

VILLAGE OF MCFARLAND **Sustainability & Natural Resources
Committee**

NOTICE OF PUBLIC MEETING

Monday, February 13, 2023

6:00 PM

McFarland Municipal Center
Community Room

AGENDA

You are invited to this meeting through a Zoom webinar. The public may attend in-person or remotely through the webinar or telephone options listed below.

PLEASE CLICK THE LINK BELOW TO JOIN THE ZOOM WEBINAR:

<https://us02web.zoom.us/j/85120458074>

Or by Telephone: +1 (312) 626-6799

Webinar ID: 851 2045 8074

Press *9 to raise/lower hand. Press *6 to mute/unmute.

1. CALL TO ORDER, ROLL CALL.

2. PUBLIC APPEARANCES.

- a. This is an opportunity for members of the public to address the Sustainability and Natural Resources Committee for items that are not on the agenda. Please remember this is a hybrid meeting conducted in person and through the Zoom online meeting platform. Meeting attendees wishing to address the Committee about items not on the agenda may do so at this time. Zoom attendees should type their name and address in the Question and Answer feature within the Zoom online meeting platform at this time. Members of the public who are present in person and wish to address the Committee should fill out a public comment form and turn into the meeting chairperson. When you are called upon to speak, state your name, address, and provide your comments to the Committee for their consideration. Please adhere to the 3-minute time limit. Additionally, you may send your public comments to sustainability@mcfarland.wi.us to be included as part of the meeting.

Members of the public may also speak during their selected agenda item as they designate on the public comment form or in the Question and Answer feature on Zoom.

3. APPROVAL OF MINUTES.

- a. Motion to approve the minutes of the January 9, 2023 Sustainability & Natural Resources meeting.

4. BUSINESS.

- a. Presentation by Chris James of Dane County Parks Division regarding Babcock Park improvements.
- b. Discussion and action to make a recommendation to the Village Board regarding design approval for McDaniel Park site improvements and authorize the project for bid.
- c. Discussion and possible action to recommend to the Village Board adoption of Ordinance 2023-02, an ordinance amending Sec. 20-25 regulations concerning noxious weeds and lawn height to allow participation in No Mow May activities.
- d. Presentation and discussion regarding the draft management plan for conservancy areas within the park system prepared by RES Great Lakes, LLC.

5. SCHEDULE NEXT MEETING DATE.

- a. Tuesday, February 28, 2023 at 5:30 p.m. Joint Meeting with Committee of the Whole
- b. Monday, March 13, 2023 at 6:00 p.m. Regular scheduled meeting

6. ADJOURNMENT.

Any person who has a qualifying disability as defined by the Americans with Disabilities Act that requires the meeting or materials at the meeting to be in an accessible location or format should contact the McFarland Municipal Center at (608)838-3153, 5915 Milwaukee Street, McFarland, Wisconsin, or village.clerk@mcfarland.wi.us by 2:00 p.m. at least 5 business days prior to the meeting so that any necessary arrangements can be made to accommodate each request. If the meeting or request is less than 5 business days from the meeting, requests for accommodations may still be made and reasonable efforts will be made to accommodate each request.

Minutes
Sustainability & Natural Resources
Committee Meeting
January 9, 2023

Members Present: Ed Wreh, Kitty Brussock, Angela Freedman (6:00PM, present at start of meeting but not recognized during roll call), Bruce Fischer, Judy Taber, Darrel Waldera, David Wilson, Carolyn Clow (ex officio)

Staff Present: Sayer Larson, Kong Thao, Phil McDade, Lee Igl, Andrew Bremer

1. CALL TO ORDER

Wreh called the meeting to order at 6:00 PM.

2. PUBLIC APPEARANCES.

Bruce Fischer, 5209 Falling Leaves Lane, took a moment to speak during this time. Fischer provided a statement in opposition to the removal of co-chairman Mike Flaherty. Brussock and Taber concurred to Fischer's statement.

3. APPROVAL OF MINUTES.

- a. Wreh motioned to approve the minutes of the November 14, 2022, Sustainability & Natural Resource Committee meeting. Seconded by Taber. Motion carried 7-0.

4. BUSINESS.

- a. Discussion and action to make a recommendation to the Village Board regarding the Lewis Park lake access plan

Larson introduced Lee Igl, the Village's new Public Works Director. Previously, Igl was the Streets and Utility Superintendent for the Village. Larson provided summary on the agenda item and reviewed the key improvements related to project. Larson summarized improvements proposed in Options 1 & 2, location, storage options, recommended options, and improvements to accessibility of the proposed project. The Committee discussion included boat storage options, trail improvements, cost differences between Options 1 & 2.

Wreh motioned to recommend approval to the Village Board of the Lewis Park lake access plan as presented by Parkitecture. Seconded by Wilson. Discussion included affirmation of the proposed project by several committee members, the expected timeline, and additional questions on operational costs. Motion carries 7-0.

- b. Discussion regarding the joint Village of McFarland and McFarland School District Community Hosted Solar Program for parcel 154/0710-354-8341-1, near 3451 Siggelkow Road.

Bremer provided an update on the agenda item, summarizing what renewable energy certificates (RECs) are and how the process will be to handle these in the future associated with this project. Bremer confirmed the Village closed on the property on January 6, 2023, and included a timeline of what to expect in the coming months with Committee recommendations. Comments and discussion by the committee included rate changes and offset energy needs. No action was taken on this item.

- c. Discussion and possible action on recommendation to the Village Board regarding submittal of two OEI Energy Innovation Grant Program Applications for a joint comprehensive energy plan with McFarland School District and Battery Storage Systems to be located at the Public Safety Center, 6001 Broadhead St, McFarland, WI.

Thao provided summary on the agenda item and including details for each application's amount requested, the purpose of the grants, and the impact of those grants if provided. Thao covered the resiliency on the potential of the battery storage systems. Bremer provided additional comments on the financial summary for both grant applications and their impact on project development. Discussion by the committee included the technology surrounding battery use, battery life, and battery replacement. Clow commented on the design and battery ready approach to the public safety center.

Wreh motioned to recommend approval to the Village Board regarding submittal of two OEI Energy Innovation Grant Program Applications for a joint comprehensive energy plan with McFarland School District and Battery Storage Systems to be located at the Public Safety Center, 6001 Broadhead St, McFarland, WI. Seconded by Fischer. Additional discussion from the committee affirmed the planning of the Public Safety Center and energy demand. Motion carries 7-0.

5. SCHEDULE NEXT MEETING DATE.

- a. Monday, February 13, 2023, at 6:00 PM

6. ADJOURNMENT.

Fischer motioned to adjourn; Seconded by Wreh. Motion carried unanimously. Meeting adjourned at 6:40 PM.

McFarland
SUMMARY SHEET

MEETING DATE: Monday, February 13, 2023

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Sayer Larson, Parks Superintendent

AGENDA ITEM: Presentation by Chris James of Dane County Parks Division regarding Babcock Park improvements.

PREVIOUS ACTION:

None.

ISSUE SUMMARY:

Chris James of the Dane County Parks Division will present the proposed concept plan for Babcock Park improvements and provide an overview of the future project. Enclosed is the concept plan as well as the neighbor notification letter. It is proposed to finalize the concept plan and prepare construction drawings by summer of 2023.

FINANCIAL/BUDGET IMPACT:

None.

VILLAGE PLAN REFERENCE:

None.

ORDINANCE REFERENCE:

None.

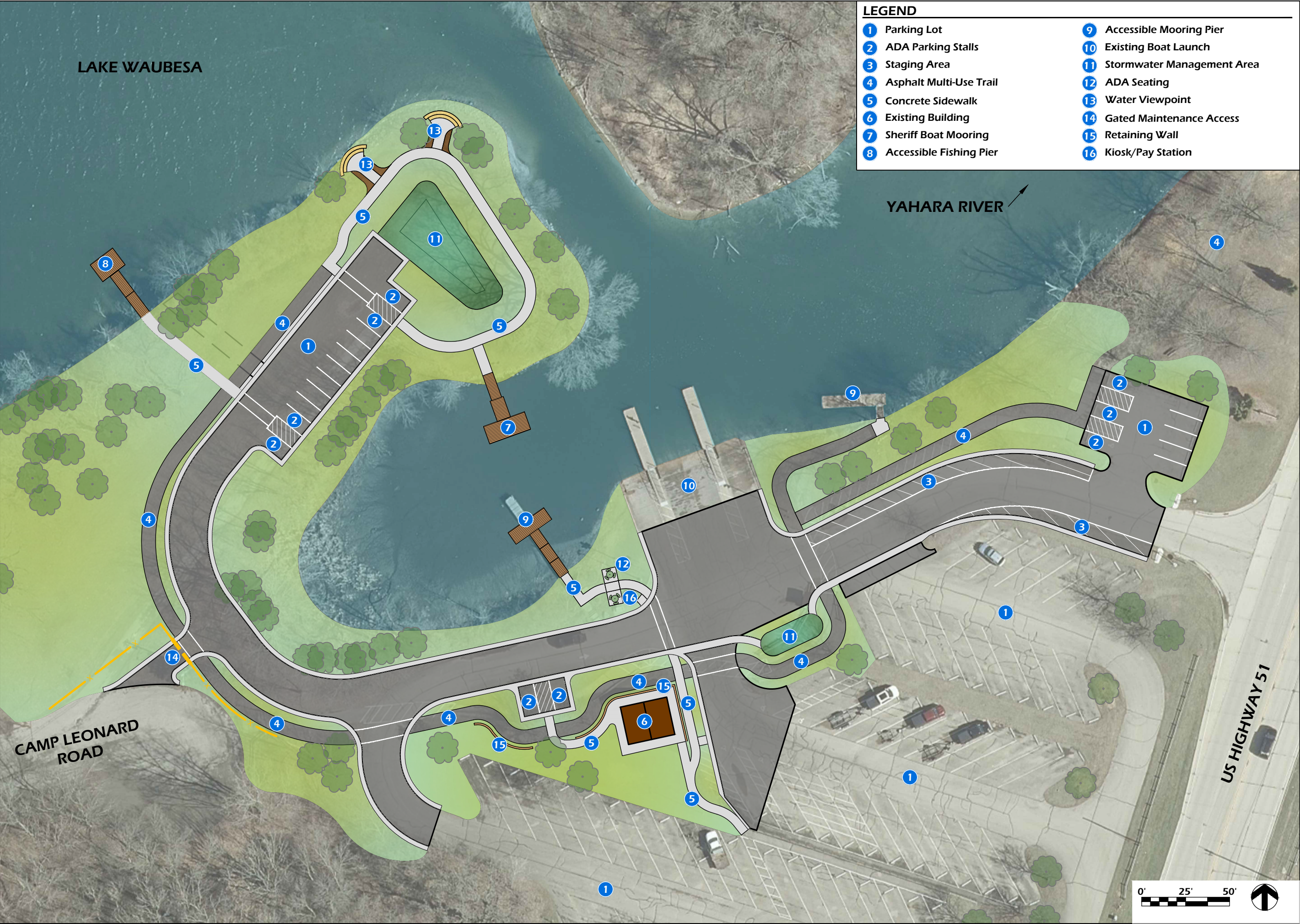
BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

No action is required on this item.

ATTACHMENTS:

1. Babcock Park Concept
2. NeighborNotificationletter

File: P:\22.018 Dene CO Babcock Park\CAD\P-CONCEPT.dwg Layout: CONCEPT PLAN User: katie Plotted: Jan 09, 2023 -- 11:59am



LEGEND	
1	Parking Lot
2	ADA Parking Stalls
3	Staging Area
4	Asphalt Multi-Use Trail
5	Concrete Sidewalk
6	Existing Building
7	Sheriff Boat Mooring
8	Accessible Fishing Pier
9	Accessible Mooring Pier
10	Existing Boat Launch
11	Stormwater Management Area
12	ADA Seating
13	Water Viewpoint
14	Gated Maintenance Access
15	Retaining Wall
16	Kiosk/Pay Station

PARKITECTURE
+ PLANNING
901 Deming Way, Suite 102
Madison, WI 53717
608.886.6808

STRAND
ASSOCIATES

Project Name:
LAKE ACCESSIBILITY & STORMWATER IMPROVEMENTS
BABCOCK PARK
2909 US HIGHWAY 51, MCFARLAND, WI 53558

Sheet Title:
CONCEPT PLAN #1

Revisions:

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Project #: 22.018
Issued For: Concept
Date: 1/9/2023

Sheet Number
EXHIBIT 1



Parks Division

Dane County Land & Water Resources Department

January 10th, 2023

TO: Neighbors of Babcock County Park

FROM: Chris James, Senior Landscape Architect

SUBJECT: Babcock Park New Property and Park Improvement Updates

Dane County Parks sent Babcock County Park neighbors a letter in November of 2019 to let them know of their recent property acquisition at the end of Camp Leonard Road and potential future plans to improve public access to the property. Since that time, we have continued to work with the Madison Fishing Expo, Access Ability Wisconsin and the Foundation for Dane County Parks on ideas to provide greater accessibility for persons with disabilities within the existing boat landing area and the newly acquired property. We have also been working with Dane County Water Resource Engineering staff on design concepts to better treat storm water runoff and the Dane County Sheriff Marine and Recreation Patrol on ideas to help them be able to respond quicker to water related emergency calls.

The proposed access improvements do not include any changes to vehicle traffic or parking on Camp Leonard Road. All vehicle and pathway access will originate from Babcock County Park. The proposed gate at the cul-de-sac on Camp Leonard Road is intended for limited operation and maintenance needs only. We are considering allowing winter walk on ice fishing access from the newly acquired property.

In May of 2022 we hired Strand Engineering to assist with furthering our concept ideas into more detailed plans and cost estimates. The enclosed updated concept site development plan will be presented as an informational item at the Town of Dunn board meeting on Tuesday, January 17th at 7:00pm. Visit the Town website or contact them by phone for additional meeting details.

We hope to finalize our concept plan and prepare construction drawings by summer of 2023. Construction of the proposed improvements will be contingent on securing necessary funds through the County Board budget process. We will continue to keep you informed of any future project timeline updates.

Please feel free to contact me by phone or email if you have any questions or need additional information.

Chris James, Senior Landscape Architect
Dane County Parks Division
james@countyofdane.com ; Cell 608-235-2252

Cc: Steve Greb; Chair, Town of Dunn
Ben Kollenbroich; Planning and Land Conservation Director, Town of Dunn
Carolyn Clow; President, Village of McFarland
Lee Igl; Director, Village of McFarland Public Works
Matt Schuenke; Village Administrator, Village of McFarland
Joleen Stinson; Director, Dane County Parks Division

**VILLAGE OF
McFarland
SUMMARY SHEET**

MEETING DATE: Monday, February 13, 2023

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Sayer Larson, Parks Superintendent, Matt Schuenke, Village Administrator

AGENDA ITEM: Discussion and action to make a recommendation to the Village Board regarding design approval for McDaniel Park site improvements and authorize the project for bid.

PREVIOUS ACTION:

The former Parks, Recreation, and Natural Resources Committee reviewed a presentation on this project at its meeting on February 24, 2022.

[Please click on this link to review the packet materials from that meeting.](#)

[Please click on this link to watch the presentation from that meeting.](#)

The Parks & Recreation committee recommended approval to the Village Board for the McDaniel Park site improvements at their October 4, 2022 meeting.

The Sustainability & Natural Resources committee recommended approval to the Village Board for the McDaniel Park site improvements at their October 10, 2022 meeting.

The Village Board recommended approval for the McDaniel Park site improvements at their October 25, 2022 meeting.

The Parks & Recreation committee recommended approval to the Village Board regarding Town and Country's proposal for design and bidding services for McDaniel Park site improvements at their November 1, 2022 meeting.

The Sustainability and Natural Resources Committee recommended approval to the Village Board regarding this proposal at their meeting on November 14, 2022.

The Village Board recommended approval at their meeting on November 22, 2022.

The Parks & Recreation committee recommended approval to the Village Board regarding Town and Country's design as presented and authorized the project for bid at their February 7, 2023 meeting.

ISSUE SUMMARY:

The project was discussed and the Committee approved a proposal from Town & Country Engineering at their meeting on November 14, 2022. The Village Board then approved the proposal for design and bidding services at their November 22nd meeting. Enclosed are the draft design plans created by Town & Country Engineering. Staff are seeking approval of the presented plans and authorization for bidding the project. The Parks & Recreation committee



approved the presented design plans at their February 7, 2023 meeting.

The 2023-2027 Capital Improvement Plan included funds to improve the beach at McDaniel Park in 2023. These funds are included within the 2023 budget. The project is in partnership with Dane County. The goal of the project is to be operational on or around June 1, 2023.

Responsibilities for the project are generally laid out as follows:

Dane County

- Permitting - 3-6 month process, targeting a January application.
- Pump/Filer - They will design and build the pump/filter mechanicals to be used to screen the water within the barrier.
- Barrier - Dane County will purchase and set in the first year, the booms with a curtain that acts as a shield within the water to keep debris and other harmful things out of the swimming area. Future years we will need to contract with them for the annual placement and removal of the barrier.
- Agreement - We will need to establish an agreement on operation of the filter/pump and maintenance of the swimming area including the beach. There are responsibilities like daily maintenance of the beach, mechanicals, and other elements to keep the swimming area usable. The County will provide funds and support for these elements, but we have to agree to the operational commitments to make sure the improvement can be accessed by the public. The operational component and its costs would be new responsibilities that have to be factored into our consideration.

Village

- Structure - The filter/pump has to go inside of a structure. The Engineer is reviewing a prefabricated model for installation. We will also need to create an area for discharge from the structure that carries the water back to the lake.
- Underground Piping - We would need to install pipes that connect the lake to the filter pump to bring water in for screening, and then pipes that bring the clean water back to the lake.
- Beach Improvement - There will be general excavation requirements associated with all of this work including the replacement of the gravel material used on the beach in favor of sand.
- Agreement - We will need to consider the agreement with Dane County for the project. All of the above responsibilities are capital expenditures that are one time actions. There are operational components and the costs for which will be recurring year to year that have to be factored in to our review of the project.

FINANCIAL/BUDGET IMPACT:

The proposal provided by Town & Country engineering for design and bidding services is estimated at \$16,900. This includes design engineering through bidding for \$9,400 and



construction administration for \$7,200.

The cost projections for the project are included in the CIP at \$250,000 for the Village. Dane County's included costs are between \$75,000-\$100,000 for their responsible items. The project for the village will be paid for with borrowed money.

VILLAGE PLAN REFERENCE:

None.

ORDINANCE REFERENCE:

None.

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

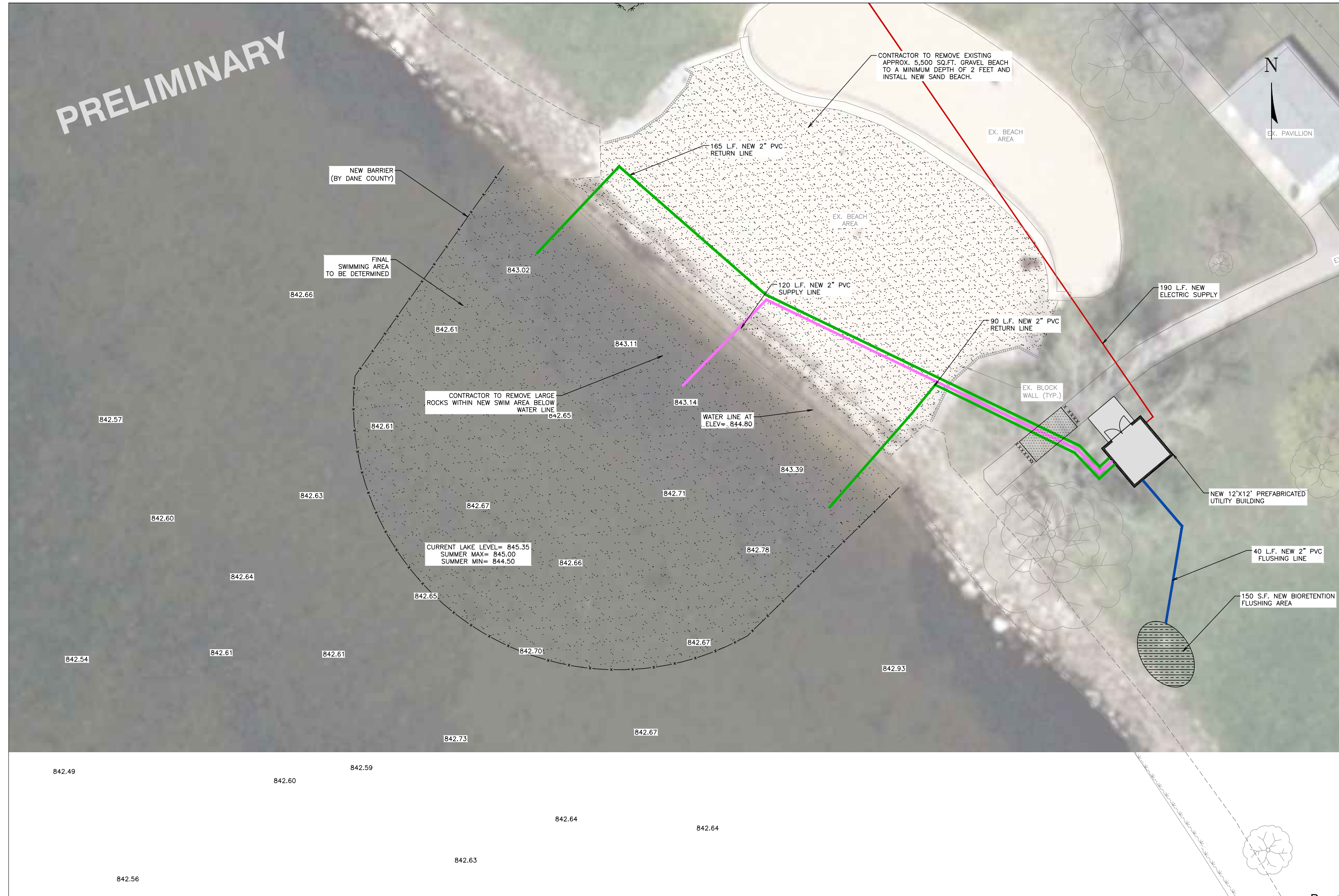
Recommended action:

Motion, second to recommend approval to the Village Board regarding Town and Country's design as presented and authorize the project for bid.

ATTACHMENTS:

1. MCDANIEL PARK BEACH-PLAN

PRELIMINARY



TOWN & COUNTRY ENGINEERING, INC. 5225 Verona Rd. Bldg. 3, P.O. Box 44451 Madison, WI 53744-4451 (608) 273-3350 (Fax) 273-3391	MCDANIEL PARK BEACH FILTRATION SYSTEM	MCDANIEL PARK IMPROVEMENTS Village of McFarland, Wisconsin	PROJECT NO.: MCDANIEL PARK BEACH FILTRATION 2.DWG DRAWN BY: T.J.S. CHECKED BY: B.R.B. DATE: 1-31-23 REVISIONS: SCALE: 0 5 10 SHEET: 1
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**VILLAGE OF
McFarland
SUMMARY SHEET**

MEETING DATE: Monday, February 13, 2023

SECTION: Business

DEPARTMENT: Community Development

CONTACT: Kong Thao, Associate Planner

AGENDA ITEM: Discussion and possible action to recommend to the Village Board adoption of Ordinance 2023-02, an ordinance amending Sec. 20-25 regulations concerning noxious weeds and lawn height to allow participation in No Mow May activities.

PREVIOUS ACTION:

November 10, 2022 - Village Board approved \$500 budget for operating expenses for No Mow May/Low Mow May

November 14, 2022 - Discussion by the S&NR committee favored No Mow May Ordinance.

ISSUE SUMMARY:

Discussion from the previous meeting in November 2022 helped guide the ordinance targets. In summary, the ordinance of No Mow May will temporarily suspend activities of mowing only in the month of May. Following May 31, the existing Village Code allows for five-day period, the Village will resume enforcement of the section standards. The ordinance ensures participation does not overlook the priority for safety such as the triangle vision clearance ordinance in Sec. 62-169, public right-of-ways, and Natural Landscaping under Sec. 59-59. See below for the definition for vision clearance. The packet includes Exhibit A, a redline copy of the ordinance where No Mo May will be included.

The budget for this program is \$500, therefore there will be a limited number of signs available.

Signs are available only to those who have registered on the Village's No Mow May website and a first-come first-serve basis. Signs are to be placed upright on the property's front lawn facing the right-of-way or road. The Village will not be mailing and/or placing signs on lawns.

Sec. 62-169. - Vision clearance

On a corner lot, no structure, screening or embankment of any kind shall be erected, placed, maintained or grown between the heights of three feet and ten feet above the curb level or its equivalent within the triangular space formed by two intersecting street lines or their projections and the line joining points on such street lines located a minimum of 25 feet from the street intersection in order to provide adequate vehicular vision clearance.

Additional tasks to be completed:

- Finalize sign design and confirm vendor for order. (See Exhibit B for sign designs)
- Develop No Mow May registration page



- Promotion of No Mow May participation on Village website, Outlook and Lookout article publications.

FINANCIAL/BUDGET IMPACT:

The Village Board approved an operating budget of \$500 for yard signs in November 2022.

Staff estimates yard signs will cost approximately \$7-8 per sign with metal stakes, varying depending on the vendor. One sign per property will be available for pickup at the Community & Economic Development Office at no cost to participants who registered on the Village's No Mow May page.

VILLAGE PLAN REFERENCE:

Sustainability Plan, 2021 - Identified in the Land Use & Development category for Near-Term Actions as stated, *Amend Village ordinances to allow for a no-mow May.*

ORDINANCE REFERENCE:

Sec. 20-25. - Regulations concerning noxious weeds and lawn height

Sec. 62-169. - Vision clearance

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Motion to recommend approval to the Village Board on Ordinance 2023-02, an ordinance amending Sec. 20-25. Regulations concerning noxious weeds and lawn height to allow participation in No Mow May activities.

ATTACHMENTS:

1. 2023-02 Ordinance to Amend Sec. 20-25 redline accepted
2. EXHIBIT A - Sec. 20_25. Regulations concerning noxious weeds and lawn height. (REDLINE, 2.1.2023)
3. EXHIBIT B - Sign Designs

ORDINANCE 2023-02

AN ORDINANCE AMENDING SEC. 20-25. – REGULATIONS CONCERNING NOXIOUS WEEDS FOR THE PURPOSE OF NO-MOW MAY ACTIVITIES.

Purpose: To amend the Municipal Code to permit resident participation in No Mow May activity in the month of May of each calendar year.

Sponsor: Andrew Bremer, Community & Economic Development Director; Karen Knoll, Community & Economic Development Clerk and Property Maintenance Officer, Kong Thao, Associate Planner.

Recommended Referral: Sustainability & Natural Resources Committee

Public Hearing: Not Required

WHEREAS, the Village of McFarland recognizes the need to support pollinator-friendly habitats for pollinators such as bees, butterflies and moths, birds and bats and other insects species as an essential part of our ecosystems; and,

WHEREAS, in 2020, the City of Appleton became the first city in the U.S. to adopt "No-Mow May," an initiative aimed at boosting the population of bees and other pollinators; and,

WHEREAS, No-Mow May is a conservation initiative intended to reduce the frequency of mowing activity in the month of May to promote growth of natural habitat and resources for bees and other pollinators; and,

WHEREAS, the Village Code of Ordinance Sec. 20-25(b) identifies a homeowner's duty to destroy noxious weeds and maintain lawns under eight inches in height; and,

WHEREAS, other cities in Wisconsin have since followed Appleton to adopt similar No-Mow May programs including: Shorewood Hills, Monona, Middleton, Sun Prairie, Wausau, Oshkosh, Fort Atkinson, Stevens Point, De Pere, Wisconsin Rapids, La Crosse; and,

WHEREAS, No-Mow May is consistent with the efforts of the whole systems approach for the three "E's" identified in the Village's Sustainability Plan which includes Environment, social Equity, and Economy; and,

WHEREAS, adopting a No-Mow May ordinance is listed as a near-term action under the Land Use & Development Actions from the Village's Sustainability Plan accepted by the Village Board on July 26, 2021; and,

NOW, THEREFORE, the Village Board of the Village of McFarland, does ordain as follows:

Section 20-25(g) of the Municipal Code is created to read as follows:

(g) No Mow May Exemption. The requirements under section 20-25(b) shall not apply during the month of May. Nothing in this section 20-25(g) shall be construed as an exemption or defense to any other provision of the Municipal Code, including, but not limited to, the requirements under section 59-59 regarding natural landscaping and the requirements under section 62-169 to maintain clearance in a vision triangle. The Village Parks Superintendent will determine which Village-owned lands will not be subject to section 20-25(b) during the month of May.

The above and foregoing Ordinance was duly adopted at a regular meeting of the McFarland Village Board on the ____ day of _____, 2023.

APPROVED:

Carolyn Clow, Village President

ATTEST:

Cassandra Suettinger, Deputy
Administrator/Clerk

ORDINANCE 2023 – 02	
MOTION	SECOND
ACTION	DATE
Adopted	
Referred	
Tabled	
Withdrawn	
Defeated	
Published	
INDIVIDUAL VOTING RECORD	
Brandt –	Jerke -
Brassington –	Nelson –
Clow –	Wreh –
Flaherty -	
VOTING RESULTS	
Motion Carried	
Motion Defeated:	

EXHIBIT A

Sec. 20-25. Regulations concerning noxious weeds and lawn height.

(a) *Definition of Noxious Weeds.* Noxious weeds, as used in this Section, includes the following:

1. *Alliaria petiolata* (Garlic Mustard).
2. *Ambrosia artemisiifolia* (Common Ragweed).
3. *Ambrosia trifida* (Giant Ragweed).
4. *Arctium minus* (Burdock).
5. *Cannabis sativa* (Hemp).
6. *Cirsium arvense* (Canada Thistle).
7. *Cirsium vulgare* (Bull Thistle).
8. *Convolvulus arvensis* (Creeping Jenny) (Field Bindweed).
9. *Cornilla varia* (Crown Vetch).
10. *Dipsacus laciniatus* (Cut-leaved Teasel).
11. *Dipsacus sylvestris* (Common Teasel).
12. *Euphorbia esula* (Leafy Spurge).
13. *Lythrum salicaria* (Purple Loosestrife).
14. *Pastinaca sativa* (Wild Parsnip).
15. *Plantago lanceolata* (English Plantain).
16. *Polygonum cuspidatum* (Japanese Knotweed).
17. *Rumex crispus* (Curled Dock).
18. *Toxicodendron diversilobum* (Poison Oak).
19. *Toxicodendron radicans* (Poison Ivy).
20. *Tragopogon dubius* (Goat's Beard).
21. *Xanthium strumarium* (Cocklebur).
22. The following grasses: *Agrostis alba* (Redtop), *Dactylis glomerata* (Orchard), *Phleum pratensis* (Timothy), *Phragmites australis* (Common reed grass), *Poa pratensis* (Kentucky Blue), *Sorghum halepense* (Johnson), and *Setaria* (Foxtail species).
23. Dandelions over eight inches in height.
24. Any yard grass or lawn over eight inches in height.
25. Any plant listed under Wis. Stats. §§ 23.235(1)(a) and 66.0407(1)(b) or prohibited under Wis. Admin. Code NR 40.

(b) *Duty to destroy noxious weeds and maintain lawn.* Except as otherwise provided, every person shall destroy or otherwise eliminate noxious weeds on lands that he or she owns or controls. All noxious weeds shall be destroyed or eliminated prior to the time in which such plants would mature to the bloom or flower state. Every person shall keep all yard grass and lawns on lands that he or she owns or controls under eight inches in height.

EXHIBIT A

- (c) *Abatement process.* The Village may provide written notice to any person failing to comply with this Section by sending notice to the property owner by first class mail or by electronic mail if the property owner provides an electronic mail address to the Village. In addition, the Village may post said notice at the subject property in a conspicuous location, such as the front door, and provide the notice personally to the owner or adult occupant of the property.

The notice shall state that the Village, after the expiration of a five-day period, will destroy or cause to be destroyed all such noxious weeds growing upon said lands, and/or will mow or cause to be mowed the grass or lawn upon said lands, and that the cost thereof, including chemical treatments, will be billed to the person and may be imposed as a special charge upon said lands if not paid. The notice shall also provide that the Village may repeat such action for future violations without additional notice. The notice shall also provide the Village's decision to issue the notice and take action to abate the nuisance is subject to administrative review pursuant to Article XI of this Code.

No additional notice is required for subsequent violations of this Section involving the same property if the same person has received a similar notice in the previous six months and failed to correct the violation.

After the five-day notice period has expired, or as soon as practicable if no notice is required, the Village or its designee may enter the lands and destroy the noxious weeds and/or mow the grass or lawn, the expense of which shall be billed and payable within 30 days of invoicing. Any unpaid charge may be imposed as a special charge against the property, as determined by the Village Board.

- (d) The Weed Commissioner shall enforce this Section.
- (e) Section 20-25(a)(24) does not apply to property located in a designated floodplain area and/or wetland area, or where the land is zoned A-1 Agriculture—Transition or RH-1 Rural Home Districts.
- (f) Any person violating paragraph 20-25 (b) of this Section shall forfeit not less than \$50.00 nor more than \$100.00 for a first offense, and not less than \$200.00 nor more than \$300.00 for a second or subsequent offense occurring within the same calendar year. Each day of violation constitutes a separate offense. Citations may be issued irrespective of any abatement action commenced by the Village under paragraph 20-25 (c) of this Section, or other lawful remedies pursued by the Village.
- (g) No Mow May Exemption. The requirements under section 20-25(b) shall not apply during the month of May. Nothing in this section 20-25(g) shall be construed as an exemption or defense to any other provision of the Municipal Code, including, but not limited to, the requirements under section 59-59 regarding natural landscaping and the requirements under section 62-169 to maintain clearance in a vision triangle. The Village Parks Superintendent will determine which Village-owned lands will not be subject to section 20-25(b) during the month of May.

(Ord. No. 2020-14 , § 2, 4-27-2020)

Editor's note(s)—Ord. No. 2020-14 , § 2, adopted April 27, 2020, amended § 20-25 in its entirety to read as herein set out. Former § 20-25 pertained to destruction of noxious weeds and derived from Code 1998, § 8-1-5; Ord. No. 98-10, § 1, adopted Oct. 12, 1998; Ord. No. 2003-05, §§ 26, 27, adopted March 24, 2003; and Ord. No. 2017-18 , § 1, adopted Aug. 14, 2017.

EXHIBIT B (2.13.2023)

Example 1



Example 2



Example 3



Example 4



**VILLAGE OF
McFarland
SUMMARY SHEET**

MEETING DATE: Monday, February 13, 2023

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Sayer Larson, Parks Superintendent

AGENDA ITEM: Presentation and discussion regarding the draft management plan for conservancy areas within the park system prepared by RES Great Lakes, LLC.

PREVIOUS ACTION:

The former Parks Recreation & Natural Resources Committee recommended approval to the Village Board for issuance of an RFP for a Management Plan for Conservancy Areas at their January 27, 2022 meeting.

The Village Board approved the issuance of an RFP at their February 14, 2022 meeting.

The Sustainability & Natural Resources Committee recommended the award of a contract to RES Great Lakes, LLC at their May 9, 2022 meeting.

The Village Board made the award of contract at their May 24, 2022 meeting.

ISSUE SUMMARY:

RES Great Lakes, LLC was selected to conduct management planning services related to conservancy areas within the Village in 2022. The project scope included items such as:

- Conduct an analysis of the project areas to identify key issues, opportunities, and possible improvements.
- Provide site inventories along with reviewing various property records and reports.
- Providing cost/labor estimates for each site.
- Conduct public input activities and compile that information.
- Compile a final report and present it to various committee(s) and the Village Board.

Matt Parsons, ecologist with RES Great Lakes, will present an overview of the draft conservancy management plan. The draft management plan attached to the agenda does not include appendices. The [full draft management plan](#) with appendices is available through the hyperlink.

Progress tracking:



Task Description	Target/Completion Date
Kick-off Meeting	Completed
Data Gathering	Completed
Summer 2022 Field Survey	Completed
Progress Meeting	Completed
Guided Field Tours	Completed
Progress Meeting	Completed
Draft CMP Submittal – Staff Review	Received
Draft CMP Presentation	February SNR Committee meeting
Stakeholder Engagement Meetings	March 2 & 9, 2023
Spring 2023 Field Survey	Mid-April
Final CMP Submittal – Staff Review	Mid-May
Final CMP Presentation	June SNR Committee Meeting
Village Board Approval	June 20, 2023

The Village will conduct stake holder meetings on March 2 and 9, 2023. Letters to adjacent property owners will be mailed two weeks prior to the correlating property meeting. Additional public notification will be placed on Village social media platforms. Conservancy properties will be divided between the two meetings. These meetings will provide opportunities for residents to learn, ask questions and give feedback about the draft management plan. The draft plan will be made available prior to the stake holder meetings. Images of properties will be posted an hour prior to the start of the meeting. The meeting will entail a presentation followed by ample time to address questions. Committee members are welcome to attend.

FINANCIAL/BUDGET IMPACT:

None.

VILLAGE PLAN REFERENCE:

For reference, the previous [Management Plan for Conservancy Parks](#)

ORDINANCE REFERENCE:

None.

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

No action on this item at this time.

ATTACHMENTS:



1. Draft Management Plan without Appendices



Village of McFarland

Draft Conservancy Management Plan

PRJ106368 | January 27, 2023



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Acronyms and Abbreviations

BDA	Beaver Dam Analog
CMP	Conservancy Management Plan
CE	Common Era
DCiMap	Dane County Interactive Map
DBH	Diameter at Breast Height
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FQA	Floristic Quality Assessment
GPS	Global Positioning System
HUC	Hydrologic Unit Code
IPM	Integrated Pest Management
MU	Management Unit
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OPC	Opinion of Probable Costs
PLS	Pure Live Seed
PP	Photo-documentation Point
RES	Resource Environmental Solutions, LLC
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
Village	Village of McFarland
WDNR	Wisconsin Department of Natural Resources
wFQI	Weighted Floristic Quality Index
WHAIFinder	Wisconsin Historic Aerial Imagery Finder
wMean C	Weighted Mean Coefficient of Conservatism
WNHI	Wisconsin Natural Heritage Inventory
WWI	Wisconsin Wetland Inventory



Executive Summary

Introduction

The Village of McFarland (Village), located southeast of the City of Madison in southeast Dane County, Wisconsin, owns and manages several parks and conservancies located throughout the municipality. These conservancies contain important cultural and natural resources and require ongoing ecological restoration and vegetation maintenance to maintain or improve their ecological health. Babcock Conservancy, Grand View Conservancy, Indian Mound Conservancy (including the School Forest parcel), Marsh Woods Conservancy, Siggelkow Road Park, Taylor Road Conservancy, Thrun Marsh Conservancy, Urso Park, Woodland Commons Conservancy, and Yahara River Conservancy are the subject of this Conservancy Management Plan (CMP). The CMP characterizes the historical and existing conditions of each conservancy, provides restoration and management prescriptions to improve their ecological condition with associated cost estimates, and recommends performance metrics to track management effectiveness.

Baseline Assessment

Resource Environmental Solutions, LLC (RES) conducted vegetation meander surveys in summer 2022 and spring 2023 throughout delineated Management Units (MUs) of each conservancy. RES determined plant species abundance and plant community quality for each MU. The total number of plant species identified ranged from 40 at Yahara River Conservancy to 164 at Indian Mound/Thrun Marsh Conservancies in summer 2022. The total number of plant species ranged from X species at X to X species at X in spring 2023.

Native absolute percent cover, which can exceed 100% when the canopy of different vegetation canopy layers overlap, was highest in the dry-mesic forest of Indian Mound Conservancy (215%) and was lowest in the emergent marsh portions of Grandview Conservancy (32%) in summer 2022. Native absolute percent cover was highest in the X of X (X%) and was lowest in the X of X (X%) in spring 2023. Non-native, invasive absolute cover was highest in the wetland portions of Babcock Conservancy and emergent marsh portions of Grand View Conservancy (77%) and lowest in the mesic forest portion of Babcock Conservancy (0%) in summer 2022. Invasive cover was highest in X of X (X%) and lowest in X of X (X%) in spring 2023.

In summer 2022, *w*Mean C (a measure of floristic quality) was lowest in the mesic forest in the southern portion of Grand View Conservancy (0.6) and highest in the mesic forest portion of Babcock Conservancy (4.6). In spring 2023, *w*Mean C was lowest in the X of X (X) and highest in the X of X (X).

RES located and mapped one sensitive plant species during the summer of 2022: obovate beak grain (*Diarrhena obovata*, State Endangered). Invasive species such as common buckthorn (*Rhamnus cathartica*), Tartarian honeysuckle (*Lonicera tatarica*), white mulberry (*Morus alba*), Canada thistle (*Cirsium arvense*), narrow-leaved cattail (*Typha angustifolia*), and reed canary grass (*Phalaris arundinacea*) are prevalent at Village conservancies.

Management Recommendations

The following is a summary of management recommendations discussed in more detail in the body of the CMP:

- Control large populations of woody and herbaceous invasive species via a combination of mechanical and chemical means. This includes forestry mowing large and dense populations of woody invasive shrubs, brushcutting smaller and scattered populations of woody invasive shrubs, broadcast spraying large populations of herbaceous invasive species and spot-spraying smaller populations, and introducing a prescribed fire regime for short- and long-term vegetation



management.

- Utilize trees that have been cut down or girdled as habitat enhancement features.
- Restore, enhance, expand, and connect a variety of habitats/cover types including oak woodland, southern dry-mesic forest, southern mesic forest, southern hardwood swamp, floodplain forest, shrub-carr, emergent marsh, southern sedge meadow, wet prairie, wet-mesic prairie, and dry-mesic prairie through native seed and plant installation.
- Consider hydrology restoration at appropriate locations.
- Repair the severe erosion at Indian Mound/Thrun Marsh Conservancies.
- Encourage sustainable stormwater solutions and native landscaping practices on neighboring lands.



Introduction

Project Background and Location

The Village of McFarland (Village) is located southeast of the City of Madison in southeast Dane County, Wisconsin (Appendix A; Figure 1). The Village owns and manages several parks and conservancies located throughout the municipality. Ten of the conservancies/parks are the subject of this Conservancy Management Plan (CMP): Babcock Conservancy, Grand View Conservancy, Indian Mound Conservancy (including the School Forest parcel), Marsh Woods Conservancy, Siggelkow Road Park, Taylor Road Conservancy, Thrun Marsh Conservancy, Urso Park, Woodland Commons Conservancy, and Yahara River Conservancy. Several of these natural areas, including Indian Mound Conservancy, Siggelkow Park, Taylor Road Conservancy, and Woodland Commons Conservancy, contain prehistoric Indian mounds and are of critical historical and cultural importance. The Village is situated adjacent to a portion of the Yahara Chain of Lakes so several of the conservancies contain significant tracts of wetlands and other sensitive habitats. Therefore, continued restoration and maintenance of its natural assets is a vital component of realizing the Village's vision and mission.

The CMP characterizes the historical and existing conditions of each conservancy, provides restoration and management prescriptions to improve their ecological condition with associated cost estimates, and recommends performance metrics to track management effectiveness.

Project Objectives

The following are the CMP objectives:

1. Protect and enhance current resources.
2. Provide historical context.
3. Characterize existing resources and evaluate their condition.
4. Address the long-term vision of the conservancies.
5. Identify environmental constraints, including those that originate from adjacent lands.
6. Collaborate with stakeholders, such as the Village and local residents, by garnering and incorporating their input.
7. Create a stepped management approach with timeline and opinion of probable costs and labor hours.
8. Develop measurable performance goals.



Study Methods

Resource Environmental Solutions, LLC (RES) conducted a baseline assessment of the conservancies to establish baseline ecological conditions in the context of historical land-use and to formulate a conceptual restoration plan that aims to improve these conditions. RES' methodological approach included existing data review, vegetation surveys, and vegetation mapping.

Existing Data Review

Existing data and reports reviewed prior to field work included the following:

- Glacial Geology of Dane County, Wisconsin (Mickelson & McCartney 1979)
- Urso Community Park Master Plan (Ken Saiki Design 2005)
- Management Plan for Conservancy Parks (JFNew 2007)
- Policy for Preservation and Maintenance of McFarland's Indian Mounds (Village of McFarland 2010)
- Ecological Assessment and Management Plan – Marsh Woods Park (Taylor Conservation, LLC 2010a)
- Indian Mounds Vegetation Assessment (Taylor Conservation, LLC 2010b)
- Indian Mounds Conservation Park McFarland, WI - Trail Project Design Layout and Construction Recommendations (Yocum 2012)
- The Ecological Landscapes of Wisconsin (WDNR 2015a)
- Outdoor Recreation and Open Space Plan 2019-2023 (Village of McFarland 2019)
- Vegetation Management Use Policy (Village of McFarland 2020)
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Dane County
- Wisconsin Natural Heritage Inventory (WNHI) Natural Communities of Wisconsin
- Wisconsin Wetland Inventory (WWI)
- Dane County 1-foot topographic maps
- Wisconsin Historic Aerial Imagery Finder (WHAIFinder) 1937 Historical Aerial Imagery
- Dane County Interactive ArcGIS Web Application (DCiMap) Historical Aerial Imagery.

RES used existing information to gain a precursory understanding of the various conservancies, create preliminary vegetation and management unit maps, and to identify data gaps where additional information is needed to inform this CMP.

Vegetation Surveys

RES Ecologists performed a thorough baseline assessment of all native and non-native vegetative cover types at each conservancy to determine relative population levels and prescribe recommended control/treatments where appropriate. Surveys were conducted in summer 2022 (July 12, 19, and 20, 2022) and spring 2023 (XX/XX/2023). As part of the baseline assessment, RES collected tree, sapling/shrub, herbaceous, and vine strata composition and percentages using weighted FQA methodology (Bernthal 2003). The tree layer was defined as the uppermost vegetative layer formed by mature tree crowns. Trees were defined as woody plants 3 inches or more in diameter at breast height (DBH). The shrub layer consisted of woody plants less than 3 inches in DBH. The herbaceous layer was defined as all non-woody plants and woody plants under 3.28 feet in height.



Each conservancy was divided into, and stratified by, preliminary management units (MU) which are areas of similar vegetation composition and structure. Preliminary MUs were delineated using air photo interpretation. The number and precise arrangement of MUs was refined based on field observations during the field assessments. RES performed meander species search surveys throughout the entirety of each MU and prepared comprehensive plant lists for each stratum (i.e., canopy, shrub, herbaceous, and vine) within each MU. Once the survey within a unit was complete, surveyors estimated the approximate absolute percent cover of each species in each stratum as well as the total absolute cover of each stratum.

These surveys documented species presence and abundance (i.e., absolute percent cover) and allowed for calculation of native, non-native, and invasive relative percent cover (i.e., proportion of total vegetative cover) for each MU. RES also determined plant community quality for each MU using Floristic Quality Assessment (FQA) which includes calculation of weighted Mean Coefficient of Conservatism (wMean C) and weighted Floristic Quality Index (wFQI). FQA data were derived using the Wisconsin Department of Natural Resources' (WDNR) FQA Calculator.

Vegetation Mapping

During vegetation surveys, RES delineated and characterized dominant plant communities in accordance with land use history and the WNHI system. RES mapped significant populations of invasive species, especially those characterized as "Restricted" in Wisconsin Administrative Code NR 40, as well as reed canary grass (*Phalaris arundinacea*). RES also mapped rare species encountered. Where practical, plant community boundaries, invasive species populations, and rare plants were surveyed using Global Positioning System (GPS) receivers capable of sub-meter accuracy. However, large and/or discontinuous populations of invasive species were mapped by hand using air photo interpretation techniques and verified using GPS.

Photo-documentation

RES established 54 permanent photo-documentation (PP) locations at representative locations throughout each conservancy. Photographs taken at these locations during this baseline assessment document pre-restoration baseline conditions and can be compared to repeat photographs taken from the same locations and orientations post-restoration. Photographs were also taken at other features of note including rare plants and notable invasive species. Photographs are presented in Appendix B.



Historical Conditions

Geology and Historical Ecology

McFarland is in the Dane-Jefferson Drumlins and Lakes Land Type Association which consists of an undulating complex of glacial till plains with drumlins, outwash plains, lake plains, and muck deposits (WDNR 2015a). Soils are predominantly well drained silt and loam over calcareous sandy loam till, loamy lacustrine, or gravelly sandy outwash. Conservancies located near Lake Waubesa and Mud Lake; such as Babcock Conservancy, Yahara River Conservancy, Marsh Woods Conservancy, Grand View Conservancy, Thrun Marsh Conservancy, and portions of Urso Park; occur on lacustrine plain geologic landforms (Mickelson & McCartney 1979). Whereas the inland conservancies such as Woodland Commons Conservancy, Taylor Road Conservancy, Siggelkow Road Park, Indian Mound Conservancy, and portions of Urso Park and Marsh Woods Conservancy; are located on drumlin and ground moraine geologic landforms.

The dominant historic vegetation communities in northern McFarland consisted of emergent marshes and sedge meadows in the lowlands and mesic forests dominated by sugar maple (*Acer saccharum*) and American basswood (*Tilia americana*) in the uplands (WDNR 2015a). Southern McFarland also contained emergent marshes and sedge meadows in the lowlands, but the dominant upland vegetation type shifted to oak woodland/oak forest dominated by bur oak (*Quercus macrocarpa*) and white oak (*Q. alba*). It does not appear that upland prairie was a dominant ecosystem type in the area immediately east of Lake Waubesa historically; however, oak opening/oak savanna did exist east of modern-day McFarland. There is also evidence that drumlins within the limits of the Village were historically composed of open-grown oak trees, indicating historic oak savannas and oak woodlands were likely common.

Historical Land Use

Conservancies such as Woodland Commons Conservancy, the western portion of Siggelkow Park, and Indian Mound Conservancy appear to have undergone little significant land alteration since the early 1930's relative to other conservancies (Figures 2a-c), with the exception of construction of the water tower at Indian Mound Conservancy. However, these areas are now surrounded by suburban development and the vegetative communities have shifted over time to closed canopy forest types with dense shrub invasion in the understories.

Taylor Road Conservancy is a drumlin currently composed of a red pine (*Pinus resinosa*) plantation, tree- and shrub-invaded surrogate grasslands, and a cut bank on the north end of the site. The west side of the conservancy was planted to red pine between 1968 and 1976. This area remained cleared as late as 1968 when construction of an apartment complex to the north had begun. The east slope was composed of sparse tree cover and possibly pastureland or savanna/prairie historically.

The southern portion of Grand View Conservancy historically consisted of a homestead, cropland or pastureland drained by a north-south oriented ditch, and potentially orchards. The northern portion of this conservancy was undeveloped historically likely due to the poorly drained soils in this area. With development of the surrounding neighborhoods came encroachment issues at this conservancy.

Review of DCiMap historical aerial imagery indicates the southern portion of Urso Park, which occurs on the slopes of ground moraine landforms, was historically composed of oak woodland and oak savanna. The western and northern sections were composed of agricultural fields and/or pasture. The fields in the north were drained by an east to west flowing agricultural ditch since at least 1937. The ditch is still present and functioning to drain the wetlands that have formed in this area since agricultural production ceased. A



farmstead was present in the northeast portion of the park that is currently a parking lot. Historical aerial imagery interpretation indicates orchards were planted in the western portion of the site between 1937 and 1955. The northern agricultural fields were taken out of production sometime between 1987 and 1995 and the structures associated with the farmstead in the northeast portion of the site were removed sometime between 2000 and 2005. The McFarland Dog Park was constructed in 2009 occupying the eastern boundary of Urso Park. The southern portion of the dog park was recently expanded. Additionally, a disc golf course was constructed throughout the woodlands in the southwestern portion of Urso Park in 2022.

Babcock, Yahara River, Thrun Marsh, and Marsh Woods Conservancies are comprised largely of existing wetlands which have been left mostly intact. The northeast portion of Marsh Woods Conservancy was historically in pasture and the southeastern oak woodland may have been grazed or logged in the past.

Cultural History

The Village of McFarland and surrounding areas have a rich cultural history. Several documents exist containing information on Indian mounds on the Village's properties (Village of McFarland 2010, Taylor Conservation, LLC 2010b, Yocum 2012). In brief, Indian Mound Conservancy, Siggelkow Park, Taylor Road Conservancy, and Woodland Commons Conservancy, contain prehistoric Indian mounds (Village of McFarland 2010). A total of fourteen mounds are documented within the Village limits. The mounds were built by the people of the Effigy Mound Culture, Late Woodland Stage, from approximately 650-1200 Common Era (CE). Many mounds are burial grounds while other serve as man-made landmarks and are considered sacred sites by Native Americans. Agricultural and urban development has resulted in widespread destruction and loss of many of the mounds. The Village recognizes the historical and cultural value of the remaining mounds and has adopted policies to ensure their protection and preservation.

Per McFarland's Indian Mound Policy, Indian Mound Conservancy is listed on the National Register of Historic Places (NRHP) which means no ground disturbing activities are allowed anywhere within the conservancy. An NRHP database query also indicates that Siggelkow Park or portions thereof is listed as well. Any activities that might potentially cause ground disturbance on or near mounds in other conservancies requires prior approval from the Wisconsin Historical Society.

The Indian Mound Policy provides direction on vegetation management of the mounds, including removing all brush and non-native, invasive species growing on the mounds. Removing in phases, all trees except large, healthy, deep-rooted trees and establishing native ground cover on the mounds to protect against erosion. Maps and vegetation maintenance guidelines for all fourteen mounds within the four conservancies were established in the Indian Mounds Vegetation Assessment (Taylor Conservation, LLC 2010b). Guidelines include reducing forest canopy cover surrounding the mounds and restoring dense native soil stabilizing groundcover on the mounds and in the area surrounding the mounds.



Existing Conditions

Today, the Village's conservancies are highly fragmented compared to their historic condition due to agricultural and urban development. This has reduced habitat patch size and migration corridors for wildlife, increased invasive species colonization, degraded water quality, and altered nutrient cycles and hydrologic regimes. With these challenges also come opportunities, starting with the Village's and other organizations' commitment to acquiring and maintaining open spaces and natural areas. Additionally, the close proximity of residential neighborhoods to these natural areas provides residents the unique opportunity to have a direct impact on the Village's natural resources based on how they manage their own properties.

Babcock Conservancy

The approximately 7.82-acre Babcock Conservancy is located on the eastern shore of Lake Waubesa near the outlet to the Yahara River. It is surrounded on three sides by water, with Lake Waubesa to the west, Yahara River to the south, and a canal to the east. The conservancy's topography is relatively flat as it is situated mostly on a lacustrine plain landform (Figure 3a). The mesic forest portion of the conservancy to the northwest has some relief as it is located at the base of a drumlin. Elevations range from 845 feet along the water's edge in the southern and eastern portions of the site to 877 feet on a hillslope in the northwestern portion of the site.

Babcock Conservancy is comprised of three soil map units: Adrian muck, 0-2% slopes (Ad); Kidder loam, 12-20% slopes, eroded (KdD2); and Water (W) (Table 1) (Figure 4a).

Table 1. Babcock Conservancy Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
Ad – Adrian muck, 0-2% slopes	82%	Very poorly drained	100% Hydric	Depressions	Marsh, sedge meadow, shrub-carr
Kd – Kidder loam, 12-20% slopes, eroded	17%	Well drained	0% Hydric	Moraines and drumlins	Oak/hickory forest
W – Water	1%	N/A	N/A	N/A	N/A

The Adrian soil series consists of very deep, very poorly drained soils formed in herbaceous organic materials over sandy deposits on outwash plains, lake plains, lake terraces, floodplains, moraines, and till plains. These soils formed under marsh, sedge meadows, or shrub-carr vegetation and are classified as hydric (soils that form under wet conditions).

The Kidder soil series consists of very deep, well drained soils formed in thin loess and in loamy till or just in loamy till on moraines and drumlins. These soils typically form under oak/hickory forest; however, historic vegetation mapping and the current vegetation community indicates historic vegetation in the area mapped as Kidder in the northwest portion of Babcock Conservancy was likely formed under southern mesic forest, and was dominated by tree species such as sugar maple and American basswood. Historic vegetation in the area mapped as Kidder in the southwest portion of the conservancy was likely floodplain forest/hardwood swamp and dominated by species such as eastern cottonwood (*Populus deltoides*) and silver maple (*Acer saccharinum*). Kidder loams are classified as non-hydric.

The conservancy is situated in the Lake Monona-Yahara River Hydrologic Unit Code (HUC) 10 Watershed (0709000207) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Hydrology is



influenced largely by surface water from Lake Waubesa and the Yahara River as well as runoff from the surrounding suburban developments.

Babcock Conservancy currently consists of approximately 4.50 acres of emergent marsh, 1.95 acres of southern hardwood swamp, 0.57 acres of southern mesic forest, 0.04 acres of lake, and 0.76 acres of hardscape (Figure 5a). RES did not conduct formal wetland delineations at this or any of the other conservancies; however, we estimate approximately 6.45 acres of wetlands are present onsite. Non-native invasive species such as narrow-leaved cattail (*Typha angustifolia*) and purple loosestrife (*Lythrum salicaria*) are prevalent at this conservancy. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

The emergent wetlands within Babcock Conservancy may be used by herptiles such as painted turtles (*Chrysemys picta*), snapping turtles (*Chelydra serpentina*), American toad (*Anaxyrus americanus*), American bullfrog (*Lithobates catesbeianus*), and spring peepers, (*Pseudacris crucifer*); birds such as marsh wren (*Cistothorus palustris*), great blue heron (*Ardea Herodias*), and swamp sparrow (*Melospiza georgiana*); and mammals such as muskrats (*Ondatra zibethicus*). Woodland species are likely urban species such as white-tailed deer (*Odocoileus virginianus*), raccoons (*Procyon lotor*), grey squirrel (*Sciurus carolinensis*), opossums (*Didelphis virginiana*), rock pigeons (*Columba livia*), American robins (*Turdus migratorius*), black-capped chickadees (*Poecile atricapillus*), and mourning doves (*Zenaida macroura*). Potential bat species that may use the forested areas include northern-long eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and tri-colored bat (*Perimyotis subflavus*).

Appendix C presents a summary of bird observation data from this conservancy derived from the Cornell Lab of Ornithology eBird database (Cornell Lab of Ornithology eBird 2023).

Grand View Conservancy

The approximately 32.86-acre Grand View Conservancy is situated on a glacial lacustrine plain approximately 1,200 feet northeast of Mud Lake. The conservancy's topography is relatively flat with a slight valley landform, sloping upwards to the west and east from the center (Figure 3b). The mesic forest portions of the conservancy have some relief. Elevations range from 851 feet in the marsh bottom in the southern portion of the site to 864 feet on a hillslope in the northern portion of the site.

Grand View Conservancy is comprised of six soil map units: Dodge silt loam, 2-6% slopes (DnB); Elburn silt loam, gravelly substratum, 0-3% slopes (EgA); Hayfield silt loam, 0-3% slopes (HaA); Sable silty clay loam, 0-2% slopes (SaA); St. Charles silt loam, 2-6% slopes (ScB); and Virgil silt loam, gravelly substratum, 0-3% slopes (VwA) (Table 2) (Figure 4b).

**Table 2. Grand View Conservancy Soils and Historical Vegetation Data**

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
DnB – Dodge silt loam, 2-6% slopes	6%	Well drained	0% Hydric	Drumlins	Maple/basswood, oak/hickory forests
EgA – Elburn silt loam, gravelly substratum, 0-3% slopes	20%	Somewhat poorly drained	10% Hydric	Till Plains	Prairie
HaA – Hayfield silt loam, 0-3% slopes	12%	Somewhat poorly drained	5% Hydric	Outwash Plains	Tallgrass prairie, oak savanna
SaA – Sable silty clay loam, 0-2% slopes	45%	Poorly drained	85% Hydric	Swales	Sedge meadow, wet prairie
ScB – St. Charles silt loam, 2-6% slopes	4%	Well drained	3% Hydric	Till Plains	Forest
VwA – Virgil silt loam, gravelly substratum, 0-3% slopes	13%	Somewhat poorly drained	10% Hydric	Drainageways on outwash plains	Prairie, savanna

The Dodge soil series consists of very deep well-drained soils formed in loess and in the underlying till on ground moraines, end moraines, and drumlins. These soils formed under sugar maple/American basswood and oak/hickory hardwood forest associations and are classified as non-hydric.

The Elburn soil series consists very deep, somewhat poorly drained soils on outwash plains, stream terraces, and till plains. These soils formed in loess or other silty material and in the underlying loamy stratified outwash under prairie vegetation. Elburn soils are classified as non-hydric but they may contain inclusions of hydric soil types.

The Hayfield soil series consists of very deep, somewhat poorly drained soils that formed in silty or loamy sediments and the underlying sandy and gravelly outwash. These soils occur on linear or concave slopes on outwash plains, valley trains, treads and risers on stream terraces, and glaciated uplands under tallgrass prairie and oak savanna vegetation. Hayfield soils are classified as non-hydric but they may contain inclusions of hydric soil types.

The Sable soil series consists of very deep, poorly drained, moderately permeable soils formed in loess on nearly level broad summits of moraines and stream terraces. These soils formed under marsh, sedge meadow, and wet prairie vegetation and are classified as hydric.

The St. Charles soil series consists of very deep, well drained soils on outwash plains, till plains, or stream terraces. They formed in loess and in the underlying loamy outwash or sandy loam till under hardwood forest vegetation. St. Charles soils are classified as non-hydric but they may contain inclusions of hydric soil types.

The Virgil soil series consists of very deep, somewhat poorly drained soils on outwash plains, stream terraces, or till plains. These soils formed in loess or other silty material and in the underlying loamy outwash or sandy loam till under prairie and oak savanna vegetation. Virgil soils are classified as non-hydric but they may contain inclusions of hydric soil types.

The conservancy is situated in the Lake Kegonsa-Yahara River HUC-10 Watershed (0709000209) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Hydrology is influenced largely by groundwater as well as runoff from the surrounding suburban developments. Prior to 1937, the southern portion of the



conservancy was ditched to make arable land with flow directed southerly to a large wetland complex associated with Mud Lake. At some point prior to 1955, a second ditch was constructed in the northern portion of the conservancy. This ditch drains the northern wetland area, flows under Creamery Road connecting to the original southern ditch, and receives flows from a stormwater basin north of the adjacent railroad tracks. Several other outfalls feed water to the northern wetland from the surrounding developments.

Grand View Conservancy currently consists of approximately 7.55 acres of emergent marsh, 3.21 acres of shrub-invaded mesic prairie, 2.45 acres of mesic prairie, 0.68 acres of pond, 4.76 acres of southern hardwood swamp, 7.20 acres of southern mesic forest, 3.86 acres of wet meadow, 1.89 acres of wet-mesic prairie, 0.25 acres of landscaped/developed land, and 1.01 acres of trails (Figure 5b). RES estimates approximately 18.74 acres of wetlands are present onsite. Non-native invasive species such as reed canary grass, narrow-leaved cattail, honeysuckles (*Lonicera* spp.), common buckthorn (*Rhamnus cathartica*), and garlic mustard (*Alliaria petiolata*) are prevalent. This conservancy also contains populations of several garden escapees that likely originate from nearby residential gardens. A patch of relatively high quality native wet prairie/wet-mesic prairie is present in the southern portion of the site and contains species such as Michigan lily (*Lilium michiganense*) and various sedges (*Carex* spp.). More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

Grand View may host a variety of wildlife species including urban wildlife such as white-tailed deer, raccoons, grey squirrel, opossums, rock pigeons, American robins, black-capped chickadees, and mourning doves. Prairie species include sparrow species, meadowlark (*Sturnella* spp.), eastern bluebird (*Sialia sialis*), cedar waxwing (*Bombycilla cedrorum*), and American goldfinch (*Spinus tristis*), and gartersnake (*Thamnophis* spp.). Aquatic species that may utilize the pond and its vicinity include northern water snakes (*Nerodia sipedon*), American bullfrog, snapping turtle, and painted turtle. Bat species that may use the forested areas include northern-long eared bat, little brown bat, and tri-colored bat. Appendix C presents a summary of bird observation data from this conservancy derived from the Cornell Lab of Ornithology eBird database (Cornell Lab of Ornithology eBird 2023).

Encroachment from neighboring landowners onto the Village's property is a significant source of ecological stressors at Grand View Conservancy. Landowners are using and maintaining the fringes of the conservancy in numerous locations as extensions of their property. Gardens, garden waste, trash, fire pits, manicured lawns, and drainage ditches are examples of features found in these encroachment zones (Photos 16-18). These land uses are resulting in elevated levels of sediments, nutrients, and other pollutants flowing directly into the adjacent conservancy wetlands as well as large populations of escaped exotic garden ornamental species. Some activities such as ditching to promote drainage may be outright violations of wetland laws. Harboring and allowing the spread of restricted invasive species is also a violation of Chapter NR 40 of the Wisconsin Statutes. Potential solutions to these encroachment issues are discussed later in the CMP.

Indian Mound and Thrun Marsh Conservancies

The Indian Mound/Thrun Marsh Conservancy complex (including the School Forest parcel) is approximately 22.05-acres. Thrun Marsh to the south is situated on a flat, lacustrine plain landform just east of the Yahara River (Figure 3a). Elevations and relief increase to the north where the landform transitions from ground moraine to a drumlin in the highest elevations of Indian Mound Conservancy. Elevations range from 846 in the bottom of the marsh in the southern portion of the site to 958 on the top of the drumlin in the northern portion of the site.



Indian Mound/Thrun Marsh Conservancies are comprised of six soil map units: Adrian muck, 0-2% slopes (Ad); Marshan silt loam (Mc); McHenry silt loam, 2-6% slopes (MdB); Military loam, 12-20% slopes, eroded (MhD2); Plano silt loam, gravelly substratum, 2-6% slopes (PoB); and St. Charles silt loam, 2-6% slopes (ScB) (Table 3) (Figure 4a).

Table 3. Indian Mound/Thrun Marsh Conservancies Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
Ad – Adrian muck, 0-2% slopes	18%	Very poorly drained	100% Hydric	Depressions	Marsh, sedge meadows, shrub-carr
Mc – Marshan silt loam	25%	Very poorly drained	100% Hydric	Stream terraces	Wet prairie, wet-mesic prairie
MdB – McHenry silt loam, 2-6% slopes	14%	Well drained	0% Hydric	Moraines	Hardwood forest
MhD2 – Military loam, 12-20% slopes, eroded	37%	Well drained	0% Hydric	Hills	Hardwood forest
PoB – Plano silt loam, gravelly substratum, 2-6% slopes	1%	Well drained	0% Hydric	Outwash plains	Prairie
ScB – St. Charles silt loam, 2-6% slopes	5%	Well drained	3% Hydric	Till Plains	Forest

The Adrian and St. Charles soil series were described in detail in previous sections. The Marshan soils series consists of very deep, poorly and very poorly drained soils that formed in loamy sediments and the underlying sandy and gravelly outwash. These soils occur on plane or slightly concave positions along narrow drainageways on outwash plains, valley trains, and stream terraces under wet prairie and wet-mesic prairie vegetation. Marshan soils are classified as hydric.

The McHenry soil series consists of very deep, well drained soils formed in loess or other silty material and in the underlying loamy till on moraines and till plains. These soils formed under hardwood forest vegetation and are classified as non-hydric.

The Military soil series consists of well drained soils that are moderately deep to a lithic contact with sandstone. These upland soils formed in sandy loam till underlain by sandstone bedrock under hardwood forest vegetation.

The Plano soil series consists of very deep, well drained soils on outwash plains, stream terraces, or till plains. These soils formed in loess or other silty material and in the underlying loamy stratified outwash or sandy loam till under prairie vegetation. Plano soils are classified as non-hydric but they may contain inclusions of hydric soil types.

The Thrun Marsh Conservancy and southern portion of the Indian Mound Conservancy are situated in the Lake Kegonsa-Yahara River HUC-10 Watershed (0709000209) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). The drumlin in the northern portion of Indian Mound Conservancy forms the watershed boundary between the Lake Kegonsa-Yahara River HUC-10 Watershed to the south and the Lake Monona-Yahara River HUC-10 Watershed (0709000207) to the north.

Geology and topographic maps indicate Thrun Marsh was historically fully hydrologically connected to the Yahara River. This hydrologic connection was altered significantly with construction of Jaeger Road, Jaeger



Park, and residential developments to the north of the park. Prior to 1937, Thrun Marsh was ditched with flow directed southwesterly under Jaeger Road, and outletting to the Yahara River. This connection remains today, though the ditch appears to have been sedimented-in and flow from Jaeger Road west was routed underground.

Several prehistoric Indian mounds exist at Indian Mound Conservancy. Vegetation on these mounds is managed in accordance with the Village's Policy for Preservation and Maintenance of McFarland's Indian Mounds (Village of McFarland 2010).

Today Thrun Marsh functions largely as a stormwater basin, collecting and treating runoff from the surrounding developed and undeveloped areas. This highlights the importance of restoration and maintenance of the marsh's adjacent uplands, as well as the need to repair the several stormwater issues that exist within the conservancy complex to ensure the marsh is receiving pre-treated, clean water.

A stormwater outlet draining the residential development to the north is present approximately 200 feet north of the marsh (Figure 5c). Unabated stormwater is concentrated and directed from the pipe to the south through a relatively high-gradient draw and eventually to the marsh (Photos 28-31). Through the years, this draw has eroded severely from high flows during large precipitation events and large quantities of sediment has deposited into the marsh. Repair is needed to arrest this erosional process and eliminate sediment deposition in the marsh from this location. Several other outfalls feed water to Thrun Marsh from the surrounding developments (Figure5c).

Severe rill erosion is also present on the trails in the eastern portion of Indian Mound Conservancy. Erosion is being caused by concentrated stormwater surface runoff from Indian Mound Middle School (Figure 5c) (Photo 32 and 33). Potential solutions to the stormwater issues at Indian Mound/Thrun Marsh Conservancies are discussed later in the CMP.

Indian Mound/Thrun Marsh Conservancies currently consist of approximately 4.13 acres of emergent marsh, 4.34 acres of southern hardwood swamp, 1.71 acres of southern mesic forest, and 11.87 acres of southern dry-mesic forest (Figure 5c). RES estimates approximately 8.47 acres of wetlands are present onsite. Non-native invasive species such as narrow-leaved cattail, Asian bittersweet (*Celastrus orbiculatus*), common buckthorn, and honeysuckles are prevalent at these conservancies. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

Due to its size and proximity to residential areas, Indian Mound/Thrun Marsh Conservancies are most likely to be utilized by urban wildlife such as white-tailed deer, raccoons, grey squirrel, opossums, rock pigeons, American robins, black-capped chickadees, mourning doves, and woodpecker species. Bat species may include northern-long eared bat, little brown bat, and tri-colored bat. Thrun Marsh is likely used by a variety of reptile and amphibians such as painted turtles, snapping turtles, American toad, American bullfrog, and spring peepers. Other species may include marsh wren, great blue heron, swamp sparrow, and muskrats. Additionally, Indian Mound and Thrun Marsh may be utilized as a stopover for migratory bird species such as warbler species, vireos (*Vireo* spp.), flycatchers (*Empidonax* spp.), orioles (*Icterus* spp.), thrushes, hummingbirds, and tanagers (*Piranga* spp.).

Appendix C presents a summary of bird observation data from these conservancies derived from the Cornell Lab of Ornithology eBird database (Cornell Lab of Ornithology eBird 2023).



Marsh Woods Conservancy

The approximately 32.80-acre Marsh Woods Conservancy is on a glacial lacustrine plain abutting the north shore of Mud Lake. Topography is relatively flat except for the hills in the eastern portion of the site which have some relief and steeper slopes (Figure 3b). Elevations range from 844 feet along the Mud Lake shoreline in the southern portion of the site to 867 feet on a hillslope in the northeastern portion of the site.

Marsh Woods Conservancy is comprised of ten soil map units: Adrian muck, 0-2% slopes (Ad); Dodge silt loam, 2-6% slopes (DnB); Dodge silt loam, 6-12% slopes, eroded (DnC2); Dresden silt loam, 2-6% slopes (DsB); Granby loamy sand (Gn); Hayfield silt loam, 0-3% slopes (HaA); Marshan silt loam (Mc); McHenry silt loam, 2-6% slopes (MdB); Virgil silt loam, gravelly substratum, 0-3% slopes (VwA); and Water (W) (Table 4) (Figure 4b).

Table 4. Marsh Woods Conservancy Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
Ad – Adrian muck, 0-2% slopes	16%	Very poorly drained	100% Hydric	Depressions	Marsh, sedge meadows, shrub-carr
DnB – Dodge silt loam, 2-6% slopes	18%	Well drained	0% Hydric	Drumlins	Maple/basswood, oak/hickory forests
DnC2 – Dodge silt loam, 6-12% slopes, eroded	1%	Well drained	0% Hydric	Drumlins	Maple/basswood, oak/hickory forests
DsB – Dresden silt loam, 2-6% slopes	4%	Well drained	0% Hydric	Plains	Oak savanna
Gn – Granby loamy sand	23%	Very poorly drained	100% Hydric	Stream terraces and lake beds	Marsh, sedge meadow, forested wetland
HaA – Hayfield silt loam, 0-3% slopes	2%	Somewhat poorly drained	5% Hydric	Outwash Plains	Tallgrass prairie
Mc – Marshan silt loam	21%	Very poorly drained	100% Hydric	Stream terraces	Wet prairie, wet-mesic prairie
MdB – McHenry silt loam, 2-6% slopes	11%	Well drained	0% Hydric	Moraines	Hardwood forest
VwA – Virgil silt loam, gravelly substratum, 0-3% slopes	3%	Somewhat poorly drained	10% Hydric	Drainageways on outwash plains	Prairie, savanna
W – Water	1%	N/A	N/A	N/A	N/A

The Adrian, Dodge, Hayfield, Marshan, McHenry, and Virgil soil series were described in detail in previous sections. The Dresden soil series consists of very deep, well drained soils on kames, outwash plains, and stream terraces. These soils formed in silty material and the underlying loamy sediments over calcareous gravel and sand under oak savanna vegetation. Dresden soils are classified as non-hydric.

The Granby soil series consists of very deep, poorly drained or very poorly drained soils formed in sandy outwash or sandy glaciolacustrine deposits on outwash plains, lake plains, and glacial drainageways. These soils formed under marsh, sedge meadow, and forested wetland vegetation and are classified as hydric.

The conservancy is situated in the Lake Kegonsa-Yahara River HUC-10 Watershed (0709000209) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Hydrology is influenced largely by groundwater



as well as runoff from the developments to the north. Hydrology in the lowest portions of the site is also influenced by surface water from Mud Lake, especially during periods of high water.

Marsh Woods Conservancy currently consists of approximately 6.52 acres of emergent marsh, 1.10 acres of mesic prairie, 4.47 acres of oak woodland, 1.14 acres of shrub-carr, 0.95 acres of southern hardwood swamp, 7.25 acres of southern sedge meadow, 5.10 acres of surrogate grassland, 1.73 acres of wet meadow, 3.66 acres of active-use park, 0.26 acres of lake, and 0.62 acres of trails (Figure 5d). RES estimates approximately 17.59 acres of wetlands are present onsite. Non-native invasive species such as reed canary grass, narrow-leaved cattail, honeysuckles, and common buckthorn are prevalent in areas. There is also a relatively high-quality sedge meadow in the central portion of the site dominated by the native tussock sedge (*Carex stricta*). This area likely represents remnant conditions since wetlands at Marsh Woods Conservancy appear to have been left relatively undisturbed historically. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

Wildlife species that may utilize Marsh Woods Conservancy include emergent and sedge meadow species that are documented at the Lower Mud Lake State Natural Area, such as pied-billed grebe (*Podilymbus podiceps*), American bittern (*Botaurus lentiginosus*), common goldeneye (*Bucephala clangula*), mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), blue-winged teal (*Spatula discors*), wood duck (*Aix sponsa*), and Virginia rail (*Rallus limicola*). Reptile and amphibians such as painted turtles, snapping turtles, American toad, American bullfrog, and spring peepers may use the site. Woodland species may include warblers, American robin, ovenbird (*Seiurus aurocapilla*), woodpecker species, black-capped chickadee, and eastern wood peewee (*Contopus virens*). Other species that may use the area are white-tailed deer, raccoons, flying squirrels (*Glaucomys sabrinus*), grey squirrel, woodland vole, muskrats, and bat species such as northern-long eared bat, little brown bat, and tri-colored bat.

Appendix C presents a summary of bird observation data from this conservancy derived from the Cornell Lab of Ornithology eBird database (Cornell Lab of Ornithology eBird 2023).

Siggelkow Road Park

The approximately 5.60-acre Siggelkow Road Park sits on a drumlin landform in the west and a ground moraine landform to the east. The eastern portion of the site is flat while the western portion is relatively steeply sloped (Figure 3c). The site slopes downwards generally from west to east. Elevations range from 871 feet in the southeastern portion of the site to 943 feet on the top of the drumlin in the southwestern portion of the site.

Siggelkow Road Park is comprised of four soil map units: Batavia silt loam, gravelly substratum, 0-2% slopes (BbA); Kidder loam, 12-20% slopes, eroded (KdD2); McHenry silt loam, 6-12% slopes, eroded (MdC2); and St. Charles silt loam, 2-6% slopes (ScB) (Table 5) (Figure 4c).



Table 5. Siggelkow Road Park Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
BbA – Batavia silt loam, gravelly substratum, 0-2% slopes	1%	Well drained	0% Hydric	Outwash plains	Oak savanna
KdD2 – Kidder loam, 12-20% slopes, eroded	42%	Well drained	0% Hydric	Moraines and drumlins	Oak/hickory forest
MdC2 – McHenry silt loam, 6-12% slopes, eroded	33%	Well drained	0% Hydric	Moraines	Hardwood forest
ScB – St. Charles silt loam, 2-6% slopes	24%	Well drained	3% Hydric	Till Plains	Forest

The Kidder, McHenry, and St. Charles soil series were described in detail in previous sections. The Batavia soil series consists of very deep, well drained soils on till plains, glacial outwash plains, and stream terraces. These formed in loess or other silty material and in loamy stratified outwash or sandy loam till under oak savanna vegetation. Batavia soils are classified as non-hydric.

The conservancy is situated in the Lake Monona-Yahara River HUC-10 Watershed (0709000207) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Given the elevations of the site, water is generally shed from the site to lower areas north and east of the conservancy. Groundwater is likely deep at this site due to the well-drained soils.

Several prehistoric Indian mounds exist at Siggelkow Road Park. Vegetation on these mounds is managed in accordance with the Village's Policy for Preservation and Maintenance of McFarland's Indian Mounds (Village of McFarland 2010).

Siggelkow Road Park currently consists of approximately 3.82 acres of southern dry-mesic forest and 1.78 acres of active-use park (Figure 5e). It is RES' opinion that no wetlands are present onsite. Non-native invasive species such as honeysuckles and common buckthorn are prevalent at this conservancy. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

Wildlife species that may use the small dry-mesic southern woodland are likely urban wildlife species such as white-tailed deer, raccoons, grey squirrel, opossums, rock pigeons, American robins, black-capped chickadees, mourning doves, and woodpecker species. Bat species that may use the forest include northern-long eared bat, little brown bat, and tri-colored bat.

Taylor Road Conservancy

The approximately 3.14-acre Taylor Road Conservancy is on a drumlin landform with steep slopes (Figure 3c). Elevations range from 864 in the eastern portion of the site to 929 feet on the top of the drumlin in the northwestern portion of the site. It is surrounded on all sides by residential developments.

The conservancy is comprised of three soil map units: Elburn silt loam, 0-3% slopes (EfB); Gravel pit (GP); and Kidder loam, 12-20% slopes, eroded (KdD2) (Table 6) (Figure 4c).



Table 6. Taylor Road Conservancy Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
EfB – Elburn silt loam, 0-3% slopes	1%	Somewhat poorly drained	9% Hydric	Stream terraces, outwash plains, drainageways	Prairie
GP – Gravel pit	<1%	N/A	1% Hydric	N/A	N/A
KdD2 – Kidder loam, 12-20% slopes, eroded	99%	Well drained	0% Hydric	Moraines and drumlins	Oak/hickory forest

Elburn and Kidder soil series were described in detail in previous sections. The Gravel Pit (GP) soil map unit typically represents anthropogenic soils.

The conservancy is situated in the Lake Monona-Yahara River HUC-10 Watershed (0709000207) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Given the elevations of the site, water is generally shed from the site in all directions to surrounding lower areas. Groundwater is likely deep at this site due to the well-drained soils.

One prehistoric Indian mound exists at Taylor Road Conservancy. Vegetation on this mound is managed in accordance with the Village's Policy for Preservation and Maintenance of McFarland's Indian Mounds (Village of McFarland 2010).

Taylor Road Conservancy currently consists of approximately 1.94 acres of conifer plantation and 1.20 acres of woody-invaded surrogate grassland (Figure 5f). It is RES' opinion that no wetlands are present onsite. The site has a long history of disturbance from land use practices such as farming, silviculture, and grading to accommodate residential development. Non-native invasive species such as white mulberry (*Morus alba*), honeysuckles, and common buckthorn are prevalent at this conservancy. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

Wildlife species that may use the Taylor Road Conservancy are primarily urban wildlife species such as white-tailed deer, raccoons, grey squirrel, opossums, rock pigeons, American robins, black-capped chickadees, mourning doves, and woodpecker species. The surrogate invaded grassland may be occupied by bird species such as golden-winged (*Vermivora chrysoptera*) and mourning warblers (*Geothlypis Philadelphia*), brown thrashers (*Toxostoma rufum*), eastern kingbird (*Tyrannus tyrannus*), eastern towhees (*Pipilo erythrophthalmus*), white-throated sparrows (*Zonotrichia albicollis*), field sparrows (*Spizella pusilla*), meadowlarks, and grasshopper sparrow (*Ammodramus savannarum*).

Urso Park

The approximately 45.67-acre Urso Park is on a glacial lacustrine plain approximately 0.4 miles northeast of Mud Lake. The southern portion of the site occurs on a ground moraine landform. The topography at the conservancy is relatively flat with steeper slopes in the south (Figure 3b). The site generally slopes downward from south to north and then drains to the west. Elevations range from 855 feet in the ditch in the northern portion of the site to 880 feet on a hillslope on the southwest portion of the site.

Urso Park is comprised of five soil map units: Dodge silt loam, 6-12% slopes, eroded (DnC2); Sable silty clay loam, 0-2% slopes (SaA); St. Charles silt loam, 2-6% slopes (ScB); Virgil silt loam, gravelly substratum, 0-3% slopes (VwA); and Wacousta silty clay loam, 0-2% slopes (Wa) (Table 7) (Figure 4b).

**Table 7. Urso Park Soils and Historical Vegetation Data**

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
DnC2 – Dodge silt loam, 6-12% slopes, eroded	8%	Well drained	0% Hydric	Drumlins	Maple/basswood, oak/hickory forests
SaA – Sable silty clay loam, 0-2% slopes	42%	Poorly drained	85% Hydric	Swales	Sedge meadow, wet prairie
ScB – St. Charles silt loam, 2-6% slopes	13%	Well drained	3% Hydric	Till Plains	Forest
VwA – Virgil silt loam, gravelly substratum, 0-3% slopes	22%	Somewhat poorly drained	10% Hydric	Drainageways on outwash plains	Prairie, savanna
Wa – Wacousta silty clay loam, 0-2% slopes	15%	Very poorly drained	100% Hydric	Interdrumlins	Marsh, sedge meadow, shrub-carr

Dodge, Sable, St. Charles, and Virgil soil series were described in detail in previous sections. The Wacousta soil series consists of very deep, very poorly drained soils formed in silty lacustrine sediments. These soils occur in broad depressions and swales on till plains, moraines, and stream terraces under marsh, sedge meadow, and shrub-carr vegetation. Wacousta soils are classified as hydric.

The conservancy is situated in the Lake Kegonsa-Yahara River HUC-10 Watershed (0709000209) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Hydrology is influenced largely by groundwater as well as runoff from the surrounding agricultural and residential developments. The site drains to the north where an east to west flowing ditch directs water west towards a large wetland complex associated with Mud Lake.

Urso Park currently consists of approximately 1.44 acres of old apple orchard, 0.66 acres of conifer plantation, 5.36 acres of emergent marsh, 7.91 acres of oak woodland, 0.52 acres of pond, 3.81 acres of shrub-carr, 7.34 acres of southern hardwood swamp, 3.40 acres of wet meadow, 5.41 acres of disc golf course, 9.43 acres of dog park, and 0.39 acres of trails (Figure 5g). RES estimates that approximately 20.44 acres of wetlands exist onsite. Portions of the site have a long history of relatively intense land uses such as farming and orchards, and more recently, dog park and disc golf course developments. Non-native invasive species such as reed canary grass, narrow-leaved cattail, multiflora rose (*Rosa multiflora*), and honeysuckles are prevalent at this conservancy. Recent efforts by the Village to remove invasive shrubs from the oak woodland have resulted in improved species composition and structure in this area. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

Wildlife species that likely utilize Urso Park include urban wildlife such as white-tailed deer, raccoons, grey squirrel, opossums, rock pigeons, American robins, black-capped chickadees, and mourning doves. Potential bat species include northern-long eared bat, little brown bat, and tri-colored bat. The emergent wetlands and wet meadows may be used by painted turtles, snapping turtles, American toad, American bullfrog, and spring peepers, marsh wren, great blue heron, swamp sparrow, and muskrats. Animals that may occupy the shrub-carr include willow flycatcher (*Empidonax traillii*), gray catbird (*Dumetella carolinensis*), eastern kingbird, cedar waxwing, and rose-breasted grosbeak (*Pheucticus ludovicianus*).

Appendix C presents a summary of bird observation data from this conservancy derived from the Cornell Lab of Ornithology eBird database (Cornell Lab of Ornithology eBird 2023).



Woodland Commons Conservancy

The approximately 5.21-acre Woodland Commons Conservancy is on a drumlin landform with steep slopes (Figure 3c). Elevations range from 861 feet in the western portion of the site to 939 feet on the top of the drumlin in the northern portion of the site. It is surrounded on all sides by commercial and residential developments.

Woodland Commons Conservancy is comprised of three soil map units: Kidder loam, 6-12% slopes, eroded (KdC2); Kidder loam, 12-20% slopes, eroded (KdD2); and Marshan silt loam (Mc) (Table 8) (Figure 4c).

Table 8. Woodland Commons Conservancy Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
KdC2 – Kidder loam, 6-12% slopes, eroded	14%	Well drained	0% Hydric	Moraines and drumlins	Oak/hickory forest
KdD2 – Kidder loam, 12-20% slopes, eroded	85%	Well drained	0% Hydric	Moraines and drumlins	Oak/hickory forest
Mc – Marshan silt loam	1%	Very poorly drained	100% Hydric	Stream terraces	Wet prairie, wet-mesic prairie

Kidder and Marshan soil series were described in detail in previous sections.

The conservancy is situated in the Lake Monona-Yahara River HUC-10 Watershed (0709000207) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Given the elevations of the site, water is generally shed from the site in all directions to surrounding lower areas. Groundwater is likely deep at this site due to the well-drained soils.

Two prehistoric Indian mounds exist at Woodland Commons Conservancy. Vegetation on these mounds is managed in accordance with the Village's Policy for Preservation and Maintenance of McFarland's Indian Mounds (Village of McFarland 2010).

Woodland Commons Conservancy currently consists of approximately 5.16 acres of southern dry-mesic forest and 0.05 acres of landscaped area (Figure 5h). It is RES' opinion that no wetlands are present onsite. The site has been heavily invaded by non-native, invasive shrubs such as honeysuckles and common buckthorn. More detailed vegetation information is presented in the following Vegetation Assessment Results Section.

The small parcel of dense southern dry woodlands found in Woodland Commons is most likely utilized by urban wildlife such as white-tailed deer, raccoons, grey squirrel, opossums, rock pigeons, American robins, black-capped chickadees, mourning doves, and woodpecker species. Bat species that may use the forest include northern-long eared bat, little brown bat, and tri-colored bat.

Yahara River Conservancy

The approximately 1.11-acre Yahara River Conservancy is on a glacial lacustrine plain landform in the floodplain of the Yahara River. The topography at the conservancy is flat though a shallow ditch in the northern portion of the site has sloped banks (Figure 3a). The site generally slopes downward from north to south. Elevations range from 845 feet along the Yahara River shoreline in the southern portion of the site to 850 feet in the northern portion of the site.

Yahara River Conservancy is comprised of two soil map units: Granby loamy sand (Gn) and Marshan silt loam (Mc) (Table 9) (Figure 4a).



Table 9. Yahara River Conservancy Soils and Historical Vegetation Data

Soil Map Unit Symbol and Name	% of Conservancy	Drainage Classification	Hydric Soil Rating	Landform	Historic Vegetation
Gn – Granby loamy sand	93%	Very poorly drained	100% Hydric	Stream terraces and lake beds	Marsh, sedge meadow, forested wetland
Mc – Marshan silt loam	7%	Very poorly drained	100% Hydric	Stream terraces	Wet prairie, wet-mesic prairie

Granby and Marshan soil series were described in detail in previous sections.

The conservancy is situated in the Lake Kegonsa-Yahara River HUC-10 Watershed (0709000209) within the larger Middle Rock HUC-8 Watershed (07090002) (Figure 1). Hydrology is influenced largely by the Yahara River; however, the site also receives overflow from a small stormwater basin immediately to the north. This basin receives stormwater from the residential developments to the north. An east to west flowing ditch in the northern portion of the site directs overflow from the stormwater basin to the west and then south to the Yahara River.

The Yahara River Conservancy is a relatively small site containing approximately 0.36 acres of emergent marsh, 0.69 acres of floodplain forest, and 0.06 acres of boat launch (Figure 5i). RES estimates that approximately 1.05 acres of wetlands exist onsite. Non-native invasive species such as reed canary grass, narrow-leaved cattail, honeysuckles, and common buckthorn are prevalent at this conservancy.

Due to the proximity to the Lower Mud Lake State Natural Area, wildlife use is likely to be high and include a large variety of bird species. Emergent species known to nest in the vicinity include pied-billed grebe, American bittern, common goldeneye, mallard, northern pintail, blue-winged teal, wood duck, and Virginia rail. Floodplain forest species include a variety of bird species such as warblers, American robin, ovenbird, bald eagle (*Haliaeetus leucocephalus*), and red-tailed hawk (*Buteo jamaicensis*). Other species that may use the area are white-tailed deer, raccoons, flying squirrels, grey squirrel, muskrats, and bat species such as northern-long eared bat, little brown bat, and tri-colored bat.

Appendix C presents a summary of bird observation data from this conservancy derived from the Cornell Lab of Ornithology eBird database (Cornell Lab of Ornithology eBird 2023).

Current Management Practices

The Village currently conducts spring burns at Marsh Woods and Grand View Conservancies every other year. Village staff conduct winter brush removal at the various conservancies and install/maintain fire breaks at Marsh Woods and Grand View Conservancies. The Village also treats resprouting invasive shrubs in areas that have been forestry mowed such as in Grand View Conservancy.

The Village organized volunteer brush cutting workdays in the winter of 2019/2020 at Siggelkow Road Park, Marsh Woods Conservancy, Woodland Commons Conservancy, and Indian Mound/Thrun Marsh Conservancies. Volunteers also periodically conduct brush removal and spot herbicide treatments of invasive species at Marsh Woods Conservancy.



Vegetation Assessment Results

Introduction

The emphasis of the baseline assessments was to quantify plant species abundance; vegetation cover type structure, composition, quality, and extent; and extent and location of rare and invasive species. RES delineated 28 MUs across the ten conservancies (Figure 5, Table 10) and collected baseline vegetation data within each. The data represent conditions on the dates of the surveys.

Table 10. Management Unit Information

Conservancy	Management Unit ID	Habitat Type	Surface Area (ac)
Babcock Conservancy	BMU-1	Southern mesic forest	0.57
	BMU-2	Emergent marsh	4.40
		Southern hardwood swamp	1.95
Grand View Conservancy	GMU-1A-EM	Emergent marsh	2.21
	GMU-1A-HS	Southern hardwood swamp	4.09
	GMU-1A-WM	Wet meadow	3.86
		Wet-mesic Prairie	1.89
	GMU-1B	Emergent marsh	5.34
		Southern hardwood swamp	0.67
	GMU-2A	Mesic prairie	2.45
	GMU-2B	Invaded mesic prairie	3.21
	GMU-3A	Southern mesic forest	4.31
	GMU-3B	Southern mesic forest	2.89
Indian Mound/Thrun Marsh Conservancies	ITMU-1	Southern dry-mesic forest	11.87
		Southern mesic forest	1.71
	ITMU-2	Emergent marsh	4.13
		Southern hardwood swamp	4.34
Marsh Woods Conservancy	MMU-1	Oak woodland	4.47
	MMU-2	Mesic prairie	1.10
		Surrogate grassland	5.10
	MMU-3	Emergent marsh	6.52
		Shrub-carr	1.14
		Southern hardwood swamp	0.95
		Southern sedge meadow	7.25
		Wet meadow	1.73
Siggelkow Road Park	SMU-1	Southern dry-mesic forest	3.82
Taylor Road Conservancy	TMU-1	Conifer plantation	1.94
	TMU-2	Invaded surrogate grassland	1.20
Urso Park	UMU-1-EM	Emergent marsh	5.36
	UMU-1-HS	Southern hardwood swamp	7.33
	UMU-1-SCE	Shrub-carr	2.27
	UMU-1-SCN	Shrub-carr	1.55
	UMU-1-WMN	Wet meadow	2.74
	UMU-1-WMS	Wet meadow	0.66
	UMU-2	Oak woodland	7.91
	UMU-3	Conifer plantation	0.31
		Orchard	1.44
Woodland Commons Conservancy	WMU-1	Southern dry-mesic forest	5.16
Yahara River Conservancy	YMU-1	Emergent marsh	0.36
		Floodplain forest	0.69



Vegetation mapping efforts indicate the Village conservancies are currently comprised of a total of approximately 1.44 acres of old apple orchard, 2.60 acres of conifer plantation, 28.42 acres of emergent marsh, 0.69 acres of floodplain forest, 3.21 acres of woody-invaded mesic prairie, 1.20 acres of woody-invaded surrogate grassland, 3.55 acres of mesic prairie, 12.38 acres of oak woodland, 4.95 acres of shrub-carr, 20.85 acres of southern dry-mesic forest, 19.34 acres of southern hardwood swamp, 9.48 acres of southern mesic forest, 7.25 acres of southern sedge meadow, 5.10 acres of surrogate grassland, 9.00 acres of wet meadow, 1.89 acres of wet-mesic prairie, and 1.20 acres of pond. In total, RES estimates that approximately 72.74 acres of wetlands existing across the ten conservancies. Several other cover types exist within the conservancies that are not the subject of this CMP, including trails, landscaped/developed, disc golf course, dog park, boat launch, and active-use park.

Plant Community Descriptions

Conifer plantations exist at Taylor Road Conservancy and Urso Park. Dominant overstory species in these areas include red pine and Norway spruce (*Picea abies*) often with an understory composed of honeysuckle and/or common buckthorn. In addition, old orchard plantings are found at Urso Park, which are dominated by apple (*Malus pumila*) in the overstory and pasture grasses such as timothy (*Phleum pratense*) in the understory.

Emergent marsh wetlands are present at all conservancies except Siggelkow Road Park, Taylor Road Conservancy, and Woodland Commons Conservancy. Emergent marshes are generally dominated by species such as narrow-leaved cattail and reed canary grass, though significant stands of the native broad-leaved cattail (*Typha latifolia*) are present at Urso Park.

Yahara River Conservancy is the only conservancy containing floodplain forest wetlands. Floodplain forest is dominated by cottonwood in the overstory and pussy willow (*Salix discolor*), red-osier dogwood (*Cornus sericea*), and common buckthorn in the understory.

Mesic prairie is found at Grand View and Marsh Woods Conservancies and is dominated by herbaceous species such as Indian grass (*Sorghastrum nutans*) and Canada goldenrod (*Solidago canadensis*). Woody-invaded mesic prairie, found at Grand View Conservancy, has a similar herbaceous layer but with high cover of shrubs including gray dogwood (*Cornus foemina* ssp. *racemosa*) and honeysuckle.

Surrogate grassland, found at Marsh Woods Conservancy, is dominated by non-native, cool-season grasses such as Kentucky bluegrass (*Poa pratensis*) and smooth brome (*Bromus inermis*). Woody-invaded surrogate grassland, found at Taylor Road Conservancy, has a similar herbaceous layer but with high cover of shrubs and trees including black walnut (*Juglans nigra*), honeysuckle, and smooth sumac (*Rhus glabra*). These areas are also heavily invaded by crown vetch (*Securigera varia*).

Oak woodland is currently found at Marsh Woods Conservancy and Urso Park. Oak woodlands are dominated by species such as white oak, bur oak (*Quercus macrocarpa*), and shagbark hickory (*Carya cordiformis*) with total canopy closure over 50% but less than 100%.

Shrub-carr wetlands are found at Marsh Woods Conservancy and Urso Park and are generally dominated by dogwoods (*Cornus* spp.), sandbar willow (*Salix interior*), and several other willows species (*Salix* spp.).

Southern dry-mesic forest is found at Siggelkow Road Park, Woodland Commons Conservancy, and Indian Mound Conservancy. This forest type is generally dominated by species such as white oak, red oak (*Quercus rubra*), and black cherry (*Prunus serotina*) in the overstory; gray dogwood, honeysuckle, and common buckthorn in the sapling/shrub stratum; and enchanter's nightshade (*Circaea canadensis*), wild geranium



(*Geranium maculatum*), and white snakeroot (*Ageratina altissima*) in the herbaceous stratum. Canopy closure exceeded 100% in southern dry-mesic forests which differentiated it from oak woodland (50-99% canopy closure). Dry-mesic forest was differentiated from mesic forest by having higher proportions of black oak (*Quercus velutina*), red oak, and white oak which are more characteristic of forests with drier soil moisture regimes.

Southern mesic forest is found at Babcock, Grandview, and Indian Mound/Thrun Marsh Conservancies. The species composition of the southern mesic forests within the Village varies widely between sites. For instance, mesic forest at Babcock Conservancy is dominated by typical mesic forest species such as sugar maple and American basswood. Whereas mesic forest at Grand View Conservancy is a disturbance-adapted mesic forest type dominated almost exclusively by boxelder (*Acer negundo*) in the overstory. In general, mesic forest was differentiated from dry-mesic forest by having a higher proportion of species such as American basswood and hackberry (*Celtis occidentalis*) versus black, red, and white oak which are more characteristic of dry-mesic and dry forest types.

Southern hardwood swamp wetlands are present at all conservancies except Siggelkow Road Park, Taylor Road Conservancy, Woodland Commons Conservancy, and Yahara River Conservancy. Southern hardwood swamp species compositions are variable between sites; however, this habitat is generally dominated by silver maple, cottonwood, and black willow (*Salix nigra*) in the overstory; dogwoods, sandbar willow, pussy willow, and green ash in the sapling/shrub stratum; and reed canary grass in the herbaceous stratum. Orange jewelweed (*Impatiens capensis*) and white avens (*Geum canadense*) were also commonly found in the herbaceous stratum of the various southern hardwood swamp wetlands.

Southern sedge meadow is found at Marsh Woods Conservancy and is dominated by tussock sedge (*Carex stricta*) and to a lesser extent, blue-joint grass (*Calamagrostis canadensis*). The hummocky terrain of the wet meadow wetlands at Urso Park indicate that sedge meadow was the likely plant community in this area historically but it has since been invaded by reed canary grass due to the extensive soil and hydrologic disturbances that have occurred in the past.

Wet meadow wetlands are present at Grand View Conservancy, Marsh Woods Conservancy, and Urso Park and are dominated by reed canary grass. Minor components of this habitat type include fowl manna grass (*Glyceria striata*), blue vervain (*Verbena hastata*), and stinging nettle (*Urtica dioica*).

A patch of transitional wet-mesic prairie is present mid-slope between wet meadow wetlands and mesic prairie in the southern portion of Grand View Conservancy. Recent forestry mowing in this area has resulted in a flush of native species germinating from the seed bank. The wet-mesic prairie is dominated by recently cut and resprouting honeysuckle, sedges (*Carex* spp.), and saw-tooth sunflower (*Helianthus grosseserratus*). Numerous Michigan lily (*Lilium michiganense*) individuals are found in the wetter portions of this area and the neighboring wet meadow.

Percent Cover

In summer 2022, total native percent cover ranged from 32% in GMU-1A-EM (emergent marsh portions of Grand View Conservancy) to 215% in ITMU-1 (Indian Mound Conservancy dry-mesic forest) (Table 11). Total non-native percent cover ranged from 4% in BMU-1 (mesic forest portion of Babcock Conservancy) to 107% in UMU-3 (orchard/conifer plantation portion of Urso Park). Total invasive species cover ranged from 0% in BMU-1 (mesic forest portion of Babcock Conservancy) to 77% in BMU-2 (wetland portion of Babcock Conservancy) and GMU-1A-EM (emergent marsh portions of Grand View Conservancy). Other highly invaded areas in summer 2022 included GMU-3A (mesic forest in southern portion of Grand View



Conservancy) at 74% invasive cover and GMU-1A-HS (hardwood swamp portion of Grand View Conservancy) at 63% invasive cover.

In spring 2023, total native percent cover ranged from X% in X to X% in X (Table 12). Total non-native percent cover ranged from X% in X to X% in X. Total invasive species cover ranged from X% in X to X% in X. Other highly invaded areas in spring 2023 included X at X % invasive cover and X at X % invasive cover.

The complete percent cover data set for spring and summer surveys is presented in Appendix D.

Table 11. Summer 2022 Absolute Percent Cover Data Summary

Conservancy	MU ID	Canopy Stratum				Sapling/Shrub Stratum				Vine Stratum				Herbaceous Stratum				All Strata Combined			
		T	N	NN	I	T	N	NN	I	T	N	NN	I	T	N	NN	I	T	N	NN	I
Babcock	BMU-1	100%	100%	0%	0%	18%	17%	1%	0%	0%	0%	0%	0%	31%	28%	3%	0%	149%	145%	4%	0%
	BMU-2	25%	24%	1%	0%	16%	5%	11%	9%	4%	4%	0%	0%	133%	47%	86%	68%	178%	80%	98%	77%
Grand View	GMU-1A-EM	0%	0%	0%	0%	2%	0%	2%	2%	0%	0%	0%	0%	120%	42%	78%	75%	122%	32%	80%	77%
	GMU-1A-HS	58%	57%	1%	0%	24%	11%	13%	13%	5%	5%	0%	0%	99%	44%	55%	50%	186%	117%	69%	63%
	GMU-1A-WM	0%	0%	0%	0%	15%	9%	6%	6%	2%	2%	0%	0%	142%	83%	59%	52%	159%	94%	65%	59%
	GMU-1B	7%	6%	1%	1%	6%	6%	0%	0%	4%	4%	0%	0%	98%	42%	56%	53%	115%	58%	57%	54%
	GMU-2A	1%	1%	0%	0%	38%	10%	28%	28%	0%	0%	0%	0%	80%	57%	23%	3%	119%	68%	51%	31%
	GMU-2B	<1	<1	0%	0%	75%	53%	22%	20%	8%	8%	0%	0%	142%	125%	17%	2%	225%	186%	39%	22%
	GMU-3A	77%	76%	1%	1%	52%	7%	45%	45%	1%	1%	0%	0%	62%	28%	34%	28%	192%	112%	80%	74%
	GMU-3B	117%	112%	5%	5%	18%	9%	9%	9%	9%	9%	0%	0%	97%	82%	15%	11%	241%	212%	29%	25%
Indian Mound/Thrun Marsh	ITMU-1	104%	103%	1%	1%	45%	34%	11%	8%	18%	8%	10%	10%	87%	70%	17%	3%	254%	215%	39%	22%
	ITMU-2	42%	32%	10%	0%	56%	31%	25%	18%	6%	6%	0%	0%	97%	52%	45%	34%	201%	121%	80%	52%
Marsh Woods	MMU-1	90%	90%	0%	0%	54%	46%	8%	6%	15%	15%	0%	0%	54%	44%	10%	6%	213%	195%	18%	12%
	MMU-2	3%	3%	0%	0%	28%	21%	7%	7%	2%	2%	0%	0%	151%	65%	86%	3%	184%	91%	93%	10%
	MMU-3	30%	29%	1%	1%	36%	30%	6%	4%	5%	5%	0%	0%	129%	78%	51%	43%	200%	142%	58%	48%
Siggelkow Rd	SMU-1	92%	92%	0%	0%	18%	5%	13%	13%	5%	5%	0%	0%	74%	60%	14%	7%	189%	162%	27%	20%
Taylor Rd	TMU-1	106%	97%	9%	9%	30%	6%	24%	20%	7%	7%	0%	0%	43%	19%	24%	16%	186%	129%	57%	45%
	TMU-2	51%	49%	2%	2%	39%	34%	5%	5%	5%	5%	0%	0%	100%	27%	73%	25%	195%	115%	80%	32%
Urso	UMU-1-EM	0%	0%	0%	0%	3%	1%	2%	2%	0%	0%	0%	0%	108%	74%	34%	28%	111%	75%	36%	30%
	UMU-1-HS	53%	53%	0%	0%	45%	33%	12%	12%	12%	12%	0%	0%	56%	48%	8%	34%	166%	146%	20%	46%
	UMU-1-SCE	7%	6%	1%	0%	52%	46%	6%	6%	4%	4%	0%	0%	56%	34%	22%	17%	119%	90%	29%	23%
	UMU-1-SCN	40%	39%	1%	1%	48%	33%	15%	15%	14%	14%	0%	0%	59%	41%	18%	14%	161%	127%	34%	30%
	UMU-1-WMN	1%	1%	0%	0%	15%	8%	7%	7%	3%	3%	0%	0%	100%	39%	61%	38%	119%	51%	68%	45%
	UMU-1-WMS	2%	2%	0%	0%	5%	5%	0%	0%	5%	5%	0%	0%	104%	45%	59%	54%	116%	57%	59%	54%
	UMU-2	57%	56%	1%	1%	35%	18%	17%	14%	9%	9%	0%	0%	58%	43%	15%	9%	159%	126%	33%	24%
Woodland Commons	WMU-1	113%	108%	5%	5%	56%	26%	30%	27%	8%	8%	0%	0%	94%	78%	16%	11%	241%	190%	51%	43%
Yahara River	YMU-1	63%	63%	0%	0%	54%	39%	15%	15%	9%	9%	0%	0%	71%	23%	48%	41%	197%	134%	63%	56%

Note: T = Total, N = Native, NN = Non-native, I = Invasive

Table 12. Spring 2023 Absolute Percent Cover Data Summary

Conservancy	MU ID	Canopy Stratum				Sapling/Shrub Stratum				Vine Stratum				Herbaceous Stratum				All Strata Combined			
		T	N	NN	I	T	N	NN	I	T	N	NN	I	T	N	NN	I	T	N	NN	I
Babcock	BMU-1																				
	BMU-2																				
Grand View	GMU-1A-EM																				
	GMU-1A-HS																				
	GMU-1A-WM																				
	GMU-1B																				
	GMU-2A																				
	GMU-2B																				
	GMU-3A																				
	GMU-3B																				
Indian Mound/Thrun Marsh	ITMU-1																				
	ITMU-2																				
Marsh Woods	MMU-1																				
	MMU-2																				
	MMU-3																				
Siggelkow Rd	SMU-1																				
Taylor Rd	TMU-1																				
	TMU-2																				
Urso	UMU-1-EM																				
	UMU-1-HS																				
	UMU-1-SCE																				
	UMU-1-SCN																				
	UMU-1-WMN																				
	UMU-1-WMS																				
	UMU-2																				
	UMU-3																				
Woodland Commons	WMU-1																				
Yahara River	YMU-1																				

Note: T = Total, N = Native, NN = Non-native, I = Invasive



Floristic Quality Assessment

In summer 2022, total species richness ranged from 40 at Yahara River Conservancy to 164 at Indian Mound/Thrun Marsh Conservancies (Table 13). Native species richness ranged from 23 to 123 at those same conservancies. Non-native species richness ranged from 14 at Woodland Commons Conservancy to 43 at Grandview Conservancy. In spring 2023, total species richness ranged from X in X to X in X (Table 14). Native species richness ranged from X in X to X in X. Non-native species richness ranged from X in X to X in X.

Table 13. Summer 2022 Floristic Quality Assessment Data Summarized by Conservancy

Conservancy	wMean C		wFQI		Species Richness		
	Native	All	Native	All	Native	Non-native	Total
Babcock	3.8	2.9	30.4	26.6	63	19	82
Grand View	3.3	2.4	34.3	29.0	109	43	152
Indian Mound/Thrun Marsh	4.1	3.1	45.7	39.6	123	41	164
Marsh Woods	3.6	2.8	37.6	32.9	110	33	143
Siggelkow Rd	3.3	2.2	20.8	16.9	39	20	59
Taylor Rd	2.8	1.7	17.0	13.2	36	24	60
Urso	3.5	2.7	37.7	33.0	113	35	148
Woodland Commons	3.5	2.7	24.7	21.9	50	14	64
Yahara River	2.8	1.6	13.3	10.1	23	17	40

Table 14. Spring 2023 Floristic Quality Assessment Data Summarized by Conservancy

Conservancy	wMean C		wFQI		Species Richness		
	Native	All	Native	All	Native	Non-native	Total
Babcock							
Grand View							
Indian Mound/Thrun Marsh							
Marsh Woods							
Siggelkow Rd							
Taylor Rd							
Urso							
Woodland Commons							
Yahara River							

In summer 2022, wMean C, considering all species (native and non-native), ranged from 0.6 at GMU-3A (mesic forest in southern portion of Grand View Conservancy) to 4.6 in BMU-1 (mesic forest portion of Babcock Conservancy) (Table 15). wFQI, considering all species, ranged from 3.7 in GMU-3A (mesic forest in southern portion of Grand View Conservancy) to 35.5 in ITMU-1 (mesic and dry-mesic forest at Indian Mound Conservancy). In spring 2023, wMean C, considering all species, ranged from X in X to X in X (Table 16). wFQI considering all species ranged from X in X to X in X.

Lower Mean C/FQI scores indicate plant communities dominated by plant species that are relatively tolerant of disturbance while higher Mean C/FQI scores indicate plant communities dominated by plant species that are relatively intolerant of disturbance. Provisional FQA benchmarks have been developed by the WDNR for wetland systems using wMean C (Marti & Bernthal 2019) which is helpful for interpreting the results of this FQA. Five categories of habitat quality exist based on FQA benchmarks: Excellent, Good, Fair, Poor, and Very Poor. Provisional benchmarks do not yet exist for upland habitats making FQA scores in those



areas more difficult to interpret.

Using wMean C scores, the wetland communities within Village conservancies ranged in quality from Very Poor to Fair. YMU-1, a floodplain forest wetland, rated as Very Poor. UMU-1-EM, an emergent marsh wetland in Urso Park, rated as Fair. The numerous other wetlands and wetland complexes within the Village conservancies, including BMU-2, GMU-1A, GMU-1B, ITMU-2, MMU-3, and UMU-1 all rated as poor for their respective wetland types. Though not assessed individually apart from the larger wetland complex, the sedge meadow wetland at Marsh Woods Conservancy by itself is a relatively high-quality wetland that would likely be rated as Good or Excellent.

MUs with relatively low Mean C/FQI scores were GMU-3A (mesic forest in southern portion of Grand View Conservancy), GMU-1A-EM (emergent marsh wetlands at Grand View Conservancy), and UMU-1 (wet meadow wetlands at Urso Park). MUs with relatively high Mean C/FQI scores were ITMU-1 (mesic and dry-mesic forest at Indian Mound Conservancy), MMU-1 (oak woodland at Marsh Woods Conservancy), BMU-1 (mesic forest portion of Babcock Conservancy), and UMU-2 (oak woodland portion of Urso Park). FQA data collected after restoration activities have been completed will indicate whether the treatments have had a positive effect on habitat quality.

The complete FQA data set for spring and summer surveys is presented in Appendix E.

Table 15. Summer 2022 Floristic Quality Assessment Data Summarized by Management Unit

Conservancy	MU ID	wMean C		wFQI		Species Richness		
		Native	All	Native	All	Native	Non-native	Total
Babcock	BMU-1	4.7	4.6	14.1	15.4	9	2	11
	BMU-2	3.3	1.7	25.1	15.0	59	19	78
Grand View	GMU-1A-EM	2.9	1.0	11.6	4.7	16	6	22
	GMU-1A-HS	2.6	1.7	14.9	10.4	32	7	39
	GMU-1A-WM	3.9	2.3	27.4	18.2	50	13	63
	GMU-1B	2.9	1.5	16.4	9.0	31	6	37
	GMU-2A	2.0	1.3	12.2	10.0	36	24	60
	GMU-2B	2.7	2.2	13.9	12.8	27	6	33
	GMU-3A	1.1	0.6	5.2	3.7	22	11	33
	GMU-3B	2.8	2.5	14.9	15.1	28	9	37
Indian Mound/Thrun Marsh	ITMU-1	4.2	3.5	36.4	35.5	76	28	104
	ITMU-2	3.6	2.4	31.5	24.0	75	26	101
Marsh Woods	MMU-1	4.4	4.1	31.9	32.7	52	11	63
	MMU-2	2.9	1.4	21.2	12.1	53	18	71
	MMU-3	3.4	2.5	26.0	22.1	58	19	77
Siggelkow Rd	SMU-1	4.4	3.6	27.3	27.9	39	20	59
Taylor Rd	TMU-1	5.3	4.0	24.9	22.8	22	11	33
	TMU-2	2.4	1.4	10.5	8.6	20	19	39
Urso	UMU-1-EM	3.2	2.3	18.1	13.8	32	5	37
	UMU-1-HS	3.8	2.8	21.9	18.2	34	8	42
	UMU-1-SCE	3.2	2.4	20.6	17.5	41	11	52
	UMU-1-SCN	3.0	2.4	15.8	14.4	27	9	36
	UMU-1-WMN	3.1	1.3	15.6	8.5	25	15	40
	UMU-1-WMS	4.0	1.9	13.7	7.5	12	3	15
	UMU-2	4.0	3.3	29.2	27.2	53	14	67
	UMU-3	2.8	1.7	14.0	10.3	25	12	37
Woodland Commons	WMU-1	3.8	3.1	26.7	24.9	50	14	64
Yahara River	YMU-1	2.3	1.5	11.2	9.8	23	17	40

**Table 16. Spring 2023 Floristic Quality Assessment Data Summarized by Management Unit**

Conservancy	MU ID	wMean C		wFQI		Species Richness		
		Native	All	Native	All	Native	Non-native	Total
Babcock								
Grand View								
Indian Mound/Thrun Marsh								
Marsh Woods								
Siggelkow Rd								
Taylor Rd								
Urso								
Woodland Commons								
Yahara River								

Rare Plants

RES located and mapped one sensitive plant species during the summer of 2022: obovate beak grain (*Diarrhena obovata*, State Endangered). The population was located throughout the understory at Indian Mound/Thrun Marsh Conservancies (Figure 7). It is relatively common for this species to be planted in shady parts of residential yards; however, no records are known to exist indicating that this is a planted population (pers. comm. S. Larson), nor does it appear that this population has escaped from nearby landscaped areas. No other rare plants were documented at any other Village conservancy during summer 2022 or spring 2023.

Invasive Species

Invasive species such as common buckthorn, Tartarian honeysuckle (*Lonicera tatarica*), white mulberry (*Morus alba*), Canada thistle (*Cirsium arvense*), narrow-leaved cattail, and reed canary grass are prevalent at Village conservancies. One particularly interesting non-native species population located and mapped by RES was a population of strawberry ground-cherry (*Physalis alkekengi*) (Photo 18) in GMU-3A (mesic forest in southern portion of Grand View Conservancy) which has likely escaped from nearby residential gardens. This popular ornamental is native to Europe and Asia, and the characteristic inflated calyx of this genus creates a bladder or lantern-shaped structure enclosing the fruit. Locations and extents of significant invasive species populations mapped in 2022 are presented in Figure 6a-Figure 6i.



Conceptual Ecological Restoration Plan

Introduction

Reflecting the diversity of biotic and abiotic conditions of the Village conservancies, fourteen target natural communities are proposed for this restoration effort: oak woodland, southern dry-mesic forest, southern mesic forest, southern hardwood swamp, floodplain forest, shrub-carr, emergent marsh, pond shoreline, southern sedge meadow, wet prairie, wet-mesic prairie, mesic prairie, dry-mesic prairie, and conifer plantation. A variety of methods are proposed to accomplish this including invasive species removal, native seeding/planting, prescribed fire, and habitat enhancement feature installation.

Some of the recommended restoration actions will result in substantial reductions in tree and shrub cover while other recommendations will result in almost no perceptible change to the appearance of the system. The CMP seeks to address both the positive and negative aspects of these changes.

This plan assumes restoration activities will begin in the winter of 2023/2024; however, the proposed restoration and management schedule is subject to change based on funding availability and scheduling constraints. Conceptual restoration plan maps are shown on Figure 8a-Figure 8i in Appendix A.

Basis of Design

Historical Ecology

The primary goal of this CMP is to restore the historical ecological conditions of the conservancies where appropriate and feasible. Many of the wooded plant communities in the vicinity of the Village historically consisted of open-canopy savannas and woodlands. Tree canopy cover in savannas range from 10-50%, woodlands range from 50-99%, and, in forest systems, canopy cover exceeds 99%. These systems were typically dominated by oaks and hickories. Closed-canopy forests, such as southern mesic forest, did exist historically in this area. In those locations, RES is recommending restoring and maintaining the closed canopy structure. With lack of maintenance, particularly fire, and invasive species colonization since European settlement, forest canopies in this area have gradually closed and forests have become overstocked by shade-tolerant species. This condition is not desirable from an ecological perspective because it reduces wildlife habitat quality, reduces biological diversity, denudes the herbaceous layer increasing runoff and reducing downstream water quality, and allows for the ready transmission of forest pests and diseases.

Forest thinning and invasive shrub removal is recommended for most of the Village conservancies to various degrees. The most substantial changes in canopy structure are proposed for portions of Grand View Conservancy, Siggelkow Road Park, Taylor Road Conservancy, and Woodland Commons Conservancy. Proposed reductions in tree cover in these areas range from 40-71% depending on the conservancy (Table 17). Shrub enhancement is proposed for most wooded areas so the reduction in shrub cover will be temporary. The mesic forest canopy at Grand View Conservancy will be significantly denuded in the short-term; however, to expedite recovery of these systems, dense tree and shrub planting with fast-growing species is proposed. The Village could also opt to phase tree removal and reforestation in these areas to minimize canopy reduction at any given point in time.



Table 17. Pre- and Post-restoration Tree and Shrub Cover

Conservancy	MU	Proposed Community	Pre-restoration % Cover		Post-restoration % Cover	
			Tree	Shrub	Tree	Shrub**
Grand View*	GMU-3A	Mesic Forest	77%	52%	6%	2%
	GMU-3B	Mesic Forest	117%	18%	77%	9%
Siggelkow Rd	SMU-1	Oak Woodland	92%	18%	46%	4%
Taylor Rd	TMU-2	Dry-mesic Prairie	51%	39%	1%	17%
Woodland Commons	WMU-1	Oak Woodland	113%	56%	44%	12%

* Mesic forest in the southern portion of Grand View Conservancy is dominated overwhelmingly by invasive trees. The intent is for this forest to remain closed-canopy mesic forest; however, invasive trees must first be removed which will result in an open-canopy system for several decades until planted trees begin reaching maturity.

** Post-restoration shrub cover reflects conditions immediately after woody removal. Enhancement of the shrub layer is proposed for several conservancies and native shrub cover is expected to rebound accordingly.

Wildlife

Wildlife habitat improvement is also a critical design consideration. RES instituted the following design considerations in developing this CMP to improve habitat for birds, bats, mammals, herptiles, and native crayfish. For birds, the CMP seeks to increase and enhance habitat extent, connectivity, quality, structure, and buffers by reducing non-native, invasive species; installing native tree, shrub, and herbaceous species with diverse budburst phenology and fruit/seed diversity in forest and shrubland habitats; installing a diverse mix of native herbaceous species in herbaceous plant communities (e.g., prairies and emergent marshes); and retaining and creating snags. The CMP also seeks to promote prey biomass and foraging areas for birds by maximizing stream and wetland buffers and implementing Integrated Pest Management (IPM) strategies.

For bats, maintain linear habitat corridors, retain/create dead and dying trees, avoid summer tree removal, conduct prescribed burning, and retain natural vegetation along waterbodies. For non-bat mammals, restore natural vegetation along waterbodies.

For herptiles, restore upland hardwoods forest; retain and create downed woody debris; create, restore, and enhance wetlands and ponds; and reduce cover of non-native, invasive species. For native crayfish, maintain and enhance floodplain and isolated wetlands, control invasive species, establish diverse native plant communities, and reduce cover of root mat forming species (e.g., cattail and reed canary grass)

Human Considerations

The appearance of restored woodlands is often drastically different than the overstocked, shrub-invaded woodlands that many people are accustomed to encountering in urban and suburban contexts. In fact, many people may have never seen an example of a healthy remnant or restored ecosystem; and therefore, lack a frame of reference. Residents living adjacent to densely wooded areas may also perceive a reduction in privacy as a result of tree and shrub thinning. Forest restoration can therefore be regarded in a negative light. On the other hand, immense value is had by connecting with history and becoming refamiliarized with the historical ecosystems that have been nearly erased from the landscape. In this way, people can become acquainted with new ways of observing and interacting with these systems. It can be difficult to find balance between the immediate emotional response to a restored landscape with appreciation for the new and enhanced functions that system is now providing. It is critically important in these modern times for people to reconnect to landscapes of the past and participate in recreating them when the opportunities arise.



As mentioned previously, proposed enhancement of the shrub layer in restored woodlands will help to recreate the sense of privacy enjoyed by conservancy neighbors in a relatively short amount of time. Dense tree and shrub replanting of fast-growing species proposed at Grand View Conservancy are an added feature of the CMP that will help to accelerate canopy recovery in this area.

Lastly, open-canopy forests provide users with an enhanced sense of safety as they allow for a more extensive field of view and lack of cover for illegal activities. It is clear that short-term inconveniences are relatively minor tradeoffs when compared to the enhanced aesthetics, wildlife viewing, public safety, and cleaner water that will be provided by the restored conservancies.

Target Plant Communities

If hydrology restoration is pursued at any of the conservancies, those measures should be completed prior to the vegetation restoration activities such as seeding and planting.

Oak Woodland

Enhancement of existing oak woodland is proposed at Marsh Woods Conservancy (4.47 acres) and Urso Park (7.91 acres). In addition, southern dry-mesic forest is proposed to be converted to oak woodland at Siggelkow Road Park (3.82 acres) and Woodland Commons Conservancy (5.16 acres). Proposed enhancement/rehabilitation measures include the following:

- Woody invasive species should be removed in MMU-1, UMU-1, SMU-1, and WMU-1 in winter 2023/2024. Tree-sized common buckthorn should be removed using chainsaws and small/scattered patches of invasive shrubs such as common buckthorn, honeysuckle, multi-flora rose (*Rosa multiflora*), privet (*Ligustrum vulgare*), and autumn olive (*Elaeagnus umbellata*) should be cut with brushcutters. Dense and extensive populations of invasive shrubs, such as those at WMU-1 should be removed via forestry mower. Cut stumps should be spot-treated with herbicide immediately after removal. In areas that are forestry mowed, broadcast-spray resprouting invasive shrubs with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- Cut or girdle all boxelder, white mulberry, and silver poplar (*Populus alba*) trees using chainsaws and treat stumps with herbicide in MMU-1, UMU-1, SMU-1, and WMU-1 in winter 2023/2024.
- More extensive tree removal is proposed for SMU-1 and WMU-1 in order to convert these areas to oak woodland. Remove or girdle all black cherry, hackberry, ash, American basswood, black walnut, and cottonwood. To help offset costs, the Village could consider conducting timber salvage operations using professional foresters in these areas as several of these tree species could provide valuable timber.
- Retain several logs from each conservancy for use as downed woody debris habitat enhancement features.
- Spot-spray non-native, invasive, herbaceous species such as Canada thistle, day-lily (*Hemerocallis fulva*), Japanese hedge-parsley (*Torilis japonica*), and garlic mustard with herbicide throughout the growing season starting in early spring 2024 once initial tree and shrub removal is completed. Opening of the canopy will likely result in large flushes of garlic mustard so timely response will be critical for early control of this species. Repeat spot-spraying in 2025 and 2026.
- Where fuel loads are adequate, conduct prescribed burns in MMU-1, UMU-1, SMU-1, and WMU-1 in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer



should be mowed and raked. Broadcast seed MMU-1 and UMU-1 in fall 2024 per Table 18. Broadcast seed SMU-1 and WMU-1 in fall 2024 per Table 19. Debris left over from forestry mowing may need to be removed prior to seeding if it will inhibit seed/soil contact. Excessive debris will need to be removed from around the base of trees to be preserved prior to burning.

- In seeded areas of SMU-1, and WMU-1 where annual weeds become prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Install native trees and shrubs shown in Table 20 at SMU-1 and WMU-1 once woody invasive species have been adequately controlled in spring/summer 2025. Native tree and shrub planting is not proposed for oak woodland at MMU-1 or UMU-1; however, if natural recruitment of native woody species is lacking several years after initial restoration activities in these areas, the Village should consider supplemental native woody planting.
- Begin long-term management of MMU-1, UMU-1, SMU-1, and WMU-1 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 18. Oak Woodland Herbaceous Seed Mix for MMU-1 and UMU-1

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Carex molesta</i>	field oval sedge	0.53
<i>Carex normalis</i>	spreading oval sedge	0.96
<i>Carex radiata</i>	curly wood sedge	0.64
<i>Carex sprengei</i>	long-beaked sedge	0.06
<i>Elymus hystrix</i>	bottlebrush grass	6.72
<i>Elymus villosus</i>	silky wild rye	3.84
<i>Luzula multiflora</i>	common wood rush	0.32
<i>Schizachyrium scoparium</i>	little bluestem	4.80
Forbs		
<i>Agastache nepetoides</i>	yellow giant hyssop	1.54
<i>Allium cernuum</i>	nodding wild onion	0.22
<i>Aquilegia canadensis</i>	wild columbine	0.69
<i>Baptisia alba</i>	white wild indigo	1.28
<i>Bouteloua curtipendula</i>	side oats grama	4.80
<i>Eupatorium altissimum</i>	tall boneset	0.96
<i>Eutrochium purpureum</i>	purple joe pye weed	0.64
<i>Helianthus divaricatus</i>	woodland sunflower	0.32
<i>Helianthus strumosus</i>	pale-leaved sunflower	0.32
<i>Monarda fistulosa</i>	wild bergamot	0.64
<i>Polygonatum biflorum</i>	smooth Solomon's seal	0.06
<i>Rudbeckia triloba</i>	brown-eyed Susan	1.28
<i>Solidago juncea</i>	early goldenrod	0.64
<i>Symphyotrichum laeve</i>	smooth blue aster	0.12
<i>Symphyotrichum oolentangiense</i>	sky-blue aster	0.12
<i>Thalictrum thalictroides</i>	rue anemone	0.32
<i>Veronicastrum virginicum</i>	Culver's root	0.06
<i>Zizia aurea</i>	golden alexanders	0.12
Total		32.00
Cover Crop		
<i>Elymus canadensis</i>	Canada wild rye	64.00
Gr. Total		96.00



Table 19. Oak Woodland Herbaceous Seed Mix for SMU-1 and WMU-1

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Carex molesta</i>	field oval sedge	2.11
<i>Carex normalis</i>	spreading oval sedge	3.84
<i>Carex radiata</i>	curly wood sedge	2.56
<i>Carex sprengei</i>	long-beaked sedge	0.26
<i>Elymus hystrix</i>	bottlebrush grass	26.88
<i>Elymus villosus</i>	silky wild rye	15.36
<i>Luzula multiflora</i>	common wood rush	1.28
<i>Schizachyrium scoparium</i>	little bluestem	19.20
Forbs		
<i>Agastache nepetoides</i>	yellow giant hyssop	6.16
<i>Allium cernuum</i>	nodding wild onion	0.90
<i>Aquilegia canadensis</i>	wild columbine	2.78
<i>Baptisia alba</i>	white wild indigo	5.12
<i>Bouteloua curtipendula</i>	side oats grama	19.20
<i>Eupatorium altissimum</i>	tall boneset	3.84
<i>Eutrochium purpureum</i>	purple joe pye weed	2.56
<i>Helianthus divaricatus</i>	woodland sunflower	1.28
<i>Helianthus strumosus</i>	pale-leaved sunflower	1.28
<i>Monarda fistulosa</i>	wild bergamot	2.56
<i>Polygonatum biflorum</i>	smooth Solomon's seal	0.26
<i>Rudbeckia triloba</i>	brown-eyed Susan	5.12
<i>Solidago juncea</i>	early goldenrod	2.56
<i>Symphotrichum laeve</i>	smooth blue aster	0.46
<i>Symphotrichum oolentangiense</i>	sky-blue aster	0.46
<i>Thalictrum thalictroides</i>	rue anemone	1.28
<i>Veronicastrum virginicum</i>	Culver's root	0.23
<i>Zizia aurea</i>	golden alexanders	0.46
Total		128.00
Cover Crop		
<i>Elymus canadensis</i>	Canada wild rye	64.00
Gr. Total		192.00

Table 20. Oak Woodland Woody Plant Palette for SMU-1 and WMU-1

Scientific Name	Common Name	Density (trees/shrubs per acre)
<i>Carya ovata</i>	shagbark hickory	10
<i>Corylus americana</i>	hazelnut	15
<i>Hamamelis virginiana</i>	American witch-hazel	10
<i>Prunus americana</i>	wild plum	20
<i>Quercus alba</i>	white oak	10
<i>Quercus macrocarpa</i>	bur oak	5
<i>Quercus velutina</i>	black oak	10
<i>Ribes missouriense</i>	Missouri gooseberry	10
<i>Viburnum acerifolium</i>	maple-leaved viburnum	10
Total		100



Southern Dry-mesic Forest

Southern dry-mesic forest enhancement is proposed at Indian Mound Conservancy (11.87 acres). Proposed enhancement measures include the following:

- Woody invasive species should be removed in ITMU-1 (dry-mesic forest portion) in winter 2023/2024. If tree-sized common buckthorn is encountered, it should be removed using chainsaws. Invasive saplings, shrubs, and vines such as common buckthorn, honeysuckle, multi-flora rose, privet, Asian bittersweet (*Celastrus orbiculatus*), and Norway maple (*Acer platanoides*) should be cut with brushcutters or chainsaws. Cut stumps should be spot-treated with herbicide immediately after removal. Spot-spray resprouting invasive woody species with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- Cut or girdle all boxelder, white mulberry, Norway spruce, and Norway maple trees using chainsaws and treat stumps with herbicide in ITMU-1 in winter 2023/2024.
- Retain several logs for use as downed woody debris habitat enhancement features.
- Spot-spray non-native, invasive, herbaceous species such as Canada thistle, day-lily, lily-of-the-valley (*Convallaria majalis*), reed canary grass, and garlic mustard with herbicide throughout the growing season starting in spring 2024 once initial tree and shrub removal is completed. Opening of the canopy may result in flushes of garlic mustard so timely response will be critical for early control of this species. Repeat spot-spraying in 2025 and 2026.
- Where fuel loads are adequate, conduct prescribed burns in ITMU-1 in fall 2024 to prepare the soil for native seeding. Exclude areas dominated by obovate beak grain as reseeding these areas is not necessary. If burning is not feasible, the herbaceous layer may need to be mowed and raked. Broadcast seed these same areas in fall 2024 per Table 21.
- Native tree and shrub planting is not proposed for the dry-mesic forest portion of ITMU-1; however, if natural recruitment of native woody species is lacking several years after initial restoration activities in these areas, the Village should consider supplemental native woody planting.
- Begin long-term management of ITMU-1 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 21. Southern Dry-mesic Forest Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Carex radiata</i>	curly wood sedge	0.64
<i>Carex spengelii</i>	long-beaked sedge	0.06
<i>Elymus hystrix</i>	bottlebrush grass	7.56
<i>Elymus villosus</i>	silky wild rye	4.86
<i>Luzula multiflora</i>	common wood rush	0.32
Forbs		
<i>Allium cernuum</i>	nodding wild onion	0.22
<i>Anemone quinquefolia</i>	wood anemone	0.64
<i>Aquilegia canadensis</i>	wild columbine	0.69
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	0.32
<i>Caulophyllum thalictroides</i>	blue cohosh	3.01
<i>Claytonia virginica</i>	spring beauty	0.20
<i>Desmodium glutinosum</i>	pointed tick-trefoil	0.02



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
<i>Dicentra cucullaria</i>	dutchman's britches	0.13
<i>Dodecatheon meadia</i>	shooting star	0.38
<i>Eupatorium altissimum</i>	tall boneset	0.32
<i>Eutrochium purpureum</i>	purple joe pye weed	0.64
<i>Geranium maculatum</i>	wild geranium	0.03
<i>Helianthus divaricatus</i>	woodland sunflower	0.32
<i>Helianthus strumosus</i>	pale-leaved sunflower	0.32
<i>Hepatica nobilis</i> var. <i>acuta</i>	sharp-lobed hepatica	0.16
<i>Heuchera richardsonii</i>	prairie alum root	3.84
<i>Maianthemum racemosum</i>	false Solomon's seal	0.32
<i>Podophyllum peltatum</i>	may apple	0.03
<i>Polemonium reptans</i>	Jacob's ladder	0.13
<i>Polygonatum biflorum</i>	smooth Solomon's seal	0.06
<i>Rudbeckia triloba</i>	brown-eyed Susan	1.28
<i>Sanguinaria canadensis</i>	bloodroot	0.10
<i>Solidago flexicaulis</i>	broad-leaved goldenrod	0.32
<i>Solidago juncea</i>	early goldenrod	1.28
<i>Solidago ulmifolia</i>	elm-leaved goldenrod	0.95
<i>Symphyotrichum laeve</i>	smooth blue aster	1.98
<i>Thalictrum thalictroides</i>	rue anemone	0.32
<i>Veronicastrum virginicum</i>	Culver's root	0.06
<i>Viola pubescens</i>	downy yellow violet	0.48
Total		32.00
Cover Crop		
<i>Elymus canadensis</i>	Canada wild rye	64.00
Gr. Total		96.00

Southern Mesic Forest

Southern mesic forest enhancement is proposed at Babcock Conservancy (0.57 acres), Grand View Conservancy (7.20 acres), and Indian Mound Conservancy (1.71 acres). Proposed enhancement measures include the following:

- Woody invasive species should be removed in GMU-3A, GMU-3B, and ITMU-1 (mesic forest portion) in winter 2023/2024. It should be noted that no highly invasive shrubs were noted at BMU-1, however, this should be confirmed as the implementation phase approaches. If tree-sized common buckthorn is encountered at any of the conservancies, it should be removed using chainsaws. Invasive saplings, shrubs, and vines such as common buckthorn, honeysuckle, multi-flora rose, privet, and Asian bittersweet should be cut with brushcutters or chainsaws. Dense and extensive populations of invasive shrubs, such as those at GMU-3A, should be removed via forestry mower. Cut stumps should be spot-treated with herbicide immediately after removal. In areas that are forestry mowed, broadcast-spray resprouting invasive woody species with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- Cut or girdle all boxelder, white mulberry, and black locust (*Robinia pseudoacacia*) trees using chainsaws and treat stumps with herbicide in GMU-3A, GMU-3B, and ITMU-1 in winter 2023/2024.
- Retain several logs for use as downed woody debris habitat enhancement features.
- Spot-spray non-native, invasive, herbaceous species such as Canada thistle, day-lily, lily-of-the-valley, reed canary grass, strawberry ground-cherry, and garlic mustard with herbicide throughout the growing season at all four conservancies starting in spring 2024 once initial tree and shrub



removal is completed. Opening of the canopy will likely result in large flushes of garlic mustard so timely response will be critical for early control of this species. Repeat spot-spraying in 2025 and 2026.

- Where fuel loads are adequate, conduct prescribed burns in GMU-3A, GMU-3B, and ITMU-1 in fall 2024 to prepare the soil for native seeding. Exclude areas at Indian Mound/Thrun Marsh Conservancies that are dominated by obovate beak grain as reseeding these areas is not necessary. Seedbed preparation is also not necessary at BMU-1. If burning is not feasible, the herbaceous layer may need to be mowed and raked. Broadcast seed GMU-3B, and ITMU-1 in fall 2024 per Table 22. Due to the open canopy conditions that will result at GMU-3A, broadcast seed this area in fall 2024 per the Mesic Prairie Mix in Table 34. Debris left over from forestry mowing may need to be removed prior to seeding if it will inhibit seed/soil contact. Excessive debris will need to be removed from around the base of trees to be preserved prior to burning.
- Install native trees and shrubs shown in Table 23 in GMU-3A and GMU-3B once woody invasive species have been adequately controlled in spring 2025.
- In seeded areas of GMU-1A and GMU-1B where annual weeds become prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Native tree and shrub planting is not proposed for BMU-1 or ITMU-1; however, if natural recruitment of native woody species is lacking several years after initial restoration activities, the Village should consider supplemental native woody planting.
- Begin long-term management of BMU-1, GMU-3A, GMU-3B, and ITMU-1 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 22. Southern Mesic Forest Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Carex blanda</i>	common wood sedge	0.96
<i>Carex normalis</i>	spreading oval sedge	1.83
<i>Carex radiata</i>	curly wood sedge	0.64
<i>Carex sprengei</i>	long-beaked sedge	0.06
<i>Elymus hystrix</i>	bottlebrush grass	7.42
<i>Elymus villosus</i>	silky wild rye	4.86
<i>Luzula multiflora</i>	common wood rush	0.32
<i>Muhlenbergia mexicana</i>	leafy satin grass	0.38
Forbs		
<i>Allium cernuum</i>	nodding wild onion	0.22
<i>Anemone canadensis</i>	meadow anemone	0.03
<i>Anemone virginiana</i>	Virginia anemone	0.13
<i>Aquilegia canadensis</i>	wild columbine	0.69
<i>Claytonia virginica</i>	spring beauty	0.20
<i>Dicentra cucullaria</i>	dutchman's britches	0.13
<i>Dodecatheon meadia</i>	shooting star	0.38
<i>Eupatorium altissimum</i>	tall boneset	0.96
<i>Eutrochium purpureum</i>	purple joe pye weed	0.64
<i>Geranium maculatum</i>	wild geranium	0.03



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
<i>Helianthus strumosus</i>	pale-leaved sunflower	0.03
<i>Heuchera richardsonii</i>	prairie alum root	3.84
<i>Phlox divaricata</i>	blue phlox	1.56
<i>Podophyllum peltatum</i>	may apple	0.03
<i>Polemonium reptans</i>	Jacob's ladder	0.13
<i>Polygonatum biflorum</i>	smooth Solomon's seal	0.06
<i>Rudbeckia triloba</i>	brown-eyed Susan	1.28
<i>Sanguinaria canadensis</i>	bloodroot	0.06
<i>Solidago flexicaulis</i>	broad-leaved goldenrod	0.32
<i>Solidago juncea</i>	early goldenrod	1.28
<i>Solidago ulmifolia</i>	elm-leaved goldenrod	0.95
<i>Symphyotrichum laeve</i>	smooth blue aster	1.98
<i>Thalictrum dasycarpum</i>	purple meadow rue	0.19
<i>Thalictrum thalictroides</i>	rue anemone	0.32
<i>Veronicastrum virginicum</i>	Culver's root	0.06
Total		32.00
Cover Crop		
<i>Elymus canadensis</i>	Canada wild rye	64.00
Gr. Total		96.00

Table 23. Southern Mesic Forest Woody Plant Palette for GMU-3A and GMU-3B

Scientific Name	Common Name	Density (trees/shrubs per acre)
<i>Acer saccharum</i>	sugar maple	20
<i>Carpinus caroliniana</i>	muscle-wood	20
<i>Carya cordiformis</i>	bitternut hickory	20
<i>Corylus americana</i>	hazelnut	20
<i>Hamamelis virginiana</i>	American witch-hazel	20
<i>Prunus americana</i>	wild plum	25
<i>Quercus alba</i>	white oak	15
<i>Quercus macrocarpa</i>	bur oak	15
<i>Quercus rubra</i>	red oak	15
<i>Ribes americanum</i>	American black currant	20
<i>Tilia americana</i>	American basswood	20
<i>Sambucus canadensis</i>	elderberry	20
<i>Ulmus americana</i>	American elm	20
Total		250

Southern Hardwood Swamp

Southern hardwood swamp enhancement is proposed at Babcock Conservancy (1.95 acres), Grand View Conservancy (4.76 acres), Indian Mound/Thrun Marsh Conservancies (4.34 acres), Marsh Woods Conservancy (0.95 acres), and Urso Park (7.33 acres). Proposed enhancement measures include the following:

- Woody invasive species should be removed in BMU-2 (hardwood swamp portion), GMU-1A-HS, GMU-1B (hardwood swamp portion), ITMU (hardwood swamp portion), MMU-3 (hardwood swamp portion), and UMU-1-HS in winter 2023/2024. If tree-sized common buckthorn is encountered, it should be removed using chainsaws. Invasive saplings, shrubs, and vines such as common buckthorn, honeysuckle, multi-flora rose, privet, and Asian bittersweet should be cut with brushcutters or chainsaws. Cut stumps should be spot-treated with herbicide immediately after removal. Spot-spray resprouting woody invasive species with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.



- Herbicides used in southern hardwood swamp areas should be those approved for use in aquatic environments.
- Cut or girdle all boxelder, white mulberry, and black locust trees using chainsaws and treat stumps with herbicide in BMU-2, GMU-1A-HS, GMU-1B, ITMU, MMU-3, and UMU-1-HS in winter 2023/2024.
- Retain several logs for use as downed woody debris habitat enhancement features.
- Spot-spray non-native, invasive, herbaceous species such as Canada thistle, day-lily, lily-of-the-valley, reed canary grass, Japanese hedge-parsley, and wild parsnip (*Pastinaca sativa*) with herbicide throughout the growing season starting in spring 2024 once initial tree and shrub removal is completed. Large populations of reed canary grass may need to be broadcast-sprayed. Repeat spot-spraying in 2025 and 2026.
- Install native trees and shrubs shown in Table 24 in the southern hardwood swamp portions of BMU-2, GMU-1A-HS, GMU-1B, ITMU, MMU-3, and UMU-1-HS once woody invasive species have been adequately controlled in spring/summer 2025. Broadcast seed these same areas after woody plant installation in fall 2025 per Table 25. The herbaceous layer may need to be mowed and raked prior to seeding to allow for good seed-soil contact.
- Begin long-term management of BMU-2, GMU-1A-HS, GMU-1B, ITMU, MMU-3, and UMU-1-HS in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 24. Southern Hardwood Swamp Woody Plant Palette

Scientific Name	Common Name	Density (trees/shrubs per acre)
<i>Acer rubrum</i>	red maple	5
<i>Celtis occidentalis</i>	hackberry	10
<i>Cornus amomum</i>	silky dogwood	5
<i>Cornus sericea</i>	red osier dogwood	10
<i>Ilex verticillata</i>	common winterberry	10
<i>Physocarpus opulifolius</i>	ninebark	10
<i>Quercus bicolor</i>	swamp white oak	15
<i>Quercus macrocarpa</i>	bur oak	10
<i>Sambucus canadensis</i>	elderberry	10
<i>Viburnum lentago</i>	nannyberry	15
Total		100

Table 25. Southern Hardwood Swamp Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Calamagrostis canadensis</i>	blue-joint grass	3.00
<i>Carex crinita</i>	fringed sedge	1.00
<i>Carex gracillima</i>	graceful sedge	0.50
<i>Carex grayi</i>	Gray's sedge	0.50
<i>Carex lupulina</i>	hop sedge	0.50
<i>Carex stipata</i>	awl fruited sedge	4.00
<i>Cinna arundinacea</i>	wood reed grass	0.50
<i>Glyceria canadensis</i>	rattlesnake manna grass	1.00
<i>Glyceria striata</i>	fowl manna grass	0.25
<i>Muhlenbergia mexicana</i>	leafy satin grass	0.05
Forbs		
<i>Anemone canadensis</i>	meadow anemone	0.50



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
<i>Boltonia asteroides</i>	false aster	1.00
<i>Campanulastrum americanum</i>	tall bellflower	0.50
<i>Clematis virginiana</i>	virgin's bower	0.05
<i>Eutrochium purpureum</i>	purple joe pye weed	1.00
<i>Hypericum ascyron</i>	great St. Johns wort	1.00
<i>Lobelia cardinalis</i>	cardinal flower	0.05
<i>Lysimachia ciliata</i>	fringed loosestrife	0.50
<i>Rosa setigera</i>	savanna rose	0.50
<i>Rudbeckia laciniata</i>	tall coneflower	3.00
<i>Rudbeckia subtomentosa</i>	sweet black-eyed Susan	0.50
<i>Sphenopholis obtusata</i>	prairie wedge grass	0.05
<i>Symphotrichum lateriflorum</i>	side-flowering aster	0.10
<i>Verbesina alternifolia</i>	wingstem	0.05
<i>Zizia aurea</i>	golden alexanders	0.25
Total		20.35
Cover Crop		
<i>Elymus virginicus</i>	Virginia wild rye	64.00
Gr. Total		84.35

Floodplain Forest

Floodplain forest enhancement is proposed at Yahara River Conservancy (0.69 acres). Proposed enhancement measures include the following:

- Woody invasive species should be removed in YMU-1 (floodplain forest portion) in winter 2023/2024. Woody invasive species such as common buckthorn and honeysuckle should be cut with brushcutters or chainsaws. Cut stumps should be spot-treated with herbicide immediately after removal. Spot-spray resprouting woody invasive species with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- Herbicides used in YMU-1 should be those approved for use in aquatic environments.
- Spot-spray non-native, invasive, herbaceous species such as Canada thistle, reed canary grass, and wild parsnip with herbicide throughout the growing season starting in spring 2024 once initial tree and shrub removal is completed. Repeat spot-spraying in 2025 and 2026.
- Where fuel loads and moisture levels are adequate, conduct a prescribed burn in YMU-1 in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer may need to be mowed and raked. Broadcast seed these same areas in fall 2024 per Table 26. Excessive debris will need to be removed from around the base of trees to be preserved prior to burning.
- Begin long-term management of YMU-1 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 26. Floodplain Forest Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Calamagrostis canadensis</i>	blue-joint grass	1.28
<i>Carex crinita</i>	fringed sedge	1.28
<i>Carex gracillima</i>	graceful sedge	0.96
<i>Carex grayi</i>	Gray's sedge	3.20
<i>Carex lacustris</i>	lake sedge	1.28
<i>Carex lupulina</i>	hop sedge	3.20



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
<i>Carex stipata</i>	awl fruited sedge	1.28
<i>Carex typhina</i>	cattail sedge	1.28
<i>Cinna arundinacea</i>	wood reed grass	2.24
<i>Glyceria striata</i>	fowl manna grass	1.28
<i>Leersia oryzoides</i>	rice-cut grass	1.28
<i>Muhlenbergia mexicana</i>	leafy satin grass	1.92
<i>Sphenopholis obtusata</i>	prairie wedge grass	1.28
Forbs		
<i>Acorus americanus</i>	American sweet flag	0.64
<i>Anemone canadensis</i>	meadow anemone	0.32
<i>Boltonia asteroides</i>	false aster	1.92
<i>Campanulastrum americanum</i>	tall bellflower	1.92
<i>Clematis virginiana</i>	virgin's bower	0.32
<i>Eutrochium purpureum</i>	purple joe pye weed	1.28
<i>Helenium autumnale</i>	sneezeweed	0.32
<i>Lobelia cardinalis</i>	cardinal flower	0.64
<i>Lysimachia ciliata</i>	fringed loosestrife	0.32
<i>Rosa setigera</i>	savanna rose	0.32
<i>Rudbeckia laciniata</i>	tall coneflower	0.64
<i>Rudbeckia subtomentosa</i>	sweet black-eyed Susan	0.32
<i>Symphotrichum lateriflorum</i>	side-flowering aster	0.64
<i>Verbesina alternifolia</i>	wingstem	0.32
<i>Zizia aurea</i>	golden alexanders	0.32
Total		32.00
Cover Crop		
<i>Elymus virginicus</i>	Virginia wild rye	64.00
Gr. Total		96.00

Shrub-carr

Shrub-carr enhancement is proposed at Marsh Woods Conservancy (1.14 acres) and Urso Park (3.82 acres). In addition, 1.79 acres of conifer plantation and old apple orchards at Urso Park are proposed to be converted to shrub-carr. Proposed enhancement/rehabilitation measures include the following:

- Woody invasive species should be removed in MMU-3 (shrub-carr portion), UMU-1-SCE, UMU-1-SCN, and UMU-3 in winter 2023/2024. Woody invasive species such as common buckthorn, multi-flora rose, and honeysuckle should be cut with brushcutters or chainsaws. Cut stumps should be spot-treated with herbicide immediately after removal. Spot-spray resprouting woody invasive species with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- Herbicides used in shrub-carr wetland areas should be those approved for use in aquatic environments.
- Remove all apple and red pine trees within UMU-3 in winter 2023/2024. Apple stumps will need to be treated with herbicide. Retain Norway spruce growing along Hidden Farm Road. To help offset costs, the Village could consider conducting timber salvage operations using professional foresters in this area as the red pine may have commercial value.
- Spot-spray non-native, invasive, herbaceous species such as reed canary grass, wild parsnip, and Japanese hedge-parsley with herbicide throughout the growing season starting in spring 2024 once initial tree and shrub removal is completed. Repeat spot-spraying in 2025 and 2026.



- Where fuel loads are adequate, conduct prescribed burns in MMU-3, UMU-1-SCE, and UMU-1-SCN in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer in these areas may need to be mowed and raked. Broadcast seed these same areas in fall 2024 per Table 27.
- Install native shrubs shown in Table 28 in UMU-3 in spring 2025.
- Begin long-term management of MMU-3, UMU-1-SCE, UMU-1-SCN, and UMU-3 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 27. Shrub-carr Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Calamagrostis canadensis</i>	blue-joint grass	6.40
<i>Carex crinita</i>	fringed sedge	3.20
<i>Carex gracillima</i>	graceful sedge	1.60
<i>Carex grayi</i>	Gray's sedge	3.20
<i>Carex lupulina</i>	hop sedge	1.60
<i>Carex sprengei</i>	long-beaked sedge	1.60
<i>Carex stipata</i>	awl fruited sedge	1.60
Forbs		
<i>Angelica atropurpurea</i>	great angelica	4.80
<i>Eutrochium maculatum</i>	spotted Joe-pye weed	3.20
<i>Lycopus americanus</i>	water horehound	1.60
<i>Rosa setigera</i>	savanna rose	1.60
<i>Thalictrum dasycarpum</i>	purple meadow rue	1.60
Total		32.00
Cover Crop		
<i>Elymus virginicus</i>	Virginia wild rye	64.00
Gr. Total		96.00

Table 28. Shrub-carr Woody Plant Palette

Scientific Name	Common Name	Density (shrubs per acre)
<i>Aronia melanocarpa</i>	black chokeberry	20
<i>Cornus amomum</i>	silky dogwood	10
<i>Cornus sericea</i>	red osier dogwood	10
<i>Physocarpus opulifolius</i>	ninebark	20
<i>Salix bebbiana</i>	beaked willow	25
<i>Sambucus canadensis</i>	elderberry	25
<i>Spiraea alba</i>	white meadow-sweet	20
<i>Viburnum lentago</i>	nannyberry	20
Total		150

Emergent Marsh

Emergent marsh enhancement is proposed at Babcock Conservancy (4.40 acres), Grand View Conservancy (7.55 acres), Indian Mound/Thrun Marsh Conservancies (4.13 acres), Marsh Woods Conservancy (6.52 acres), Urso Park (5.36 acres), and Yahara River Conservancy (0.36 acres). The emergent marshes on Village property are all dominated by non-native cattail. Broad-scale and aggressive cattail control efforts are only recommended in marshes that are isolated from Lake Waubesa, the Yahara River, and Mud Lake. Emergent marshes that are adjacent to these waters will constantly be subject to propagule pressure from offsite marshes so cattail control in these areas is unlikely to be sustainable in the long-term. Proposed



enhancement measures include the following:

- Treat invasive species such as common reed (*Phragmites australis* ssp. *australis*), reed canary grass, and purple loosestrife in the emergent zones of BMU-2, MMU-3, and YMU-with an herbicide approved for use in aquatic environments in spring/summer 2024. Repeat this process in 2025 and 2026.
- Broadcast-spray narrow-leaved cattail, reed canary grass, purple loosestrife and other invasive species with an herbicide approved for use in aquatic environments in the emergent zones of GMU-1A-EM, GMU-1B, and ITMU-2 in spring/summer 2024. Spot-treat narrow-leaved cattail in UMU-1-EM in spring/summer 2024. Conduct follow-up spot treatments in summer 2024 and continue spot treatments in GMU-1A-EM, GMU-1B, ITMU-2, and UMU-1-EM in 2025 and 2026.
- Conduct prescribed burns in emergent portions of GMU-1A-EM, GMU-1B, and ITMU-2, and UMU-1-EM fall 2024 to prepare the soil for native seeding. Broadcast seed these areas after burning in fall 2024 per Table 29.
- Install emergent plant plugs per Table 17 in spring 2025 within the emergent zones of GMU-1A-EM, GMU-1B, and ITMU-2, and UMU-1-EM.
- Begin long-term management of BMU-2, GMU-1A-EM, GMU-1B, ITMU-2, MMU-3, UMU-1-EM, and YMU-1 in winter 2026/2027. This would include annual spot-spraying of invasive species and supplemental native seed/plant installation as needed.

Table 29. Emergent Marsh Plant Palette

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)	Planting Density (plants per acre)
Graminoids			
<i>Carex lacustris</i>	lake sedge	0.00	100
<i>Carex comosa</i>	longhair sedge	2.40	
<i>Carex stipata</i>	owl-fruited sedge	0.96	
<i>Carex vulpinoidea</i>	fox sedge	5.28	
<i>Juncus effusus</i>	soft rush	0.96	
<i>Leersia oryzoides</i>	rice-cut grass	2.40	
<i>Scirpus cyperinus</i>	woolgrass	4.80	100
<i>Scirpus fluviatilis</i>	river bulrush	0.00	150
<i>Schoenoplectus tabernaemontani</i>	soft-stem bulrush	0.96	100
Forbs			
<i>Alisma subcordatum</i>	water plantain	7.68	
<i>Asclepias incarnata</i>	marsh milkweed	1.44	
<i>Iris virginica</i>	Virginia iris	9.60	100
<i>Pontederia cordata</i>	pickerel weed	0.00	100
<i>Rumex orbiculatus</i>	water dock	1.44	
<i>Sagittaria latifolia</i>	arrowhead	2.40	
<i>Sparganium eurycarpum</i>	giant bur reed	7.68	150
Total		48.00	800



Pond Shoreline

Shoreline enhancement is proposed for the areas surrounding the ponds at Grand View Conservancy (0.68 acres) and Urso Park (0.09 acres). Pond shoreline will be enhanced as follows:

- After initial invasive species control efforts are completed per recommendations for the emergent marsh portion of GMU-1B and the shrub-carr portion of UMU-1 above, install emergent plant plugs per Table 30 in spring 2025 within the shoreline enhancement zones of Grandview Commons and Urso Park.
- Spot-spray non-native, invasive, herbaceous species such as red canary grass with herbicide approved for use in aquatic environments throughout the growing season starting in summer 2025. Repeat spot-spraying in 2026.
- Begin long-term management of the shoreline enhancement zones in winter 2026/2027. This would include annual spot-spraying of invasive species and supplemental native seed/plant installation as needed.

Table 30. Pond Shoreline Plant Palette

Scientific Name	Common Name	Planting Density (plants per acre)
Graminoids		
<i>Carex crinita</i>	fringed sedge	150
<i>Carex lacustris</i>	lake sedge	150
<i>Juncus effusus</i>	soft rush	200
<i>Leersia oryzoides</i>	rice-cut grass	300
<i>Scirpus cyperinus</i>	woolgrass	200
<i>Scirpus fluviatilis</i>	river bulrush	300
<i>Schoenoplectus tabernaemontani</i>	soft-stem bulrush	200
Forbs		
<i>Alisma subcordatum</i>	water plantain	200
<i>Asclepias incarnata</i>	marsh milkweed	200
<i>Iris virginica</i>	Virginia iris	200
<i>Pontederia cordata</i>	pickerel weed	200
<i>Rumex orbiculatus</i>	water dock	200
<i>Sagittaria latifolia</i>	arrowhead	200
<i>Sparganium eurycarpum</i>	giant bur reed	300
Total		3,000

Southern Sedge Meadow

Southern sedge meadow enhancement is proposed at Marsh Woods Conservancy (8.98 acres) and Urso Park (3.40 acres). Minimal work is proposed for the existing high-quality sedge meadow at Marsh Woods Conservancy and more aggressive efforts will be required to convert the degraded wet meadows at Marsh Woods Conservancy and Urso Park to sedge meadow. Proposed enhancement measures include the following:

- Any woody invasive species in sedge meadow enhancement areas should be removed in winter 2023/2024 using brushcutters or chainsaws. Cut stumps should be spot-treated with herbicide immediately after removal.
- Broadcast spray reed canary grass in spring and late-summer 2024 using herbicide approved for use in aquatic settings in the wet meadow portions of Urso Park and Marsh Woods Conservancy.
- Spot-spray non-native, invasive, herbaceous species such as Canada thistle and wild parsnip with



herbicide approved for use in aquatic environments throughout the growing season starting in spring 2024. Repeat spot-spraying in 2025 and 2026.

- Where fuel loads are adequate, conduct prescribed burns in MMU-3, UMU-1-WMN, and UMU-1-WMS in fall 2024 to prepare the soil for native seeding. Exclude the existing sedge meadow area at Marsh Woods Conservancy which is already dominated by native sedges. If burning is not feasible, the herbaceous layer may need to be mowed and raked. Broadcast seed MMU-3, UMU-1-WMN, and UMU-1-WMS, excluding the existing sedge meadow in MMU-3, in fall 2024 per Table 31. Install hairy fruit sedge (*Carex trichocarpa*) and tussock sedge (*Carex stricta*) plugs in clusters throughout MMU-3, UMU-1-WMN, and UMU-1-WMS, excluding the existing sedge meadow in MMU-3, in spring 2025 per Table 31.
- In seeded areas where annual weeds are prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Begin long-term management of MMU-3, UMU-1-WMN, and UMU-1-WMS in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 31. Southern Sedge Meadow Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)	Planting Density (plants per acre)
Graminoids			
<i>Calamagrostis canadensis</i>	blue-joint grass	0.50	
<i>Carex bebbii</i>	Bebb's sedge	3.00	
<i>Carex buxbaumii</i>	Buxbaum's sedge	1.00	
<i>Carex comosa</i>	longhair sedge	2.00	
<i>Carex hystericina</i>	bottlebrush sedge	4.00	
<i>Carex pellita</i>	broad-leaved woolly sedge	1.00	
<i>Carex scoparia</i>	broom sedge	3.00	
<i>Carex stipata</i>	owl-fruited sedge	1.00	
<i>Carex stricta</i>	tussock sedge	0.00	50
<i>Carex trichocarpa</i>	hairy fruit sedge	0.00	50
<i>Carex vulpinoidea</i>	fox sedge	4.00	
<i>Glyceria striata</i>	fowl manna grass	0.05	
<i>Scirpus atrovirens</i>	dark green bulrush	0.50	
Forbs			
<i>Acorus americanus</i>	American sweet flag	1.00	
<i>Allium cernuum</i>	nodding wild onion	0.25	
<i>Anemone canadensis</i>	meadow anemone	0.25	
<i>Angelica atropurpurea</i>	great angelica	1.00	
<i>Arnoglossum plantagineum</i>	prairie Indian plantain	1.00	
<i>Asclepias incarnata</i>	swamp milkweed	1.00	
<i>Chelone glabra</i>	turtlehead	0.50	
<i>Cicuta maculata</i>	water hemlock	0.50	
<i>Doellingeria umbellata</i>	flat-topped aster	0.50	
<i>Eupatorium perfoliatum</i>	common boneset	0.50	
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	0.25	
<i>Eutrochium maculatum</i>	Joe pye-weed	0.25	
<i>Gentiana andrewsii</i>	bottle gentian	0.25	
<i>Helianthus grosseserratus</i>	sawtooth sunflower	0.50	
<i>Hypericum ascyron</i>	great St. John's wort	0.50	
<i>Iris virginica</i>	blue flag iris	0.25	
<i>Liatis pycnostachya</i>	prairie blazing star	0.50	



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)	Planting Density (plants per acre)
<i>Lobelia siphilitica</i>	great blue lobelia	0.25	
<i>Lycopus americanus</i>	American water horehound	0.50	
<i>Lythrum alatum</i>	winged loosestrife	0.25	
<i>Mentha arvensis</i>	wild mint	0.50	
<i>Physostegia virginiana</i>	prairie obedient plant	0.25	
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.25	
<i>Senna hebecarpa</i>	wild senna	0.50	
<i>Silphium perfoliatum</i>	cup-plant	0.50	
<i>Solidago gigantea</i>	late goldenrod	0.25	
<i>Solidago ohioensis</i>	Ohio goldenrod	0.25	
<i>Solidago riddellii</i>	Riddell's goldenrod	0.25	
<i>Spartina pectinata</i>	prairie cord grass	1.00	
<i>Symphyotrichum novae-angliae</i>	New England aster	0.50	
<i>Symphyotrichum puniceum</i>	marsh aster	0.25	
<i>Thalictrum dasycarpum</i>	purple meadow rue	0.50	
<i>Verbena hastata</i>	blue vervain	0.25	
<i>Vernonia fasciculata</i>	common ironweed	0.25	
<i>Veronicastrum virginicum</i>	Culver's root	0.05	
<i>Zizia aurea</i>	golden alexanders	0.50	
Total		36.10	100
Cover Crop			
<i>Elymus virginicus</i>	Virginia wild rye	64.00	
Gr. Total		100.10	100

Wet Prairie

Wet prairie enhancement is proposed at Grand View Conservancy (3.86 acres). This work will involve converting existing wet meadow dominated by reed canary grass to native wet prairie. Proposed enhancement measures include the following:

- Any woody invasive species present in the wet meadow portion of GMU-1A should be removed in winter 2023/2024 using brushcutters or chainsaws. Cut stumps should be spot-treated with herbicide immediately after removal.
- Broadcast spray reed canary grass in spring and late-summer 2024 using herbicide approved for use in aquatic settings in the wet meadow portion of GMU-1A.
- Where fuel loads are adequate, conduct prescribed burns in the wet meadow portion of GMU-1A in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer may need to be mowed and raked. Broadcast seed this area in fall 2024 per Table 32.
- In seeded areas where annual weeds are prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Spot-spray non-native, invasive, herbaceous species such as wild parsnip with herbicide approved for use in aquatic environments throughout the growing season starting in spring 2025. Repeat spot-spraying in 2026.
- Begin long-term management of the wet meadow portion of GMU-1A in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.



Table 32. Wet Prairie Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Calamagrostis canadensis</i>	Canada blue-joint grass	4.11
<i>Carex annectens</i>	yellow-fruited sedge	2.00
<i>Carex bebbii</i>	Bebb's sedge	2.23
<i>Carex scoparia</i>	pointed broom sedge	2.23
<i>Carex stipata</i>	awl fruited sedge	2.51
<i>Carex vulpinoidea</i>	fox sedge	2.51
<i>Scirpus atrovirens</i>	dark green bulrush	1.00
<i>Spartina pectinata</i>	prairie cordgrass	1.95
Forbs		
<i>Asclepias incarnata</i>	marsh milkweed	1.00
<i>Angelica atropurpurea</i>	great angelica	1.00
<i>Bidens cernua</i>	nodding bur marigold	2.00
<i>Boltonia asteroides</i>	false aster	1.12
<i>Eupatorium perfoliatum</i>	boneset	0.25
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	0.05
<i>Eutrochium maculatum</i>	Joe pye-weed	0.25
<i>Helianthus grosseserratus</i>	sawtooth sunflower	0.50
<i>Iris virginica</i>	Virginia iris	0.50
<i>Liatris spicata</i>	marsh blazing star	0.25
<i>Lythrum alatum</i>	winged loosestrife	0.05
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.05
<i>Senna hebecarpa</i>	wild senna	0.50
<i>Silphium perfoliatum</i>	cup plant	0.50
<i>Solidago riddellii</i>	Riddell's goldenrod	0.05
<i>Symphotrichum lanceolatum</i>	panicle aster	0.05
<i>Symphotrichum novae-angliae</i>	New England aster	0.25
<i>Symphotrichum puniceum</i>	red-stem aster	0.05
<i>Verbesina alternifolia</i>	wingstem	0.05
<i>Vernonia fasciculata</i>	common ironweed	0.25
<i>Veronicastrum virginicum</i>	Culver's root	0.13
<i>Zizia aurea</i>	golden alexanders	0.50
Total		27.90
Cover Crop		
<i>Elymus virginicus</i>	Virginia wild rye	64.00
Gr. Total		91.90

Wet-mesic Prairie

Wet-mesic prairie enhancement is proposed at Grand View Conservancy (1.89 acres). Proposed enhancement measures include the following:

- Woody invasive species dominating the wet-mesic portion of GMU-1A are found mostly in the herbaceous layer due to recent mowing. Resprouting woody invasive species should be broadcast or spot-sprayed with herbicide approved for use in aquatic environments in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- Spot-spray non-native, invasive, herbaceous species such as wild parsnip with herbicide approved for use in aquatic environments throughout the growing season starting in spring 2024. Repeat spot-spraying in 2025 and 2026.
- Where fuel loads are adequate, conduct prescribed burns in the wet meadow portion of GMU-1A in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer



may need to be mowed and raked. Broadcast seed this area in fall 2024 per Table 33.

- In seeded areas where annual weeds are prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Begin long-term management of the wet-mesic prairie portion of GMU-1A in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 33. Wet-mesic Prairie Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Andropogon gerardii</i>	big bluestem	7.60
<i>Calamagrostis canadensis</i>	Canada blue-joint grass	1.90
<i>Carex annectens</i>	yellow-fruited sedge	4.54
<i>Carex brevior</i>	short beak sedge	3.33
<i>Carex molesta</i>	field oval sedge	4.75
<i>Carex normalis</i>	spreading oval sedge	4.75
<i>Carex scoparia</i>	pointed broom sedge	4.75
<i>Carex vulpinoidea</i>	fox sedge	4.56
<i>Panicum virgatum</i>	switch grass	8.55
<i>Scirpus atrovirens</i>	dark green bulrush	3.33
<i>Spartina pectinata</i>	prairie cordgrass	2.85
Forbs		
<i>Allium cernuum</i>	nodding wild onion	2.76
<i>Anemone canadensis</i>	meadow anemone	2.34
<i>Arnoglossum plantagineum</i>	prairie Indian plantain	2.63
<i>Asclepias incarnata</i>	marsh milkweed	3.42
<i>Baptisia alba</i>	white wild indigo	0.95
<i>Bidens frondosa</i>	common beggar-ticks	1.05
<i>Boltonia asteroides</i>	false aster	0.95
<i>Bromus kalmii</i>	Arctic brome	5.51
<i>Desmodium canadense</i>	Canada tick trefoil	2.76
<i>Eryngium yuccifolium</i>	rattlesnake master	0.95
<i>Eupatorium perfoliatum</i>	boneset	0.95
<i>Eutrochium maculatum</i>	Joe pye-weed	0.95
<i>Helenium autumnale</i>	sneezeweed	0.83
<i>Helianthus grosseserratus</i>	sawtooth sunflower	0.76
<i>Heliopsis helianthoides</i>	early sunflower	0.95
<i>Hypericum ascyron</i>	great St. John's wort	0.95
<i>Lathyrus palustris</i>	marsh vetch	0.10
<i>Liatris spicata</i>	marsh blazing star	1.62
<i>Lycopus americanus</i>	water horehound	0.48
<i>Lythrum alatum</i>	winged loosestrife	0.05
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.95
<i>Senna hebecarpa</i>	wild senna	1.71
<i>Silphium laciniatum</i>	compass plant	0.95
<i>Silphium perfoliatum</i>	cup plant	0.29
<i>Silphium terebinthinaceum</i>	prairie dock	0.95
<i>Solidago riddellii</i>	Riddell's goldenrod	0.95
<i>Symphotrichum lanceolatum</i>	panicle aster	0.29
<i>Symphotrichum novae-angliae</i>	New England aster	1.43
<i>Symphotrichum puniceum</i>	red-stem aster	0.29
<i>Thalictrum dasycarpum</i>	purple meadow rue	1.33
<i>Tradescantia ohiensis</i>	spiderwort	0.23
<i>Verbena hastata</i>	blue vervain	1.09



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
<i>Vernonia fasciculata</i>	common ironweed	0.86
<i>Veronicastrum virginicum</i>	Culver's root	0.17
<i>Zizia aurea</i>	golden alexanders	1.71
Total		95.00
Cover Crop		
<i>Elymus virginicus</i>	Virginia wild rye	64.00
Gr. Total		159.00

Mesic Prairie

Mesic prairie enhancement is proposed at Grand View (5.66 acres) and Marsh Woods Conservancies (6.20 acres). The existing mesic prairie communities in GMU-2A and MMU-2 will require less work than the surrogate grassland and invaded mesic prairie communities in GMU-2B and MMU-2. Proposed enhancement measures are as follows:

- Woody invasive species should be removed in GMU-2A, GMU-2B, and MMU-2 in winter 2023/2024. Small/scattered patches of invasive shrubs such as common buckthorn, honeysuckle, multi-flora rose (*Rosa multiflora*), and autumn olive (*Elaeagnus umbellata*) should be cut with brushcutters or chainsaws. Dense and extensive populations of invasive shrubs, such as those in GMU-2B should be removed via forestry mower. Retain patches of gray dogwood in GMU-2B for bird habitat. Cut stumps should be spot-treated with herbicide immediately after removal. In areas that are forestry mowed, broadcast-spray resprouting invasive shrubs with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive species in 2025 and 2026.
- In MMU-2, broadcast-spray the initial flush of cool-season grasses in early spring 2024 with a grass-specific herbicide prior to the first flush of warm season vegetation.
- Spot-spray non-native, invasive, herbaceous species such as reed canary grass and wild parsnip with herbicide throughout the growing season starting in spring 2024 in GMU-2A, GMU-2B, and MMU-2. Repeat spot-spraying in 2025 and 2026.
- Where fuel loads are adequate, conduct prescribed burns in GMU-2A, GMU-2B, and MMU-2 in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer may need to be mowed and raked. Broadcast seed these areas in fall 2024 per Table 34. Debris left over from forestry mowing in GMU-2B may need to be removed prior to seeding if it will inhibit seed/soil contact.
- In seeded areas where annual weeds are prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Begin long-term management of GMU-2A, GMU-2B, and MMU-2 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.



Table 34. Mesic Prairie Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Andropogon gerardii</i>	big bluestem	7.86
<i>Bouteloua curtipendula</i>	side oats grama	31.84
<i>Carex bicknellii</i>	Bicknell's sedge	2.07
<i>Carex molesta</i>	field oval sedge	2.07
<i>Panicum virgatum</i>	switch grass	8.00
<i>Schizachyrium scoparium</i>	little bluestem	31.84
<i>Sorghastrum nutans</i>	Indian grass	8.00
Forbs		
<i>Allium cernuum</i>	nodding wild onion	4.00
<i>Asclepias syriaca</i>	common milkweed	4.00
<i>Asclepias tuberosa</i>	butterfly weed	4.00
<i>Chamaecrista fasciculata</i>	partridge pea	8.00
<i>Coreopsis palmata</i>	prairie coreopsis	0.50
<i>Dalea purpurea</i>	purple prairie clover	4.00
<i>Desmodium canadense</i>	Canada tick trefoil	4.00
<i>Echinacea pallida</i>	pale purple coneflower	3.01
<i>Hypericum ascyron</i>	great St. John's wort	0.10
<i>Monarda fistulosa</i>	wild bergamot	1.01
<i>Pycnanthemum tenuifolium</i>	slender mountain mint	0.50
<i>Ratibida pinnata</i>	yellow coneflower	4.00
<i>Rudbeckia hirta</i>	black-eyed Susan	4.00
<i>Rudbeckia subtomentosa</i>	sweet black-eyed Susan	0.50
<i>Silphium laciniatum</i>	compass plant	0.50
<i>Silphium terebinthinaceum</i>	prairie dock	0.50
<i>Solidago juncea</i>	early goldenrod	0.25
<i>Solidago rigidum</i>	stiff goldenrod	0.25
<i>Solidago speciosa</i>	showy goldenrod	0.50
<i>Symphyotrichum laeve</i>	smooth blue aster	0.50
<i>Symphyotrichum novae-angliae</i>	New England aster	0.50
<i>Symphyotrichum oolentangiense</i>	sky-blue aster	0.50
<i>Tradescantia ohiensis</i>	spiderwort	0.33
<i>Verbena stricta</i>	hoary vervain	0.25
<i>Veronicastrum virginicum</i>	Culver's root	0.05
<i>Zizia aurea</i>	golden alexanders	0.50
Total		137.90
Cover Crop		
<i>Elymus canadensis</i>	Canada wild rye	64.00
Gr. Total		201.90

Dry-mesic Prairie

Conversion of 1.20 acres of woody-invaded surrogate grassland to dry-mesic prairie at Taylor Road Conservancy is proposed in TMU-2. Proposed restoration measures are as follows:

- Woody invasive shrubs such as honeysuckle, common buckthorn, and smooth sumac should be removed using brushcutters or chainsaws in TMU-2 in winter 2023/2024. Cut stumps should be spot-treated with herbicide immediately after removal. Spot-spray resprouting invasive shrubs with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive shrubs in 2025 and 2026.
- Extensive tree removal is proposed for TMU-2 in order to convert these areas to dry-mesic prairie. Remove all black walnut, white mulberry, white ash (*Fraxinus americana*), and cottonwood trees



using chainsaws and treat stumps with herbicide in winter 2023/2024. Spot-treat resprouting trees with herbicide in 2024 and 2025. To help offset tree removal costs, the Village could consider conducting timber salvage operations using professional foresters as some of these trees could have commercial value. Due to the steep slopes in these areas, it is not recommended to create or maintain any snags.

- Spot-spray the initial flush of cool-season grasses in early spring 2024 with a grass-specific herbicide prior to the first flush of warm season vegetation.
- Spot-spray non-native, invasive, herbaceous species such as reed canary grass, crown vetch, and spotted knapweed (*Centaurea stoebe*), with herbicide throughout the growing season starting in spring 2024 in TMU-2. Repeat spot-spraying in 2025 and 2026.
- Where fuel loads are adequate, conduct prescribed burns in TMU-2 in fall 2024 to prepare the soil for native seeding. If burning is not feasible, the herbaceous layer should be mowed, raked, and removed. Broadcast seed these areas in fall 2024 per Table 35.
- In seeded areas where annual weeds are prevalent, vegetation should be mowed to a height of 12 inches once it reaches approximately 24 inches in height in May or June 2025. Two additional mowing events should occur in mid- and late-summer. Repeat this process in 2026.
- Begin long-term management of TMU-2 in winter 2026/2027. This should include annual spot-spraying of invasive species as needed, periodic prescribed burning, and supplemental native seed/plant installation as needed.

Table 35. Dry-mesic Prairie Herbaceous Seed Mix

Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
Graminoids		
<i>Andropogon gerardii</i>	big bluestem	7.72
<i>Bouteloua curtipendula</i>	side oats grama	30.89
<i>Carex bicknellii</i>	Bicknell's sedge	2.07
<i>Panicum virgatum</i>	switch grass	5.52
<i>Schizachyrium scoparium</i>	little bluestem	30.89
<i>Sorghastrum nutans</i>	Indian grass	8.00
<i>Sporobolus heterolepis</i>	prairie dropseed	0.80
Forbs		
<i>Allium cernuum</i>	nodding wild onion	3.81
<i>Asclepias tuberosa</i>	butterfly weed	2.76
<i>Asclepias verticillata</i>	whorled milkweed	2.07
<i>Chamaecrista fasciculata</i>	partridge pea	7.17
<i>Coreopsis palmata</i>	prairie coreopsis	0.50
<i>Dalea purpurea</i>	purple prairie clover	4.00
<i>Drymocallis arguta</i>	prairie cinquefoil	8.27
<i>Echinacea pallida</i>	pale purple coneflower	3.01
<i>Eryngium yuccifolium</i>	rattlesnake master	1.38
<i>Heliopsis helianthoides</i>	early sunflower	1.38
<i>Lupinus perennis</i>	wild lupine	1.38
<i>Monarda fistulosa</i>	wild bergamot	1.01
<i>Pycnanthemum tenuifolium</i>	slender mountain mint	4.83
<i>Rudbeckia hirta</i>	black-eyed Susan	4.90
<i>Rudbeckia subtomentosa</i>	sweet black-eyed Susan	0.50
<i>Solidago nemoralis</i>	old-field goldenrod	3.01
<i>Symphyotrichum laeve</i>	smooth blue aster	0.50
<i>Symphyotrichum oolentangiense</i>	sky-blue aster	0.50
<i>Tradescantia ohiensis</i>	spiderwort	0.33



Scientific Name	Common Name	Seeding Rate (oz PLS/ac)
<i>Verbena stricta</i>	hoary vervain	0.25
<i>Zizia aurea</i>	golden alexanders	0.50
Total		137.90
Cover Crop		
<i>Elymus canadensis</i>	Canada wild rye	64.00
Gr. Total		201.90

Conifer Plantation

There are two conifer plantations that are not currently recommended to be removed and converted to other habitat types: the conifer plantation at Taylor Road Conservancy (1.94 acres), and the western conifer plantation along Hidden Farm Road in Urso Park (0.31 acres). Work proposed in these areas is minimal and includes the following:

- Woody invasive shrubs such as honeysuckle and common buckthorn should be removed using brushcutters or chainsaws in TMU-1 and the western conifer plantation in UMU-3 in winter 2023/2024. Cut stumps should be spot-treated with herbicide immediately after removal. Spot-spray resprouting invasive shrubs with herbicide in spring and summer 2024. Continue aggressive spot-treatment of resprouting woody invasive shrubs in 2025 and 2026.
- Remove all boxelder and white mulberry trees using chainsaws and treat stumps with herbicide in winter 2023/2024. Spot-treat resprouting trees with herbicide in 2024 and 2025.
- Spot-spray lily-of-the-valley, crown vetch, and other invasive herbaceous species with herbicide in spring and summer 2024. Repeat this process in 2025 and 2026.
- Begin long-term management of TMU-1 and the western conifer plantation in UMU-3 in winter 2026/2027. This would include annual spot-spraying of invasive species as needed.
- A timber harvest should be considered for TMU-1 in approximately 20 years when the trees reach harvest age. Conversion of this area to oak woodland should be considered at that time.

Implementation Schedule

Tables 36-44 summarize the proposed restoration implementation schedule. This schedule is subject to change based on funding, scheduling, and staffing constraints.

Table 36. Babcock Conservancy Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Mesic Forest	BMU-1 (0.57 acres)													
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Native seed installation				X									
	Long-term management													X
Southern Hardwood Swamp	BMU-2 (1.95 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Native tree and shrub installation						X							
	Native seed installation								X					
Emergent Marsh	BMU-2 (4.40 acres)													
	Spot-spray reed canary grass and purple loosestrife		X	X			X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.

Table 37. Grand View Conservancy Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Mesic Forest	GMU-3A (4.31 acres)													
	Woody invasive forestry mowing, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native tree and shrub installation						X							
	Maintenance mowing						X	X			X	X		
	Long-term management													X
	GMU-3B (2.89 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
Southern Hardwood Swamp	Prescribed burning				X									
	Native seed installation				X									
	Native tree and shrub installation						X							
	Maintenance mowing						X	X			X	X		
	Long-term management													X
	GMU-1A-HS, GMU-1B (4.76 acres)													
	Woody invasive hand removal, stump treatments	X												
Southern Hardwood Swamp	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Native tree and shrub installation						X							

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Native seed installation								X					
	Long-term management													X
Emergent Marsh	GMU-1A-EM, GMU-1B (7.55 acres)													
	Broadcast-spray herb stratum		X											
	Spot-herbicide treatments - herb stratum			X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native plant installation						X							
	Long-term management													X
Pond Shoreline	GMU-1B (0.68 acres)													
	Native plant installation						X							
	Spot-herbicide treatments - herb stratum						X	X			X	X		
	Long-term management													X
Wet Prairie	GMU-1A-WM (3.86 acres)													
	Woody invasive hand removal, stump treatments	X												
	Broadcast-spray reed canary grass		X	X										
	Prescribed burning				X									
	Native seed installation				X									
	Maintenance mowing						X	X			X	X		
	Spot-herbicide treatments - herb stratum						X	X			X	X		
Wet-mesic Prairie	Long-term management													X
	GMU-1A-WM (1.89 acres)													
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
Mesic Prairie	Maintenance mowing						X	X			X	X		
	Long-term management													X
	GMU-2A (2.45 acres)													
	Woody invasive hand removal, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Maintenance mowing						X	X			X	X		
	Long-term management													X
	GMU-2B (3.21 acres)													
	Woody invasive forestry mowing, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Maintenance mowing						X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.

Table 38. Indian Mound/Thrun Marsh Conservancies Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Dry-mesic Forest	ITMU-1 (11.87 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
Southern Mesic Forest	ITMU-1 (1.71 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
Southern Hardwood Swamp	ITMU-2 (4.34 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Native tree and shrub installation						X							
	Native seed installation								X					
	Long-term management													X
Emergent Marsh	ITMU-2 (4.13 acres)													
	Broadcast-spray herb stratum		X											
	Spot-herbicide treatments - herb stratum			X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native plant installation						X							
	Long-term management													X

Note: Schedule subject to change.

Table 39. Marsh Woods Conservancy Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	MMU-1 (4.47 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
Southern Hardwood Swamp	MMU-3 (0.95 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Native tree and shrub installation						X							
	Native seed installation								X					
	Long-term management													X
Shrub-carr	MMU-3 (1.14 acres)													
	Woody invasive hand removal, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
Emergent Marsh	MMU-3 (6.52 acres)													
	Spot-spray common reed, reed canary grass, and purple loosestrife		X	X			X	X			X	X		
	Long-term management													X
Southern Sedge Meadow	MMU-3 (Existing Wet Meadow Area) (1.73 acres)													
	Woody invasive hand removal, stump treatments	X												
	Broadcast-spray reed canary grass		X	X										
	Prescribed burning				X									
	Native seed installation				X									
	Native plant installation						X							
	Maintenance mowing						X	X			X	X		
	Spot-herbicide treatments - herb stratum						X	X			X	X		
	Long-term management													X
	MMU-3 (Existing High-Quality Sedge Meadow) (7.25 acres)													
	Woody invasive hand removal, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Long-term management													X
Mesic Prairie	MMU-2 (Existing Surrogate Grassland Area) (5.10 acres)													
	Woody invasive hand removal, stump treatments	X												
	Broadcast-spray non-native, cool season grasses		X											
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Maintenance mowing						X	X			X	X		

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Long-term management													X
	MMU-2 (Existing Mesic Prairie) (1.10 acres)													
	Woody invasive hand removal, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Maintenance mowing						X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.

Table 40. Siggelkow Road Park Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	SMU-1 (3.82 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native tree and shrub installation						X							
	Long-term management													X

Note: Schedule subject to change.

Table 41. Taylor Road Conservancy Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Dry-mesic Prairie	TMU-2 (1.20 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree removal	X												
	Spot- or broadcast-spray non-native, cool season grasses		X											
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Maintenance mowing						X	X			X	X		
	Long-term management													X
Conifer Plantation	TMU-1 (1.94 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.

Table 42. Urso Park Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	UMU-2 (7.91 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
Southern Hardwood Swamp	UMU-1-HS (7.33 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Native tree and shrub installation						X							
	Native seed installation								X					
	Long-term management													X
Shrub-carr	UMU-1-SCE, UMU-1-SCN (3.82 acres)													
	Woody invasive hand removal, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
	UMU-3 (East Conifer Plantation & Orchard) (1.79 acres)													
	Woody invasive hand removal, stump treatments	X												
	Tree removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native shrub installation						X							
	Long-term management													X
Emergent Marsh	UMU-1-EM (5.36 acres)													
	Spot-treat non-native cattail		X											
	Spot-herbicide treatments - herb stratum			X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native plant installation						X							
	Long-term management													X
Pond Shoreline	UMU-1-SCE (0.09 acres)													
	Native plant installation						X							
	Spot-herbicide treatments - herb stratum						X	X			X	X		
	Long-term management													X
Southern Sedge Meadow	UMU-1-WMN, UMU-1-WMS (3.40 acres)													
	Woody invasive hand removal, stump treatments	X												
	Broadcast-spray reed canary grass		X	X										
	Prescribed burning				X									
	Native seed installation				X									

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Native plant installation						X							
	Maintenance mowing						X	X			X	X		
	Spot-herbicide treatments - herb stratum						X	X			X	X		
	Long-term management													X
Conifer Plantation	UMU-3 (West Conifer Plantation) (0.31 acres)													
	Woody invasive hand removal, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.

Table 43. Woodland Commons Conservancy Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	WMU-1 (5.16 acres)													
	Woody invasive forestry mowing, stump treatments	X												
	Tree girdling/removal	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Native tree and shrub installation						X							
	Maintenance mowing						X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.

Table 44. Yahara River Conservancy Restoration Implementation Schedule

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Floodplain Forest	YMU-1 (0.69 acres)													
	Woody invasive forestry mowing, stump treatments	X												
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Prescribed burning				X									
	Native seed installation				X									
	Long-term management													X
Emergent Marsh	YMU-1 (0.36 acres)													
	Spot-herbicide treatments - herb stratum		X	X			X	X			X	X		
	Long-term management													X

Note: Schedule subject to change.



Adaptive Management

Adaptive management is defined as the day to day, season to season refinements in restoration programming needed to achieve success against the performance criteria. Any adaptive refinements are an anticipated, normal process on restoration projects. Restoration programs require flexibility because of temporal and spatial variability exhibited by natural systems. Adaptive management affords the Village the option to take advantage of the latest scientific and technological techniques for successful restoration.

This CMP is a starting point in an ongoing process of restoring the Village's conservancies biodiversity and natural processes. Regular monitoring will provide feedback on the CMP's effectiveness and will generate information to evaluate and justify the need for changes. Adaptive management is a fundamental tool for use in the restoration, management, and maintenance work.

If needed, potential remedial actions include over-seeding of low diversity or poorly growing areas with native seed collected onsite or nearby or purchased from an outside vendor, use of equipment and vehicles to conduct seeding and woody species replacement, using appropriate methods needed for stabilizing slopes with cover crop and other typical slope protection strategies such as erosion blanketing, limited rock placement, straw bale use, and installation of water deterrence barriers to prevent/stop erosion.

Other Management Considerations

Several conservancies have opportunities for ecological improvement that do not involve vegetation manipulation. For instance, there is significant erosion present at Indian Mound/Thrun Marsh Conservancies caused by stormwater runoff. There are also historic hydrologic modifications at several of the conservancies that are impeding ecological recovery and impairing wetland function. These items are discussed briefly below for the purpose introducing the problem and potential solutions; however, fully developed conceptual plans have not been developed for these topics as that is outside the scope of this CMP.

Indian Mound Stormwater Solutions

Gully Erosion

Several potential solutions exist to permanently repair the severe gully erosion present immediately north of Thrun Marsh. One highly engineered and less desirable solution is to regrade the channel to a stable geometry and then hard armor the entire conveyance with rip rap. This would halt additional erosion from occurring and eliminate sediment entering the downslope wetland. The disadvantage to this approach is it would be aesthetically unappealing and have little biological or ecological value.

A more aesthetic and ecologically sound approach involves creating a step pool system within the highly eroded gully. The erosive force of stormwater exiting the concrete pipe outfall has caused the downstream channel to down-cut triggering a cycle of bank failure, channel widening, and further incision. Over time, the high flows have moved suspended sediment downslope and deposited it within the existing wetland. Thick brush has taken over the area, choking out valuable low-growing herbaceous species that provide soil-stabilizing root systems. Without intervention, further soil erosion will persist, increasing the cost to restore the area.

The step pool design would include regrading the existing banks to raise the channel bottom and reduce bank height and slope. A series of step pools installed at increments along the length of the feature would provide energy-dissipation in the channel from the outfall downslope to the existing trail crossing. By reducing velocity, the pools will promote deposition of sediment originating from the storm sewer system, helping to maintain the channel elevation and reduce sedimentation in the existing wetland. Stone or



boulder riffles/weirs would stabilize the channel above and below the pools to maintain grade, trap sediment, and reduce runoff velocity. Revegetating the banks with native herbaceous species will stabilize the soil matrix above the pool and stone areas.

In addition to repair of the stormwater conveyance channel, RES recommends constructing a shallow wetland scrape to restore historic grades at the mouth of the conveyance. Several feet of sediment that has deposited in the wetland from the eroded uplands has created an alluvial fan (sediment mound) in this location. Removal of this sediment would eliminate invasive species in this area, restore the natural hydrologic regime, increase water storage capacity of the wetland, allow for restoration of historic plant communities, and improve water quality and wildlife habitat. Additional shallow scrapes could be excavated in other strategic locations within the marsh to provide additional benefits to water quality and habitat value.

Hiking Trail Rill Erosion

There are also several potential stormwater solutions for the severe rill erosion on the hiking trails in the eastern portion of Indian Mound Conservancy that is being caused by stormwater runoff from Indian Mound Middle School. However, these solutions would need to be implemented on the school property as that is the source of the issue. One solution is appropriately placed rain gardens. Rain gardens are easily installed, small, shallow depressions planted with native wetland and prairie vegetation (rather than turfgrass) that intercept sheet flow and infiltrate it into the ground. Raingardens are effective in community areas in reducing runoff and soil erosion and promoting water infiltration into the soil.

Bioretention areas are soil- and plant-based stormwater management practices that filter runoff from developed sites by mimicking natural vegetated systems. These naturally control hydrology through infiltration and evapotranspiration. A typical application for a bioretention area is to infiltrate and treat surface runoff from parking lots, in which the bioretention area may consist of a recessed, slotted-curb parking island. Bioretention areas are small, vegetated depressions into which surface water is diverted. Stormwater flows into the bioretention area, ponds on the surface, and gradually infiltrates into the soil. Pollutants are removed by processes that include adsorption, filtration, volatilization, ion exchange, and decomposition. Treated water is allowed to infiltrate into the surrounding soil, or is collected by an underdrain system and discharged to the stormwater system or directly to receiving waters.

Vegetated swales or bioswales are shallow and gently sloped conveyances vegetated with native species. Swales have gently sloping sides and are used to convey the overland flow of stormwater down a subtle gradient. Swales accomplish many of the same functions provided by filter strips (slowing and cleaning water and promoting infiltration), while also providing directed conveyance. This conveyance function is particularly important when managing concentrated flows and during severe storm events when stormwater needs to be directed to a destination, such as a wetland. Swales should be designed with native species and can be augmented with check dams and other techniques to maximize their effectiveness at managing stormwater.

Filter strips are small, gently sloping, vegetated strips of land that slow overland flow of stormwater and promote infiltration. Depending on the type of vegetation and the size of the filter strip, effectiveness of these features varies. Filter strips with dense, tall, native vegetation can remove up to 80% of suspended solids. Filter strips utilizing grass only, particularly turf grass, are much less effective in slowing water and/or removing solids. If the filter strip is constructed with porous media in which water will readily infiltrate, the removal capability for sediments and pollutants will be as high as 98%.



Rain catchment systems are the last stormwater solution discussed for the middle school. Connecting roof downspouts to rain barrels is a highly effective method to separate roof runoff from sewer system. So long as the downspouts discharge into a suitable receiving area, there can be several variations of rain barrel design. Rain barrels can be connected to water holding containers located elsewhere on the site, or controlled to gradually irrigate an entire area over time, allowing for slow infiltration and reducing water velocities that would otherwise erode adjacent soils.

Urso Park and Grand View Conservancy Hydrology Restoration

Hydrologic modifications at Urso Park and Grand View Conservancy present opportunities to restore the natural hydrologic regimes to these areas. This could be accomplished via stream re-meandering, ditch plugging/filling, Beaver Dam Analog (BDA) installation, and/or wetland scrapes. Hydrology restoration is the key to controlling invasive species and successfully restoring historic wetland ecosystems.

Both conservancies contain human-made ditches that are lowering the water tables in the adjacent wetlands and allowing for the proliferation of invasive reed canary grass. Filling or plugging the ditches would slow water moving through the systems, raise the adjacent water tables, and restore a more natural hydrologic regime to the wetlands. Depending on stream history and permitting constraints, re-meandering the streams to their historic course and reconnecting their floodplains may be an appropriate restoration approach.

Once thought to be a nuisance, ecologists now consider beavers, and their dams, to be critical components of healthy and functioning wetland and stream systems. BDA installation is a process-based restoration technique intended to mimic the affect beavers have on ecosystem processes. These structures are constructed using untreated wooden posts driven into the stream substrate and installed across the width of the stream. The posts are then interwoven with willow whips harvested from onsite. Native streambed substrate and brush harvested onsite are used to further stabilize the structure. The intent of BDAs in this context is simply to mimic beaver dams, not to reintroduce beavers to the area.

BDAs are temporary features designed to inhibit discharge at low flows while allowing conveyance during high flows and raise the adjacent water table without increasing surface inundation of the site. This process expands the groundwater saturation zone and raises the water table in areas adjacent to the steam. BDAs also initiate bed control feature development and re-establish bed grades. They function to bring the system to equilibrium and become self-sustaining, negating the need for long-term management. The ditches at Grand View Conservancy and Urso Park appear to be appropriate for this type of instream restoration treatment due to their relatively small size and low-gradient longitudinal profile; however, offsite impacts to neighboring lands would be a critical consideration for this restoration treatment.

Lastly, a shallow wetland scrape could be excavated in the northern portion of Grand View Conservancy (north of Creamery Road). The scrape could be designed to capture water from the ditch and reduce downstream conveyance. The scrape would restore historic grades in this area which would eliminate invasive species, restore the natural hydrologic regime, increase water storage capacity of the wetland, allow for restoration of historic plant communities, and improve water quality and wildlife habitat. Scrape design should follow NRCS scrape specifications (WDNR 2022).

Additional in-depth studies would need to be undertaken to determine the best hydrology restoration treatments for each site and potential offsite impacts. If hydrology restoration is pursued at any of the conservancies, those measures should be completed prior to vegetation restoration activities.



Regulatory Considerations

Wetlands, Waterways, and Floodplains

Wetland restoration activities requiring earthwork within existing wetlands such as wetland scrapes, ditch plugs, and ditch fills would likely require permits from the U.S. Army Corps of Engineers (USACE), WDNR, and potentially other local agencies. This work would likely qualify for a USACE Nationwide Permit 27 for Aquatic Habitat Restoration or similar permit, as well as a WDNR Wetland Conservation General Permit or similar permit. Local permits may also be required through the County and/or Village. The permitting path for BDAs is less clear as this is a relatively new concept to permitting agencies in Wisconsin. Pre-application meetings with USACE, WDNR, and other relevant agencies should be held early in the planning/permitting phase of any project to ensure the proper permits are sought. Official wetland delineations will likely be required in areas where earthwork is proposed.

The eroded gully immediately north of Thrun Marsh may be considered a regulated waterway by the WDNR and/or USACE. This would need to be confirmed by an official wetland/waterway delineation and confirmation with the WDNR. If the erosional feature is considered regulatory, the repair could likely be designed to meet the eligibility requirements of a WDNR Streambank Erosion Control – Integrated Bank Treatment General Permit and a USACE Nationwide Permit 13 for Bank Stabilization.

Projects requiring federal permits are subject to National Historic Preservation Act Section 106 review. Cultural resources investigations may therefore be required in areas subject to ground disturbance. Federal projects are also subject to the Endangered Species Act (ESA) Section 7 review.

Lastly, grading activities proposed within Federal Emergency Management Agency (FEMA) regulatory floodplains typically require floodplain development permits from counties or municipalities. Portions of Babcock, Marsh Woods, and Yahara River Conservancies are located within regulatory special flood hazard areas.

Stormwater and Erosion Control

If any earthwork footprint would exceed 1 acre, a Notice of Intent (NOI) would need to be filed to request coverage under Wisconsin's Construction Site Storm Water Runoff General Permit. Erosion control permits are also usually required at the County or municipal level.

Indian Mounds

McFarland's Indian Mound Policy states that no ground disturbing activities are allowed anywhere within Indian Mound Conservancy. This should be confirmed with the Wisconsin Historical Society because portions of this conservancy are in need of erosion repair that would require land disturbance. Per the Indian Mound Policy, any activities that may cause ground disturbance on or near mounds within the Village conservancies requires prior approval from the Wisconsin Historical Society.

Vegetation on and in the vicinity of Indian mounds should be managed in accordance with the Village's Indian Mound Policy. Mechanized equipment such as forestry mowers should not be used to remove shrubs or trees on or within 15 feet of mounds. Therefore, vegetation clearing on or within 15 feet of the mounds should be conducted using hand equipment such as brushcutters and chainsaws. Trees should not be felled on or dragged across mounds. All cut woody materials should be removed from within 15 feet of the mounds. Roots of mature woody vegetation should be left in place to minimize ground disturbance. No machinery is permitted on slopes steeper than 12% on lands listed on the NRHP unless approved by the Wisconsin Historical Society. Surveys for artifacts on or near the mounds should be conducted after



prescribed burning.

Prescribed Fire

A burn permit will need to be acquired from the Village prior to beginning a prescribed fire program. This will include preparation of a burn plan and close coordination with the Village Fire Department Fire Chief.



Management Plan

Short-term (3 years) and long-term (>3 years) vegetation management/maintenance programs should be implemented at Village conservancies to ensure long-term success of the site. Short-term management is when major efforts are undertaken to restore and enhance vegetation and biological diversity and ensure that the appropriate soil conditions are present for seeding and planting. The restoration phase includes tasks such as reducing non-native species prior to seeding and planting, initial prescribed burning, native seeding/planting, and tree removal. Routine management activities including herbicide application and mowing will occur during the early years of the restoration phase.

After achieving initial vegetation management goals there will be a shift to a lower-cost, reduced-intervention management program. This phase will begin in the fourth year following initial restoration treatments and will continue in perpetuity. This phase generally requires less intensive management efforts. Tasks during the management phase will include one or more of the following: spot herbicide treatments, remedial plantings, prescribed burning, and/or other management activities. Some mowing still may occur during this phase. Tasks are performed on a regular schedule, guided by periodic ecological assessments.

It is during the long-term management phase where opportunities for long-lasting personal involvement by volunteers and/or employees in land stewardship typically begin. Direct involvement in site stewardship and wildlife observations can provide an important and meaningful way to engage the community in the restoration project.

Community Opportunities

Conservancy neighbors and all McFarland residents play a critical role in the short- and long-term success of conservancy restoration and management. Land-use practices adjacent to, upslope, and upstream of the conservancies have demonstrable effects, both positive and negative, on the ecological health of the conservancies. The following are some opportunities residents can participate in to help ensure their natural areas remain healthy.

Education

The Village should consider hosting workshops and field trips designed to educate residents on topics such as stormwater management and green stormwater infrastructure design, native landscaping, ecology and ecological restoration, and other relevant topics. This will give people the tools to be able to recognize environmental degradation, identify the source of degradation, and develop solutions. Education is the most important step in ensuring successful restoration and maintenance of the conservancies' ecological health.

Native Landscaping

Utilizing native species in landscaping is an easy and enjoyable way for residents to have a direct positive impact on their environment. In addition to the aesthetic qualities provided by many native plant species, their deep root systems penetrate deep into the soil profile which increases water infiltration and reduces surface runoff. Native plants provide important pollinator habitat as well as habitat for numerous other wildlife and insect species. Native landscaping would also help to reduce the unwanted spread of non-native garden ornamentals into neighboring conservancies and help reduce Village vegetation maintenance costs. Several native plant nurseries exist in southern Wisconsin with hundreds of plant species available that come in a variety of growth forms, heights, and flower colors. There are also landscape architects that are well-versed in incorporating native plants into landscape design who are valuable resources to rely upon



if needed.

Sustainable Stormwater Infrastructure

Descriptions and benefits of rain gardens, bioswales, and rain catchment systems were described previously in this CMP. These types of systems can easily be adapted to use in almost any residential setting. They are generally inexpensive and have simple designs but provide significant benefits to downstream water quality. Stormwater design and construction specialists can assist landowners with design and installation of these systems.

Volunteering

The Village hosts numerous volunteer opportunities at the conservancies throughout the course of the year, which include activities such as invasive species removal and native planting. These events are perfect opportunities to learn about ecological and ecosystem management while simultaneously improving the ecological condition of the conservancies. Those interested in volunteer opportunities should follow the Village on social media to stay up to date on these opportunities as they arise.

Invasive Species Control

Invasive species are the most significant ecological stressors at Village conservancies and diligent control efforts are needed to reduce their prevalence. Because of the extent and variety of invasive species, numerous methods will be required to control them, including tree removal, forestry mowing/brushcutting, broadcast and spot-herbicide treatment, mowing, hand-pulling, and prescribed fire. Invasive species management during the short-term management phase was described in detail in the Conceptual Ecological Restoration Plan.

Invasive species management during the long-term management phase should include herbicide spot-treatment events conducted throughout each MU in spring and summer of Year-4 and Year-5. Spot-spraying frequency and extent can likely be reduced in subsequent years assuming invasive species have been adequately controlled. Mowing can also be employed prior to flowering/seed set as an alternative to herbicide treatments or if certain invasive species populations missed treatment. Regular prescribed burns (every 2-3 years) should also be instituted particularly in prairies and open-canopy woodlands, but also less frequently in forested areas.

Several conservancies experience relatively heavy use by students and the general public so it will be a priority to protect park users from herbicide exposure. Effective communication between the herbicide application contractor and conservancy staff will be critical to ensure appropriate trail closure during and after herbicide application events. Herbicides will only be applied by licensed contractors following WDNR pesticide use policies and the Pesticide Use Manual Code (4230.1).

Supplemental Planting and Seeding

Supplemental seeding and/or plant installation may be needed in areas with significant native plant mortality and seeding failure as determined qualitatively by a qualified ecologist. Tree and shrub replanting should occur in spring or early summer and supplemental seeding should occur in spring or fall. Species selection should follow the plant palettes and seed mixes presented in the Conceptual Ecological Restoration Plan for the appropriate zones. Following an adaptive management approach, if certain species are observed to be performing particularly well in given areas, then those species should be emphasized in revegetation efforts for those areas.



Prescribed Fire

Fire is a critical tool for reducing shrub invasion into the prairies and savannas and to create suitable conditions for native species establishment and persistence. Prescribed burning should occur in the restored prairies and oak woodlands on a 2 to 3 year interval in either early spring or late-summer/fall. Fire should also periodically be used in closed-canopy forests.

Prescribed burns must only be conducted by qualified, permitted personnel when environmental conditions (wind speed/direction, relative humidity, and fuel load/moisture) are optimal. Burns should not be conducted during periods of drought or when air quality advisories are in place. Because most of the conservancies are surrounded by residential and commercial developments, smoke management will be critical so that smoke-sensitive areas are not affected. Burn permits and approvals must be acquired from the Village of McFarland Fire Department prior to burning.

Mowing can be conducted in lieu of prescribed fire in areas where implementing burns is infeasible. Restored prairie and oak woodland areas should be mowed every two to three years during the long-term management phase in areas where burning is not permitted.



Monitoring Plan

Qualitative Monitoring

A qualified restoration ecologist should conduct qualitative site assessments at least twice per growing season during the short-term management phase to assess vegetation performance and maintenance needs. Qualitative assessments should include inspecting recently restored areas taking note of general species dominance, mortality, disturbances, and maintenance needs. Maintenance needs should be communicated to the Village, and addressed, in a timely manner.

Quantitative Monitoring

Vegetation

To maintain consistency with baseline survey methods and efficiently collect the necessary level of information, monitoring methods should follow those in Study Methods Section of this CMP. Plot sampling following wetland delineation methodology and quadrat sampling along transects are more intensive types of vegetation surveys that the Village can consider utilizing if funding allows. Plots and transects should be randomly located throughout each restored plant community at sampling intensities that accurately represent each community. Species-area curves can be used to determine sampling intensity adequacy.

Wildlife Use

Observations of wildlife utilizing the conservancies and wildlife disturbance (i.e., footprints, tree rubbing, and plant browse) should be documented during monitoring events. Wildlife observations may include, but is not limited to, avian species, amphibian species, reptilian species, insect, and/or mammalian species. The Village should consider conducting formal bird, herptile, mammal, and insect surveys to fully understand functional uplift of wildlife habitat that occurs in response to restoration efforts.

Hydrology

If hydrology restoration is completed at any conservancy, a hydrology monitoring program should be developed. Hydrology monitoring could involve the use of staff gauges and/or water table monitoring wells outfitted with electronic dataloggers to track hydrologic responses to restoration.

Monitoring Schedule

Quantitative vegetation monitoring should occur soon after initial restoration activities are complete within a plant community or MU and then repeated at varying frequencies depending on the habitat being monitored. Table 45 presents an idealized quantitative monitoring schedule; however, the Village may have to adjust this schedule based on resource availability.



Table 45. Quantitative Monitoring Schedule

Plant Community	Year-1	Year-2	Year-3	Year-5	Year-7	Year-10
Herbaceous Communities ¹	X	X	X	X		
Shrub-carr	X	X	X	X	X	
Woodlands and forests without planted trees and shrubs ²	X	X	X	X		
Woodlands and forests with planted trees and shrubs ³	X	X	X	X	X	X

¹ Herbaceous communities include emergent marsh, pond shoreline, southern sedge meadow, wet prairie, wet-mesic prairie, mesic prairie, and dry-mesic prairie.

² Woodlands and forests without planted trees and shrubs includes conifer plantation, floodplain forest, southern dry-mesic forest, southern mesic forest at Indian Mound and Babcock Conservancies, and oak woodlands at Urso Park and Marsh Woods Conservancy.

³ Woodlands and forests with planted trees and shrubs includes southern hardwood swamp, oak woodlands at Woodland Commons Conservancy and Siggelkow Road Park, and southern mesic forest at Grand View Conservancy.

Performance Standards

Vegetation

In general, restored areas should exhibit increasing trends in native species abundance, native plant diversity, *w*FQI, and *w*Mean C and decreasing abundance of non-native and invasive species over time. Specific targets for metrics associated with each plant community type are suggested in Table 46 below; however, failure to attain some of these standards is not indicative that restoration was unsuccessful. Some of these performance standards are relatively stringent and restoration potential varies widely between sites due to constraints inherent to each site. Performance standards are particularly useful when they are used to guide ongoing vegetation management.

Table 46. Vegetation Performance Standards

Performance Standard	Benchmark 1	Benchmark 2	Final
Oak Woodland, Southern Dry-mesic Forest, and Southern Mesic Forest			
Maximum Allowance for Unvegetated Areas	<400 ft ²	<100 ft ²	<10 ft ²
Perennial Native Species Richness	≥10	≥15	≥20
Native Relative Areal Cover	≥50%	≥70%	≥80%
Non-native Relative Areal Cover	<50%	≤30%	≤20%
Southern Hardwood Swamp and Floodplain Forest			
Maximum Allowance for Unvegetated Areas	<400 ft ²	<100 ft ²	<10 ft ²
Perennial Native Hydrophyte Species Richness	≥10	≥15	≥20
Native Hydrophyte Relative Areal Cover (all strata cumulatively)	≥75%	≥80%	≥85%
Native Relative Areal Cover	≥80%	≥85%	≥90%
Non-native Relative Areal Cover	≤20%	≤15%	≤10%
Shrub-carr			
Maximum Allowance for Unvegetated Areas	<400 ft ²	<100 ft ²	<10 ft ²
Perennial Native Hydrophyte Species Richness	≥6	≥10	≥15
Native Hydrophyte Relative Areal Cover (all strata cumulatively)	≥70%	≥75%	≥80%
Native Relative Areal Cover	≥75%	≥80%	≥85%
Non-native Relative Areal Cover	≤25%	≤20%	≤15%
Emergent Marsh & Pond Shoreline			



Performance Standard	Benchmark 1	Benchmark 2	Final
Perennial Native Hydrophyte Species Richness	≥6	≥10	≥15
Native Hydrophyte Relative Areal Cover	≥40%	≥65%	≥75%
Native Relative Areal Cover	≥75%	≥80%	≥85%
Non-native Relative Areal Cover	≤25%	≤20%	≤15%
Sedge Meadow & Wet Prairie			
Maximum Allowance for Unvegetated Areas	<400 ft ²	<100 ft ²	<10 ft ²
Perennial Native Hydrophyte Species Richness	≥6	≥10	≥15
Native Hydrophyte Relative Areal Cover	≥40%	≥65%	≥75%
Native Relative Areal Cover	≥50%	≥70%	≥80%
Non-native Relative Areal Cover	<50%	≤30%	≤20%
Wet-mesic, Mesic, and Dry-mesic Prairie			
Maximum Allowance for Unvegetated Areas	<400 ft ²	<100 ft ²	<10 ft ²
Perennial Native Species Richness	≥6	≥10	≥15
Native Relative Areal Cover	≥50%	≥70%	≥80%
Non-native Relative Areal Cover	<50%	≤30%	≤20%

Hydrology

If hydrology restoration is completed at any conservancy, hydrology performance standards should be developed for each wetland type restored. One potential hydrology performance standard for restored wetlands is as follows: the water table will be ≤12 inches below the ground surface for a duration that is within 20% of the variability range of a reference wetland. An alternative standard for restored sedge meadow and wet prairie wetlands is hydrology will consist of a water table 12 inches or less below the soil surface for a minimum of 28 consecutive days, or two periods of 14 or more consecutive days, during the growing season under normal and wetter than normal hydrological conditions. Inundation during the growing season will not occur except: (1) at the start of the growing season (due to snowmelt/precipitation); and (2) following the 10-year, 24-hour—or greater—precipitation events. Depth of inundation during the growing season will be 6 inches or less with duration of less than 14 consecutive days.

Reporting

Monitoring reports should be prepared summarizing monitoring results from the preceding growing season. Reports would be used to determine if the conservancies are meeting performance standards and could include the following information:

- Site location information, permit numbers (if relevant), methodology, and monitoring dates.
- Goals, objectives, and performance standards of the conservancy.
- Identification of any failures or external disturbances to the site.
- Description of management activities conducted during the last year and corrective actions needed for the upcoming year.
- A summary of all data collected during the past year.
- A summary of all plant species within each plant community.
- Data sheets.



- Hydrology and precipitation data for each year if relevant.
- Wildlife observations.
- A site map with locations of all data collection locations.
- An assessment of the presence and level of occurrence of non-native, invasive species.
- An assessment of the degree to which performance standards are being met.
- Representative site photographs.
- A narrative summary of the monitoring results and conclusions.

Opinion of Probable Costs

Tables 47-64 present RES' opinion of probable costs (OPC) for proposed restoration work as well as estimated labor hours. Cost estimates will need to be refined during the implementation phases of the projects.

Table 47. Babcock Conservancy Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Mesic Forest	BMU-1 (0.57 acres)													
	Spot-herbicide treatments - herb stratum		\$500	\$500			\$550	\$550			\$600	\$600		
	Native seed installation				\$1,500									
	Long-term management													\$2,000
Southern Hardwood Swamp	BMU-2 (1.95 acres)													
	Woody invasive hand removal, stump treatments	\$9,750												
	Tree girdling/removal	\$2,000												
	Spot-herbicide treatments - herb stratum		\$975	\$975			\$1,100	\$1,100			\$1,200	\$1,200		
	Native tree and shrub installation						\$19,500							
	Native seed installation								\$5,000					
Emergent Marsh	BMU-2 (4.40 acres)													
	Spot-spray reed canary grass and purple loosestrife		\$2,225	\$2,225			\$2,500	\$2,500			\$2,750	\$2,750		
	Long-term management													\$9,000
	Total	\$11,750	\$3,700	\$3,700	\$1,500		\$23,650	\$4,150	\$5,000		\$4,550	\$4,550		\$15,000
Grand Total		\$77,550												

Table 48. Babcock Conservancy Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Mesic Forest	BMU-1 (0.57 acres)													
	Spot-herbicide treatments - herb stratum		4	4			4	4			4	4		
	Native seed installation				4									
	Long-term management													12
Southern Hardwood Swamp	BMU-2 (1.95 acres)													
	Woody invasive hand removal, stump treatments	300												
	Tree girdling/removal	24												
	Spot-herbicide treatments - herb stratum		8	8			8	8			8	8		
	Native tree and shrub installation						64							
	Native seed installation								8					
Emergent Marsh	BMU-2 (4.40 acres)													
	Spot-spray reed canary grass and purple loosestrife		20	20			20	20			20	20		
	Long-term management													60
	Total	324	32	32	4		96	32	8		32	32		96
Grand Total		688												

Table 49. Grand View Conservancy Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Mesic Forest	GMU-3A (4.31 acres)													
	Woody invasive forestry mowing, stump treatments	\$10,775												
	Tree girdling/removal	\$43,100												
	Spot-herbicide treatments - herb stratum		\$2,200	\$2,200			\$2,400	\$2,400			\$2,650	\$2,650		
	Prescribed burning				\$5,000									
	Native seed installation				\$1,750									
	Native tree and shrub installation						\$107,750							
	Maintenance mowing						\$900	\$900			\$1,000	\$1,000		
	Long-term management													\$8,750
	GMU-3B (2.89 acres)													
	Woody invasive hand removal, stump treatments	\$14,500												
	Tree girdling/removal	\$28,900												
	Spot-herbicide treatments - herb stratum		\$1,500	\$1,500			\$1,650	\$1,650			\$1,800	\$1,800		
	Prescribed burning				\$3,500									
Southern Hardwood Swamp	Native seed installation				\$7,250									
	Native tree and shrub installation						\$72,250							
	Maintenance mowing						\$600	\$600			\$650	\$650		
	Long-term management													\$6,000
	GMU-1A-HS, GMU-1B (4.76 acres)													
	Woody invasive hand removal, stump treatments	\$23,800												
Emergent Marsh	Tree girdling/removal	\$5,000												
	Spot-herbicide treatments - herb stratum		\$2,400	\$2,400			\$2,650	\$2,650			\$3,000	\$3,000		
	Native tree and shrub installation						\$47,600							
	Native seed installation								\$11,900					
	Long-term management													\$10,000
	GMU-1A-EM, GMU-1B (7.55 acres)													
Pond Shoreline	Broadcast-spray herb stratum		\$2,000											
	Spot-herbicide treatments - herb stratum			\$4,000			\$4,400	\$4,400			\$4,850	\$4,850		
	Prescribed burning				\$5,000									
	Native seed installation				\$18,875									
	Native plant installation						\$30,200							
	Long-term management													\$16,000
Wet Prairie	GMU-1B (0.68 acres)													
	Native plant installation						\$10,200							
	Spot-herbicide treatments - herb stratum						\$700	\$700			\$770	\$770		
	Long-term management													\$2,500
Wet Prairie	GMU-1A-WM (3.86 acres)													
	Woody invasive hand removal, stump treatments	\$19,300												
	Broadcast-spray reed canary grass		\$1,000	\$1,000										
	Prescribed burning				\$3,500									
	Native seed installation				\$4,725									
	Maintenance mowing						\$800	\$800			\$900	\$900		
	Spot-herbicide treatments - herb stratum						\$1,950	\$1,950			\$2,200	\$2,200		
	Long-term management													\$7,500

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Wet-mesic Prairie	GMU-1A-WM (1.89 acres)													
	Spot-herbicide treatments - herb stratum		\$950	\$950			\$1,050	\$1,050			\$1,200	\$1,200		
	Prescribed burning				\$3,500									
	Native seed installation				\$4,725									
	Maintenance mowing						\$500	\$500			\$550	\$550		
	Long-term management													\$4,000
Mesic Prairie	GMU-2A (2.45 acres)													
	Woody invasive hand removal, stump treatments	\$12,250												
	Spot-herbicide treatments - herb stratum		\$1,250	\$1,250			\$1,375	\$1,375			\$1,500	\$1,500		
	Prescribed burning				\$3,500									
	Native seed installation				\$6,125									
	Maintenance mowing						\$500	\$500			\$550	\$550		
	Long-term management													\$5,000
	GMU-2B (3.21 acres)													
	Woody invasive forestry mowing, stump treatments	\$16,000												
	Spot-herbicide treatments - herb stratum		\$1,600	\$1,600			\$1,750	\$1,750			\$1,950	\$1,950		
	Prescribed burning				\$3,500									
	Native seed installation				\$8,025									
	Maintenance mowing						\$650	\$650			\$725	\$725		
	Long-term management													\$6,500
Total		\$173,625	\$12,900	\$14,900	\$83,900		\$289,875	\$21,875	\$11,900		\$24,295	\$24,295		\$66,250
Grand Total		\$723,815												

Table 50. Grand View Conservancy Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Mesic Forest	GMU-3A (4.31 acres)													
	Woody invasive forestry mowing, stump treatments	650												
	Tree girdling/removal	1,300												
	Spot-herbicide treatments - herb stratum		20	20			20	20			20	20		
	Prescribed burning				64									
	Native seed installation				18									
	Native tree and shrub installation						360							
	Maintenance mowing						7	7			7	7		
	Long-term management													60
	GMU-3B (2.89 acres)													
	Woody invasive hand removal, stump treatments	435												
	Tree girdling/removal	870												
	Spot-herbicide treatments - herb stratum		12	12			12	12			12	12		
	Prescribed burning				32									
Southern Hardwood Swamp	Native seed installation				18									
	Native tree and shrub installation						240							
	Maintenance mowing						5	5			5	5		
	Long-term management													36
	GMU-1A-HS, GMU-1B (4.76 acres)													
	Woody invasive hand removal, stump treatments	715												
	Tree girdling/removal	58												
Emergent Marsh	Spot-herbicide treatments - herb stratum		20	20			20	20			20	20		
	Native tree and shrub installation						160							
	Native seed installation								20					
	Long-term management													60
	GMU-1A-EM, GMU-1B (7.55 acres)													
Pond Shoreline	Broadcast-spray herb stratum		12											
	Spot-herbicide treatments - herb stratum			30			30	30			30	30		
	Prescribed burning				64									
	Native seed installation				30									
	Native plant installation						150							
	Long-term management													90
Wet Prairie	GMU-1B (0.68 acres)													
	Native plant installation						50							
	Spot-herbicide treatments - herb stratum						4	4			4	4		
	Long-term management													12
Wet Prairie	GMU-1A-WM (3.86 acres)													
	Woody invasive hand removal, stump treatments	580												
	Broadcast-spray reed canary grass		6	6										
	Prescribed burning				32									
	Native seed installation				16									
	Maintenance mowing						8	8			8	8		
	Spot-herbicide treatments - herb stratum						16	16			16	16		
	Long-term management													48

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Wet-mesic Prairie	GMU-1A-WM (1.89 acres)													
	Spot-herbicide treatments - herb stratum		8	8			8	8			8	8		
	Prescribed burning				32									
	Native seed installation				8									
	Maintenance mowing						4	4			4	4		
	Long-term management													24
Mesic Prairie	GMU-2A (2.45 acres)													
	Woody invasive hand removal, stump treatments	370												
	Spot-herbicide treatments - herb stratum		10	10			10	10			10	10		
	Prescribed burning				32									
	Native seed installation				10									
	Maintenance mowing						4	4			4	4		
	Long-term management													30
	GMU-2B (3.21 acres)													
	Woody invasive forestry mowing, stump treatments	20												
	Spot-herbicide treatments - herb stratum		12	12			12	12			12	12		
	Prescribed burning				32									
	Native seed installation				12									
	Maintenance mowing						7	7			7	7		
	Long-term management													36
Total		4,998	100	118	400		1,127	167	20		167	167		396
Grand Total		7,660												

Table 51. Indian Mound/Thrun Marsh Conservancies Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Dry-mesic Forest	ITMU-1 (11.87 acres)													
	Woody invasive hand removal, stump treatments	\$59,500												
	Tree girdling/removal	\$12,000												
	Spot-herbicide treatments - herb stratum		\$6,000	\$6,000			\$6,600	\$6,600			\$7,250	\$7,250		
	Prescribed burning				\$6,500									
	Native seed installation				\$30,000									
	Long-term management													\$24,000
Southern Mesic Forest	ITMU-1 (1.71 acres)													
	Woody invasive hand removal, stump treatments	\$9,000												
	Tree girdling/removal	\$2,000												
	Spot-herbicide treatments - herb stratum		\$900	\$900			\$1,000	\$1,000			\$1,100	\$1,100		
	Prescribed burning				\$3,500									
	Native seed installation				\$4,250									
	Long-term management													\$4,000
Southern Hardwood Swamp	ITMU-2 (4.34 acres)													
	Woody invasive hand removal, stump treatments	\$21,700												
	Tree girdling/removal	\$4,500												
	Spot-herbicide treatments - herb stratum		\$2,200	\$2,200			\$2,500	\$2,500			\$2,750	\$2,750		
	Native tree and shrub installation						\$43,500							
	Native seed installation								\$10,750					
	Long-term management													\$9,000
Emergent Marsh	ITMU-2 (4.13 acres)													
	Broadcast-spray herb stratum		\$1,200											
	Spot-herbicide treatments - herb stratum			\$2,000			\$2,200	\$2,200			\$2,500	\$2,500		
	Prescribed burning				\$5,000									
	Native seed installation				\$10,250									
	Native plant installation						\$16,500							
	Long-term management													\$8,250
Total		\$108,700	\$10,300	\$11,100	\$59,500		\$72,300	\$12,300	\$10,750		\$13,600	\$13,600		\$45,250
Grand Total		\$357,400												

Table 52. Indian Mound/Thrun Marsh Conservancies Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Southern Dry-mesic Forest	ITMU-1 (11.87 acres)													
	Woody invasive hand removal, stump treatments	1,780												
	Tree girdling/removal	140												
	Spot-herbicide treatments - herb stratum		48	48			48	48			48	48		
	Prescribed burning				72									
	Native seed installation				48									
	Long-term management													144
Southern Mesic Forest	ITMU-1 (1.71 acres)													
	Woody invasive hand removal, stump treatments	260												
	Tree girdling/removal	20												
	Spot-herbicide treatments - herb stratum		7	7			7	7			7	7		
	Prescribed burning				32									
	Native seed installation				7									
	Long-term management													21
Southern Hardwood Swamp	ITMU-2 (4.34 acres)													
	Woody invasive hand removal, stump treatments	650												
	Tree girdling/removal	52												
	Spot-herbicide treatments - herb stratum		18	18			18	18			18	18		
	Native tree and shrub installation						140							
	Native seed installation								20					
	Long-term management													54
Emergent Marsh	ITMU-2 (4.13 acres)													
	Broadcast-spray herb stratum		7											
	Spot-herbicide treatments - herb stratum			16			16	16			16	16		
	Prescribed burning				64									
	Native seed installation				16									
	Native plant installation						80							
	Long-term management													48
Total		2,902	80	89	239		309	89	20		89	89		267
Grand Total		4,173												

Table 53. Marsh Woods Conservancy Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	MMU-1 (4.47 acres)													
	Woody invasive hand removal, stump treatments	\$22,500												
	Tree girdling/removal	\$5,000												
	Spot-herbicide treatments - herb stratum		\$2,250	\$2,250			\$2,500	\$2,500			\$2,750	\$2,750		
	Prescribed burning				\$5,000									
	Native seed installation				\$11,250									
	Long-term management													\$9,000
Southern Hardwood Swamp	MMU-3 (0.95 acres)													
	Woody invasive hand removal, stump treatments	\$5,000												
	Tree girdling/removal	\$1,000												
	Spot-herbicide treatments - herb stratum		\$500	\$500			\$550	\$550			\$600	\$600		
	Native tree and shrub installation						\$10,000							
	Native seed installation								\$2,500					
	Long-term management													\$2,000
Shrub-carr	MMU-3 (1.14 acres)													
	Woody invasive hand removal, stump treatments	\$5,700												
	Spot-herbicide treatments - herb stratum		\$600	\$600			\$675	\$675			\$750	\$750		
	Prescribed burning				\$3,500									
	Native seed installation				\$2,850									
	Long-term management													\$2,500
Emergent Marsh	MMU-3 (6.52 acres)													
	Spot-spray common reed, reed canary grass, and purple loosestrife		\$3,300	\$3,300			\$3,600	\$3,600			\$4,000	\$4,000		
	Long-term management													\$14,500
Southern Sedge Meadow	MMU-3 (Existing Wet Meadow Area) (1.73 acres)													
	Woody invasive hand removal, stump treatments	\$8,700												
	Broadcast-spray reed canary grass		\$500	\$500										
	Prescribed burning				\$3,500									
	Native seed installation				\$4,325									
	Native plant installation						\$1,000							
	Maintenance mowing						\$500	\$500			\$550	\$550		
	Spot-herbicide treatments - herb stratum						\$900	\$900			\$1,000	\$1,000		
	Long-term management													\$3,500
	MMU-3 (Existing High-Quality Sedge Meadow) (7.25 acres)													
	Woody invasive hand removal, stump treatments	\$36,500												
	Spot-herbicide treatments - herb stratum		\$3,650	\$3,650			\$4,000	\$4,000			\$4,400	\$4,400		
	Long-term management													\$14,500
Mesic Prairie	MMU-2 (Existing Surrogate Grassland Area) (5.10 acres)													
	Woody invasive hand removal, stump treatments	\$25,500												
	Broadcast-spray non-native, cool season grasses		\$1,300											
	Spot-herbicide treatments - herb stratum		\$2,600	\$2,600			\$2,900	\$2,900			\$3,200	\$3,200		
	Prescribed burning				\$5,000									
	Native seed installation				\$12,750									
	Maintenance mowing						\$1,050	\$1,050			\$1,200	\$1,200		

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Long-term management													\$10,500
	MMU-2 (Existing Mesic Prairie) (1.10 acres)													
	Woody invasive hand removal, stump treatments	\$5,500												
	Spot-herbicide treatments - herb stratum		\$550	\$550			\$600	\$600			\$675	\$675		
	Prescribed burning				\$3,500									
	Native seed installation				\$2,750									
	Maintenance mowing						\$500	\$500			\$550	\$550		
	Long-term management													\$2,500
Total		\$115,400	\$15,250	\$13,950	\$54,425		\$28,775	\$17,775	\$2,500		\$19,675	\$19,675		\$58,000
Grand Total		\$345,425												

Table 54. Marsh Woods Conservancy Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	MMU-1 (4.47 acres)													
	Woody invasive hand removal, stump treatments	670												
	Tree girdling/removal	54												
	Spot-herbicide treatments - herb stratum		18	18			18	18			18	18		
	Prescribed burning				64									
	Native seed installation				18									
	Long-term management													54
Southern Hardwood Swamp	MMU-3 (0.95 acres)													
	Woody invasive hand removal, stump treatments	150												
	Tree girdling/removal	12												
	Spot-herbicide treatments - herb stratum		4	4			4	4			4	4		
	Native tree and shrub installation						34							
	Native seed installation								4					
Shrub-carr	MMU-3 (1.14 acres)													
	Woody invasive hand removal, stump treatments	170												
	Spot-herbicide treatments - herb stratum		5	5			5	5			5	5		
	Prescribed burning				32									
	Native seed installation				5									
	Long-term management													15
Emergent Marsh	MMU-3 (6.52 acres)													
	Spot-spray common reed, reed canary grass, and purple loosestrife		40	40			40	40			40	40		
	Long-term management													120
Southern Sedge Meadow	MMU-3 (Existing Wet Meadow Area) (1.73 acres)													
	Woody invasive hand removal, stump treatments	260												
	Broadcast-spray reed canary grass		5	5										
	Prescribed burning				32									
	Native seed installation				5									
	Native plant installation						5							

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Maintenance mowing						4	4			4	4		
	Spot-herbicide treatments - herb stratum						7	7				7		
	Long-term management													21
	MMU-3 (Existing High-Quality Sedge Meadow) (7.25 acres)													
	Woody invasive hand removal, stump treatments	1,088												
	Spot-herbicide treatments - herb stratum		30	30			30	30			30			
	Long-term management													90
Mesic Prairie	MMU-2 (Existing Surrogate Grassland Area) (5.10 acres)													
	Woody invasive hand removal, stump treatments	765												
	Broadcast-spray non-native, cool season grasses		8											
	Spot-herbicide treatments - herb stratum		20	20			20	20			20	20		
	Prescribed burning				64									
	Native seed installation				20									
	Maintenance mowing						8	8			8	8		
	Long-term management													60
	MMU-2 (Existing Mesic Prairie) (1.10 acres)													
	Woody invasive hand removal, stump treatments	165												
	Spot-herbicide treatments - herb stratum		5	5			5	5			5	5		
	Prescribed burning				32									
	Native seed installation				5									
	Maintenance mowing						4	4			4	4		
	Long-term management													15
Total		3,334	135	127	277		184	145	4		145	145		391
Grand Total		4,887												

Table 55. Siggelkow Road Park Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	SMU-1 (3.82 acres)													
	Woody invasive hand removal, stump treatments	\$19,100												
	Tree girdling/removal	\$38,200												
	Spot-herbicide treatments - herb stratum		\$2,000	\$2,000			\$2,200	\$2,200			\$2,500	\$2,500		
	Prescribed burning				\$3,500									
	Native seed installation				\$9,550									
	Native tree and shrub installation						\$38,200							
	Long-term management													\$8,500
Total		\$57,300	\$2,000	\$2,000	\$13,050		\$40,400	\$2,200			\$2,500	\$2,500		\$8,500
Grand Total		\$130,450												

Table 56. Siggelkow Road Park Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	SMU-1 (3.82 acres)													
	Woody invasive hand removal, stump treatments	575												
	Tree girdling/removal	1,150												
	Spot-herbicide treatments - herb stratum		16	16			16	16			16	16		
	Prescribed burning				32									
	Native seed installation				16									
	Native tree and shrub installation						128							
	Long-term management													48
Total		1,725	16	16	48		114	16			16	16		48
Grand Total		2,045												

Table 57. Taylor Road Conservancy Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Dry-mesic Prairie	TMU-2 (1.20 acres)													
	Woody invasive hand removal, stump treatments	\$6,000												
	Tree removal	\$19,500												
	Spot- or broadcast-spray non-native, cool season grasses		\$500											
	Spot-herbicide treatments - herb stratum		\$600	\$600			\$650	\$650			\$725	\$725		
	Prescribed burning				\$3,500									
	Native seed installation				\$3,000									
	Maintenance mowing						\$500	\$500			\$550	\$550		
	Long-term management													\$2,400
Conifer Plantation	TMU-1 (1.94 acres)													
	Woody invasive hand removal, stump treatments	\$9,700												
	Tree girdling/removal	\$2,000												
	Spot-herbicide treatments - herb stratum		\$1,000	\$1,000			\$1,100	\$1,100			\$1,200	\$1,200		
	Long-term management													\$4,000
Total		\$37,200	\$2,100	\$1,600	\$6,500		\$2,250	\$2,250			\$2,475	\$2,475		\$6,400
Grand Total		\$63,250												

Table 58. Taylor Road Conservancy Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Dry-mesic Prairie	TMU-2 (1.20 acres)													
	Woody invasive hand removal, stump treatments	180												
	Tree removal	360												
	Spot- or broadcast-spray non-native, cool season grasses		4											
	Spot-herbicide treatments - herb stratum		5	5			5	5			5	5		
	Prescribed burning				32									
	Native seed installation				5									
	Maintenance mowing						4	4			4	4		
	Long-term management													15
Conifer Plantation	TMU-1 (1.94 acres)													
	Woody invasive hand removal, stump treatments	290												
	Tree girdling/removal	24												
	Spot-herbicide treatments - herb stratum		8	8			8	8			8	8		
	Long-term management													24
Total		854	17	13	37		17	17			17	17		39
Grand Total		1,028												

Table 59. Urso Park Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	UMU-2 (7.91 acres)													
	Woody invasive hand removal, stump treatments	\$40,000												
	Tree girdling/removal	\$8,000												
	Spot-herbicide treatments - herb stratum		\$4,000	\$4,000			\$4,400	\$4,400			\$4,850	\$4,850		
	Prescribed burning				\$6,500									
	Native seed installation				\$20,000									
	Long-term management													\$16,000
Southern Hardwood Swamp	UMU-1-HS (7.33 acres)													
	Woody invasive hand removal, stump treatments	\$36,500												
	Tree girdling/removal	\$7,500												
	Spot-herbicide treatments - herb stratum		\$3,700	\$3,700			\$4,000	\$4,000			\$4,400	\$4,400		
	Native tree and shrub installation						\$73,500							
	Native seed installation								\$18,250					
	Long-term management													\$14,500
Shrub-carr	UMU-1-SCE, UMU-1-SCN (3.82 acres)													
	Woody invasive hand removal, stump treatments	\$19,100												
	Spot-herbicide treatments - herb stratum		\$2,000	\$2,000			\$2,200	\$2,200			\$2,500	\$2,500		
	Prescribed burning				\$3,500									
	Native seed installation				\$9,7500									
	Long-term management													\$8,500
	UMU-3 (East Conifer Plantation & Orchard) (1.79 acres)													
	Woody invasive hand removal, stump treatments	\$9,000												
	Tree removal	\$17,900												

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Spot-herbicide treatments - herb stratum		\$1,000	\$1,000			\$1,100	\$1,100			\$1,200	\$1,200		
	Prescribed burning				\$3,500									
	Native seed installation				\$4,500									
	Native shrub installation						\$26,850							
	Long-term management													\$5,000
Emergent Marsh	UMU-1-EM (5.36 acres)													
	Spot-treat non-native cattail		\$10,750											
	Spot-herbicide treatments - herb stratum			\$2,700			\$3,000	\$3,000			\$3,300	\$3,300		
	Prescribed burning				\$6,500									
	Native seed installation				\$13,400									
	Native plant installation						\$21,500							
	Long-term management													\$11,000
Pond Shoreline	UMU-1-SCE (0.09 acres)													
	Native plant installation						\$15,000							
	Spot-herbicide treatments - herb stratum						\$500	\$500			\$550	\$550		
	Long-term management													\$2,000
Southern Sedge Meadow	UMU-1-WMN, UMU-1-WMS (3.40 acres)													
	Woody invasive hand removal, stump treatments	\$17,000												
	Broadcast-spray reed canary grass		\$850	\$850										
	Prescribed burning				\$3,500									
	Native seed installation				\$8,500									
	Native plant installation						\$1,700							
	Maintenance mowing						\$680	\$500			\$550	\$550		
	Spot-herbicide treatments - herb stratum						\$1,700	\$1,700			\$1,870	\$1,870		
Conifer Plantation	Long-term management													\$6,170
	UMU-3 (West Conifer Plantation) (0.31 acres)													
	Woody invasive hand removal, stump treatments	\$2,000												
	Spot-herbicide treatments - herb stratum		\$500	\$500			\$550	\$550			\$600	\$600		
	Long-term management													\$2,000
Total		\$157,000	\$22,800	\$14,750	\$79,650		\$156,680	\$18,130	\$18,250		\$19,950	\$19,950		\$65,170
Grand Total		\$572,330												

Table 60. Urso Park Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	UMU-2 (7.91 acres)													
	Woody invasive hand removal, stump treatments	1,190												
	Tree girdling/removal	95												
	Spot-herbicide treatments - herb stratum		32	32			32	32			32	32		
	Prescribed burning				72									
	Native seed installation				32									
	Long-term management													64
Southern Hardwood Swamp	UMU-1-HS (7.33 acres)													
	Woody invasive hand removal, stump treatments	1,100												
	Tree girdling/removal	88												
	Spot-herbicide treatments - herb stratum		30	30			30	30			30	30		
	Native tree and shrub installation						245							
	Native seed installation								30					
	Long-term management													90
Shrub-carr	UMU-1-SCE, UMU-1-SCN (3.82 acres)													
	Woody invasive hand removal, stump treatments	575												
	Spot-herbicide treatments - herb stratum		16	16			16	16			16	16		
	Prescribed burning				32									
	Native seed installation				16									
	Long-term management													48
	UMU-3 (East Conifer Plantation & Orchard) (1.79 acres)													
	Woody invasive hand removal, stump treatments	270												
	Tree removal	540												
	Spot-herbicide treatments - herb stratum		7	7			7	7			7	7		
	Prescribed burning				32									
	Native seed installation				7									
	Native shrub installation						90							
	Long-term management													21
Emergent Marsh	UMU-1-EM (5.36 acres)													
	Spot-treat non-native cattail		86											
	Spot-herbicide treatments - herb stratum			22			22	22			22	22		
	Prescribed burning				73									
	Native seed installation				22									
	Native plant installation						108							
	Long-term management													66
Pond Shoreline	UMU-1-SCE (0.09 acres)													
	Native plant installation						75							
	Spot-herbicide treatments - herb stratum						4	4			4	4		
	Long-term management													12
Southern Sedge Meadow	UMU-1-WMN, UMU-1-WMS (3.40 acres)													
	Woody invasive hand removal, stump treatments	510												
	Broadcast-spray reed canary grass		9	9										
	Prescribed burning				32									
	Native seed installation				14									

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
	Native plant installation						9							
	Maintenance mowing						5	5			5	5		
	Spot-herbicide treatments - herb stratum						14	14			14	14		
	Long-term management													42
Conifer Plantation	UMU-3 (West Conifer Plantation) (0.31 acres)													
	Woody invasive hand removal, stump treatments	48												
	Spot-herbicide treatments - herb stratum		4	4			4	4			4	4		
	Long-term management													12
Total		4,416	184	120	332		661	134	30		134	134		355
Grand Total		6,500												

Table 61. Woodland Commons Conservancy Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	WMU-1 (5.16 acres)													
	Woody invasive forestry mowing, stump treatments	\$25,500												
	Tree girdling/removal	\$51,600												
	Spot-herbicide treatments - herb stratum		\$2,500	\$2,500			\$2,750	\$2,750			\$3,000	\$3,000		
	Prescribed burning				\$5,000									
	Native seed installation				\$12,500									
	Native tree and shrub installation						\$51,600							
	Maintenance mowing						\$1,050	\$1,050			\$1,200	\$1,200		
	Long-term management													\$10,000
Total		\$77,100	\$2,500	\$2,500	\$17,500		\$55,400	\$3,800			\$4,200	\$4,200		\$10,000
Grand Total		\$177,200												

Table 62. Woodland Commons Conservancy Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Oak Woodland	WMU-1 (5.16 acres)													
	Woody invasive forestry mowing, stump treatments	775												
	Tree girdling/removal	1,550												
	Spot-herbicide treatments - herb stratum		20	20			20	20			20	20		
	Prescribed burning				64									
	Native seed installation				20									
	Native tree and shrub installation						175							
	Maintenance mowing						10	10			10	10		
	Long-term management													80
Total		2,325	20	20	84		205	30			30	30		80
Grand Total		2,824												

Table 63. Yahara River Conservancy Opinion of Probable Costs

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Floodplain Forest	YMU-1 (0.69 acres)													
	Woody invasive forestry mowing, stump treatments	\$3,500												
	Spot-herbicide treatments - herb stratum		\$500	\$500			\$550	\$550			\$600	\$600		
	Prescribed burning				\$3,500									
	Native seed installation				\$1,750									
	Long-term management													\$2,000
Emergent Marsh	YMU-1 (0.36 acres)													
	Spot-herbicide treatments - herb stratum		\$500	\$500			\$550	\$550			\$600	\$600		
	Long-term management													\$2,000
Total		\$3,500	\$1,000	\$1,000	\$5,250		\$1,100	\$1,100			\$1,200	\$1,200		\$4,000
Grand Total		\$19,350												

Table 64. Yahara River Conservancy Estimated Labor Hours

Community Type	Activity	Win 2023	Spr 2024	Sum 2024	Fall 2024	Win 2024	Spr 2025	Sum 2025	Fall 2025	Win 2025	Spr 2026	Sum 2026	Fall 2026	Win 2026
Floodplain Forest	YMU-1 (0.69 acres)													
	Woody invasive forestry mowing, stump treatments	6												
	Spot-herbicide treatments - herb stratum		4	4			4	4			4	4		
	Prescribed burning				32									
	Native seed installation				4									
	Long-term management													12
Emergent Marsh	YMU-1 (0.36 acres)													
	Spot-herbicide treatments - herb stratum		4	4			4	4			4	4		
	Long-term management													12
Total		6	8	8	36		8	8			8	8		24
Grand Total		114												



References

- Bernthal, T.W. 2003. Development of a Floristic Quality Assessment Methodology for Wisconsin. Final Report to USEPA – Region V Wetland Grant #CD975115-01-0. Dated June 2003.
- Cornell Lab of Ornithology eBird. 2023. eBird Database. Available at <https://ebird.org/home>. Accessed January 23, 2023.
- JFNew. 2007. Management Plans for Conservancy Parks.
- Ken Saiki Design. 2005. Urso Community Park Master Plan. Dated April 29, 2005
- Marti, A.M. and Bernthal, T.W. 2019. Provisional Wetland Floristic Quality Benchmarks for Wetland Monitoring and Assessment in Wisconsin. Final Report to US EPA Region V, Grants #CD00E01576 and #CD00E02075. Wisconsin Department of Natural Resources. EGAD #3200-2020-01.
- Mickelson, D.M. and McCartney, M.C. 1979. Glacial Geology of Dane County, Wisconsin. University of Wisconsin – Extension Geological and Natural History Survey, Madison.
- Taylor Conservation, LLC. 2010a. Ecological Assessment and Management Plan – Marsh Woods Park. Dated October 2010.
- Taylor Conservation, LLC. 2010b. Indian Mounds Vegetation Assessment. Dated December 13, 2010.
- Village of McFarland. 2010. Policy for Preservation and Maintenance of McFarland’s Indian Mounds. Dated August 9, 2010.
- Village of McFarland. 2019. Outdoor Recreation and Open Space Plan 2019-2023. Dated May 28, 2019.
- Village of McFarland. 2020. Vegetation Management Use Policy. Dated September 14, 2020.
- [WDNR] Wisconsin Department of Natural Resources. 2015a. The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management. Wisconsin Department of Natural Resources, PUB-SS-1131T 2015, Madison.
- [WDNR] Wisconsin Department of Natural Resources. 2015b. 2015-2025 Wisconsin Wildlife Action Plan. Madison, WI.
- [WDNR] Wisconsin Department of Natural Resources. 2022. NRCS Wetland Scrape Design. Retrieved from https://dnr.wi.gov/topic/Wetlands/documents/NRCS_Wetland_Scrape_Design.pdf. Accessed December 22, 2022.
- Yocum, J. 2012. Indian Mounds Conservation Park McFarland, WI - Trail Project Design Layout and Construction Recommendations. Dated August 2012.