the Deansville Marsh through this area could be considered.

Map 9 illustrates proposed acquisition areas.

Acquisition Summary

Acquisition is often more a matter of opportunities than planning; and this plan should not be considered a rigid guideline. Acquisition of private homesites existing within the project study area boundary is not a recommendation of this plan; however if property owners were interested in selling their homes or a portion of their lot, it should be evaluated on a case by case basis. The project area boundary as well as proposed acquisition areas are meant to be flexible and determined on a case by case basis based on negotiations with willing landowners.

XII. RELATED PLANNING EFFORTS

Wisconsin Department of Natural Resources

Patrick Marsh is included in DNR's Wisconsin Land Legacy Report. The report is an inventory of 228 places critical in meeting Wisconsin's future conservation and recreation needs. According to the report, "Patrick Marsh is located in the rapidly urbanizing landscape surrounding Sun Prairie. It was the first wetland mitigation bank site in Wisconsin and has a half-century history of study and data collection. The area is utilized for birdwatching, walking and nature study. It is an outdoor classroom for students at Patrick Marsh Middle School. The site would benefit from expanded protection, in particular the wetland complex to the southwest of the marsh, which could serve as an excellent complement to Patrick Marsh. Additional uplands could be restored to prairie to enhance the grassland nesting cover around the marsh".

The DNR is also considering ways to bring the water level down in order to get better emergent and submergent aquatic vegetation.

Wisconsin Department of Transportation

The Wisconsin Department of Transportation basically considers their planning obligations completed for Patrick Marsh, however, there appears to be some minor interest in providing technical expertise assistance with regard to investigating alternative water level options. There is the possibility that the hydric soils in the study area could present a future wetland bank site that would complement the existing area.

City of Sun Prairie

The City of Sun Prairie 2001-2006 Parks and Open Space Plan states under Acquisition recommendations:

"Work with Dane County, Town of Bristol, Town of Sun Prairie, and the Department of Natural Resources to acquire land east and south of Patrick Marsh Middle School to protect the existing open space. This land can be used as a natural resource area and trail connector around the school and Patrick Marsh."

The Parks and Open Space Plan Goals and Objectives are also closely linked to the preservation of productive farm lands, environmental corridors, waterways, floodplains, wetlands, ground water recharge areas, steep slopes, wildlife habitat, scenic vistas and mature woodlands; all of which occur within the project study area boundary.

The City of Sun Prairie Master Land Use Plan 2020 (see Appendix 2) does indicate future low-density development in some parts of the project area. If these lands do indeed become developed, preservation of viewsheds, wise stormwater management practices, upland buffers to lowland areas and provision for public trail connectivity should be considered. Conservation subdivision development themes rather than standard “maximum lots allowed by density requirement” would be preferable on lands within and adjacent to the Patrick Marsh Natural Resource Site.

Also, the City does have a parkland dedication ordinance in place whereby they require a developer to dedicate a specified amount of acreage in open space as part of their agreement to allow lands to be developed. The ordinance also provides that the developer may make payment of “fees in lieu of land” instead of a land donation. These fees could potentially be applied as matching revenues for future acquisition projects made possible through grants.

Town of Sun Prairie

The Town of Sun Prairie is currently in the process of developing their Comprehensive Plan. The Town’s draft goals and objectives are very similar to the City’s pertaining to the preservation of prime farmland and cultural, natural, and historical resources.

The Town has been working very closely with the Patrick Marsh Stakeholder Planning Team to incorporate some of the recommendations found within this plan into the agricultural, natural and cultural resources element of their Comprehensive Plan. The Town is also working on trying to identify a land based trail corridor that would connect the City of Sun Prairie with McCarthy Park. This linkage could then be connected to Patrick Marsh based on proposed trails shown on the City’s Master Plan 2020.

Town of Bristol

The Town of Bristol has also been working very closely with Patrick Marsh Stakeholder Planning Team and has recently formed a Park and Recreation Committee.

The Town has been in contact with the Dane County Conservation Fund Manager and is considering applying for funds for an acquisition project to be determined in the Patrick Marsh Project Area in the fall of 2003.

The Town of Bristol is also very interested in trail connectivity of resource areas.

Long range planning may include investigating a greenway corridor system that could provide north/south connectivity to the Patrick /Deansville Marsh via the Maunsha River corridors, and future east/west connectivity to Token Creek Park via the Token Creek /Maunsha River corridors between Happy Valley and Vinburn Roads. Greenways can provide multiple benefits including recreational trail corridors, open channel stormwater management options, and greenspace buffers between developed lands.

XIII. STAKEHOLDER SUPPORT

There have been several organizations that have shown strong interest in land use and conservation issues within the Patrick Marsh study area. The Patrick Marsh Conservancy Group has been working closely with the Dane County Natural Heritage Land Trust to investigate possible acquisition projects for conservation purposes.

Applied Ecological Services had been working with Executive Management to investigate the possibility of a conservation subdivision that would include wetland restoration projects within the project area boundary.

Cooperation and negotiation between these organizations and local units of government will be key to achieving objectives set forth in this plan. Dane County Parks Foundation should be considered as a possible stakeholder partner as well.

XIV. SUMMARY

Perhaps the greatest benefit realized by future expansion and preservation of open space surrounding the Patrick Marsh Wildlife Area will be creation of a green space corridor that provides distinct boundaries between developed land uses and open space/agricultural land use. This corridor can also help communities maintain their sense of place by creating identifiable greenway boundaries between future developments.

It must be re-emphasized that recommendations found within this Project Plan are intended to serve as a guide and all identified boundaries should be considered flexible. Objectives set forth in this project plan can only be met through a cooperative effort between all stakeholders and government entities.

Patrick Marsh has the potential to become a significant passive recreation and wildlife resource adjacent to a continually growing area of the County. The challenge ahead of those working to preserve Patrick Marsh will be to look beyond parcel by parcel land use decisions and maintain a long term vision of the project objectives that can potentially be achieved.