Tier I Managed Meadows
Habitat Management Plan
July 2023

Introduction

The City of Madison, Parks Division currently administers 5,765 acres within the City, encompassing a variety of lands and facilities. These include municipal golf courses, the State Street and Capitol Mall Concourse, Forest Hill Cemetery, Olbrich Botanical Gardens, Conservation Parks and General Parks. The General Parks are the largest subset of parkland; comprising some 3,000 acres managed by geographically-based operations sections. These parks offer a wide variety of urban and suburban recreational opportunities, and range in size from small "mini" parks, to neighborhood parks, to larger community parks with athletic facilities, parking lots and large swaths of open space.

While a large percentage of the acreage in general parks consists of turf, there are also significant areas of more natural open space, managed pollinator habitat, and bike path borders. Parks' 2017 Land Management Plan defined broad vegetation types and indicates the strategies employed to manage these areas in the general parks. It identified "Meadows" as one of the major vegetation types, divided into "Bluegrass dominated No Mow Meadows", and "Prairie Managed Meadows".

With an increased focus on sustainability and climate resilience, Parks' vegetation management approach has evolved to manage this non-turf open space with a goal of increasing native plant diversity, pollinator habitat, ecosystem function, and ecosystem services. Consistent with the updated 2023 Parks Land Management Plan, "Meadows" are now more accurately called "Managed Meadows" and are divided into three tiers based on plant diversity, restoration potential and management priority. Management priority is driven by staff and budget capacity, as well as long-term plans for a given park.

Tier I Managed Meadows are characterized by high native plant diversity and relatively small to moderate populations of invasive plants. These generally include the formerly-named "Prairie Managed Meadows" that had been intentionally planted with native wildflowers. There are currently about 60 acres of Managed Meadows classified as Tier I across 16 parks system-wide

Tier II Managed Meadows are characterized by moderate to high native plant diversity, but with more sizable invasive plant populations OR areas that are lower in native plant diversity. These areas also have relatively small to moderate populations of invasive plants and are therefore more easily transitioned to Tier I Managed Meadows in the future. There are currently about 200 acres of Managed Meadows classified as Tier II.

Tier III Managed Meadows are characterized by very low native plant diversity and often contain large populations of invasive plants. These typically include the formerly-named "Bluegrass dominated No-Mow Meadows" or "Low-Mow Meadows". Many of these areas had been maintained as turf in the past, but later allowed to grow fallow as Parks reduced its acreage of frequently mowed turf. Some current Tier III areas are fallow and simply being reserved for future development. These areas are maintained to remain free of woody growth. There are currently about 260 acres of Managed Meadows classified as Tier III.

This habitat management plan is specific to the Tier I Managed Meadows

Conservation values

Managed meadows provide:

- Habitat for native pollinators and other wildlife.
- Increased storm water infiltration.
- Lower maintenance costs, relative to turf.

Social and cultural values

Managed meadows provide:

- Increased variety and aesthetics in parklands dominated by turf.
- Increased passive recreational opportunities, such as bird watching and nature study.
- Increased exposure to healthy native ecosystems contributes to cultural awareness of native plants and natural history.
- Restoration in our natural areas strengthen and reflect a culture of stewardship and caring for the earth.

Ecological threats

- Invasive species: Several species of invasive plants regularly become established in managed meadows and have the potential to dominate these management units, resulting in a loss of biodiversity. Evaluation and adaptation of management strategies and methods, when needed, will help control invasive species populations while promoting a healthy, diverse native plant community.
- Fire suppression: Previously, managed meadow maintenance has been limited to annual mowing. Incorporating prescribed fire into management will help improve the native plant community and habitat values provided.

Conservation goals

The goals of ecologically-focused management as outlined in this plan, are to:

- Increase the quality and diversity of habitat for native pollinator species.
- Increase winter habitat for insects and small mammals.
- Provide more effective, long-term control of invasive plant populations.

Management considerations

- Smoke management: Managed Meadows are located in neighborhood and community parks surrounded by residential development, schools, and businesses. Prescribed burn planning and execution must pay particular attention to smoke management to protect public health and prevent hazards or nuisances.
- Pesticide use: Public engagement and education will be necessary to explain integrated pest management and the particular goals of herbicide treatments, and to show how management practices conform to overall Division and City policies and guidelines such as Parks' Land Management Plan and Madison's Policy Regarding Pest Management on City Property. Staff may have to reconcile incomplete and conflicting information available to the public in the media.
- Adoption of spring, rather than fall, mowing schedules, as well as targeted spot mowing during the growing season, may be confusing to stakeholders and may require additional education efforts.

Site Catalog - Tier I

Tier I Managed Meadows include higher quality prairie plantings. These are often well established plantings that were installed more than five years ago. These areas should be the top priority in which to focus available resources. The following is a list of the Tier I sites in the system.

Park name	Address	Location in park	Operations section	Year planted	Acreage	Quality Rank
Apple Ridge	4017 Cosgrove Road	Western portion of park	West	2003	1.7	2
Baxter	777 Engelhart Drive	West edge	Central	unknown	0.6	2
Blackhawk	741 Bear Claw Way	Central and north side	West	2002	8.6	
Door Creek	6901 Bluff Point Drive	Harrington Pond	East	2000	1.6	1
Door Creek	6901 Bluff Point Drive	Hillside along paved path	East	2008	1.2	2
Flagstone	8325 Flagstone Drive	East of tree line along bike path	West	2006	2.5	1
Haen	7702 Tree Lane	North end of park	West	2013	0.3	
Huegel	5902 Williamsburg Way	SE corner of park	West	1998	7	1
Mayfair	1102 Mendota Street	South edge of park	East	2015	0.15	2
McClellan	703 McClellan Drive	North meadow	East	2006	0.25	1
McGinnis	9 Crystal Lane	East side of park	East	2018	0.07	1
Olin	1156 Olin-Turville Court	Central portion of park	Central	unknown	11	1
Portland	4210 Portland Pkwy	Edges of the park	East	2020	0.9	2
Raymond Ridge	2138 Muir Field Road	North and south sides	West	1990	7	1
Reston Heights	217 Summertown Drive	SE edge	East	2008	0.36	2
Washington Manor	801 N. Oak Street	North central	East	2019	0.06	2
Woodland Hills	834 Pebble Beach Drive	West oak savanna	West	unknown	2	1
			Total acres:		57.77	

Quality Rank
1 = high native diversity, few invasive species
2 = moderate native diversity, moderate invasive species populations
3 = moderate native diversity, newly established
4 = low native diversity, large populations of invasive species
5 = non-native (fallow bluegrass)

Management unit descriptions

Descriptions of the Tier I Managed Meadows follow. These can each be considered management units within this class of similarly managed areas across the system. See Appendix A for maps of all Tier I Managed Meadows.

1. Apple Ridge (1.7 ac) Prairie planting established circa 2003 on the ridge and east facing slope of this former farm.

2. Baxter (0.6 ac) Prairie planting in west end of park by soccer field.

3. Blackhawk (8.6 ac) Prairie plantings throughout park that divide use areas and complement native plantings in the adjacent greenway.

4. Door Creek (3.8 ac total) There are two areas currently classified as Tier I Managed Meadows at Door Creek Park. Their locations and estimated installment dates are as follows:

    a. *Harrington Pond Meadow* (1.6 acres, established around 2000) The Harrington Pond Meadow had been actively managed by the Engineering division as it sits directly adjacent to a meadow surrounding the Engineering owned storm water pond. It has a high diversity of native plants. 2022 marked a shift in management from Engineering to Parks. Engineering will continue to manage the meadow surrounding the storm water pond, and Parks will manage the meadow to the west of the pond.

    b. *Hillside Meadow* (1.2 acres, established around 2008) This unit flanks the paved path that enters the park from High Cliff Trail and Bluff Point Drive. There are no records of any management having been performed since establishment. In 2020, Parks staff began managing the moderate weed populations in this area with spot herbicide treatments, spot mowing, prescribed burning, and inter-seeding.

5. Flagstone (2.5 ac) A portion of the large prairie planting that surrounds turf and amenities in park adjacent to Ice Age Trail corridor. The Tier I portion is located east of the tree line along the paved path.

6. Haen Family (0.3 ac) Very small but high quality native prairie planting maintained with help from volunteers.

7. Huegel (7 ac) One of the earliest prairie plantings established by Parks, this meadow retains moderate plant diversity, but had never been burned until 2023.

8. Mayfair (0.15 ac) This Meadow was established around 2013, mainly because the slope was too steep to maintain turf. Unlike the other Managed Meadows historically getting mowed in the fall, Mayfair had an annual spring mow schedule to retain tall vegetation through the winter and provide a “natural snow fence”, preventing snow from blowing over the sidewalk of the park. Sumac is encroaching from the eastern edge but will be cut and treated.

9. McClellan (0.25 ac) This Meadow was installed around 2006. There is a northern portion and a southern portion divided by a paved walking path. The southern portion is a Tier II meadow, and is always wet and looks like has always been a drainage area. It is now dominated by reed canary grass. The northern meadow (Tier I) is very healthy and diverse and only requires spot treatments on the edges and some hand pulling. McClellan will be on a burn rotation and was last burned in spring of 2021.

10. McGinnis (0.07 ac) This Meadow was installed in approximately 2018 and has been completely maintained by a volunteer who resides next to the park and secured permission to do so. It is a small strip of native grasses and forbs that were planted as plugs and the plants were mulched around every spring to help with weed prevention during establishment. Parks staff will support management of this meadow going forward.

11. Olin (11 ac) Open oak savanna adjacent to Turville Point Conservation Park, and smaller disjunct islands of oak savanna habitat planted on the ridge that divides the park.

12. Portland (0.9 ac) This prairie wraps around the whole park and was both planted and seeded in 2020. After a few years of establishment and management, it now has minimal weeds and a high diversity of native plants.

13. Raymond Ridge (7 ac) A well-established prairie planting that complements the adjacent conservation park and UW natural area.

14. Reston Heights (0.36 ac) This Meadow was installed around 2008. There was a bluegrass dominated meadow along the northern edge of the park that was returned to turf, and three Prairie Managed Meadows on the southern edge of the park were established with tallgrass prairie grasses and forbs. Weeding here is mainly done by hand, and the meadows were burned in spring 2021.

15. Washington Manor (0.06 ac) This is a newly established Meadow that was planted to reclaim the footprint of a playground that was removed. 0.5 lb. of native grass and 418 plugs (13 species) of native forbs and grasses were installed on bare ground in the fall of 2019. There has been occasional help hand pulling weeds here from an anonymous volunteer group.

16. Woodland Hills (2 ac) This is one of the highest quality oak savannas in Madison Parks. There are a few dedicated volunteers who have been clearing brush here since 2020. High diversity of plants that were both seeded and naturally occurring. This unit was burned for the first time, since becoming a park, in spring of 2023.

Management history

In general, “Bluegrass dominated No Mow Meadows” and “Prairie Managed Meadows” had previously been managed exclusively with mowing. This was primarily limited to once annually in the late summer or fall to prevent establishment of woody species. Some spot mowing of invasive species such as burdock, bird’s foot trefoil, thistles, and wild parsnip was also conducted, depending on staff availability.

Parks has shifted focus to prioritizing Managed Meadow units based on native species richness and invasive species abundance in order to better engage an integrated pest management approach and use resources most efficiently and effectively. This shift has included systematically targeting weed species according to phenology, setting and responding to pre-determined action thresholds for weed abundance for different classes of management units, and employing a wider array of vegetation management methods. These methods include spot herbicide treatments, hand pulling, prescribed burning, and biocontrol.

In addition, more flexibility and more attention are being used to provide winter habitat for insects as the overall grassland structure of these meadows is maintained. For example, staff previously conducted fall mowing annually or every other year to control woody species and remove dead herbaceous vegetation in all managed meadows. The current approach has shifted to prescribed burning or mowing about one third of all sites each year. This allows winter cover on a given meadow to be provided for two consecutive dormant seasons before a stand regeneration treatment (i.e. mowing or fire) occurs to prevent establishment of woody species and maintain the herbaceous-dominated structure.

Management Objectives

Management of Tier I Meadows consists of maintaining the already high-quality native plant communities. This involves providing a regular disturbance regime, and ensuring early detection and rapid removal of new colonies of invasive species.

Objectives:

- Provide a fire regime with a 3-year return interval; burn 1/3 of sites annually.
- Control woody species to prevent seed set and prevent significant increases in dominance, as measured by percent cover every three years.
- Control annual, biennial and perennial invasive plant species annually, with very low tolerance.

Prescriptions:

Timeline	Unit(s)	Task
Spring (April)	1/3 of units (see table below)	Prescribed burn
Spring (May)	All units	• Monitor for invasive species including but not limited to: burdock, dame's rocket, motherwort, mullein, spiny plumeless thistle, musk thistle, and velvetleaf • Hand pull or spray with broad-leaf specific herbicide depending on species and population size
Spring (May)	Units burned since last growing season	Spot herbicide treatments to reed canary grass where applicable
Summer (June)	Units burned this year	Spot herbicide treatments to bird's foot trefoil and Canada thistle
Summer (June - July)	All units	• Spot mowing with string trimmer or flail mower to target biennial species including sweet clover and wild parsnip. • Continue targeted weed control with hand-pulling, digging, spot mowing, or spot herbicide treatments as appropriate to species and density of target species. • Spot mowing as needed to target dense stands of perennial herbaceous species to prevent seed set and force re-sprouting. Typical targets include Canada thistle and crown vetch. These patches are often small enough to mow with a string trimmer.
Summer (August - September)	All units	Spot mowing as needed to target dense stands of woody species encroaching on prairie plantings. Normally, this will not be needed with regular burning, but a series of poor fires may allow woody species to increase. Primary targets will be clonal species such as dogwood and sumac, as regular burns should control other species (buckthorn, honeysuckle) sufficiently to reduce stem density and suppress seed production.
Fall (October - November)	1/3 of units (see table below)	As conditions allow, burn those units slated for this dormant season in order to reduce spring workload. System-wide, this will still reserve at least 1/3 of Tier I meadows to provide winter cover.
Fall (November – December)	Units burned this fall	Add seed to areas where native species are less robust or where treatments have reduced cover of vegetation.

Typical prescribed fire regime:

	Year		
site	**1**	**2**	**3**
Apple Ridge		x	
Baxter		x	
Blackhawk	x		
Door Creek - Hillside			x
Door Creek - Harrington	x		
Flagstone	x		
Haen		x	
Huegel	x		
Mayfair			x
McClellan		x	
McGinnis			x
Olin	x		
Portland		x	
Raymond Ridge			x
Reston Heights			x
Washington Manor		x	
Woodland Hills	x		

Annual Budget Estimate:

Total budget required to implement prescriptions above on all Tier I Meadows.

Description	**Annual cost**
Prescribed burns	$4,600
Weed control: hand pulling and small-scale spot treatments	$9,000
Weed control: spot mowing	$4,500
Mower operating cost (20 days @ $100/day)	$2,000
Augment plant community (seeding/planting)	$2,000
Total:	**$22,100**

Monitoring and Evaluation

Measuring results is critical to determining success. Managed meadows are tracked individually with a scorecard that documents relative quality, plant species richness, and volunteer engagement. See Appendix C for an example.

As with other natural areas in the Madison Parks system, we plan to engage volunteers to conduct vegetation monitoring and participate in a variety of established Community Science efforts. See Appendix D for an overview of Parks' monitoring plan for natural habitats.

Monitoring goals include:

- Plant inventories for each Tier I Managed Meadow
- Floristic Quality Assessments
- Native pollinator inventory and monitoring for each Tier I Managed Meadow

Document History

This Habitat Management Plan is consistent with Madison Parks' Land Management Plan.

Version	Description
8/5/2022	First draft
7/6/2023	Second draft, updated tier assignments

Appendices

A. Managed Meadow Unit Maps
B. Representative Plant Species List
C. Managed Meadow Scorecard (Example)
D. Natural Areas Monitoring Goals


Apple Ridge Park
4017 Cosgrove Rd
Installed Circa 2003
N
0
105
210
420 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I

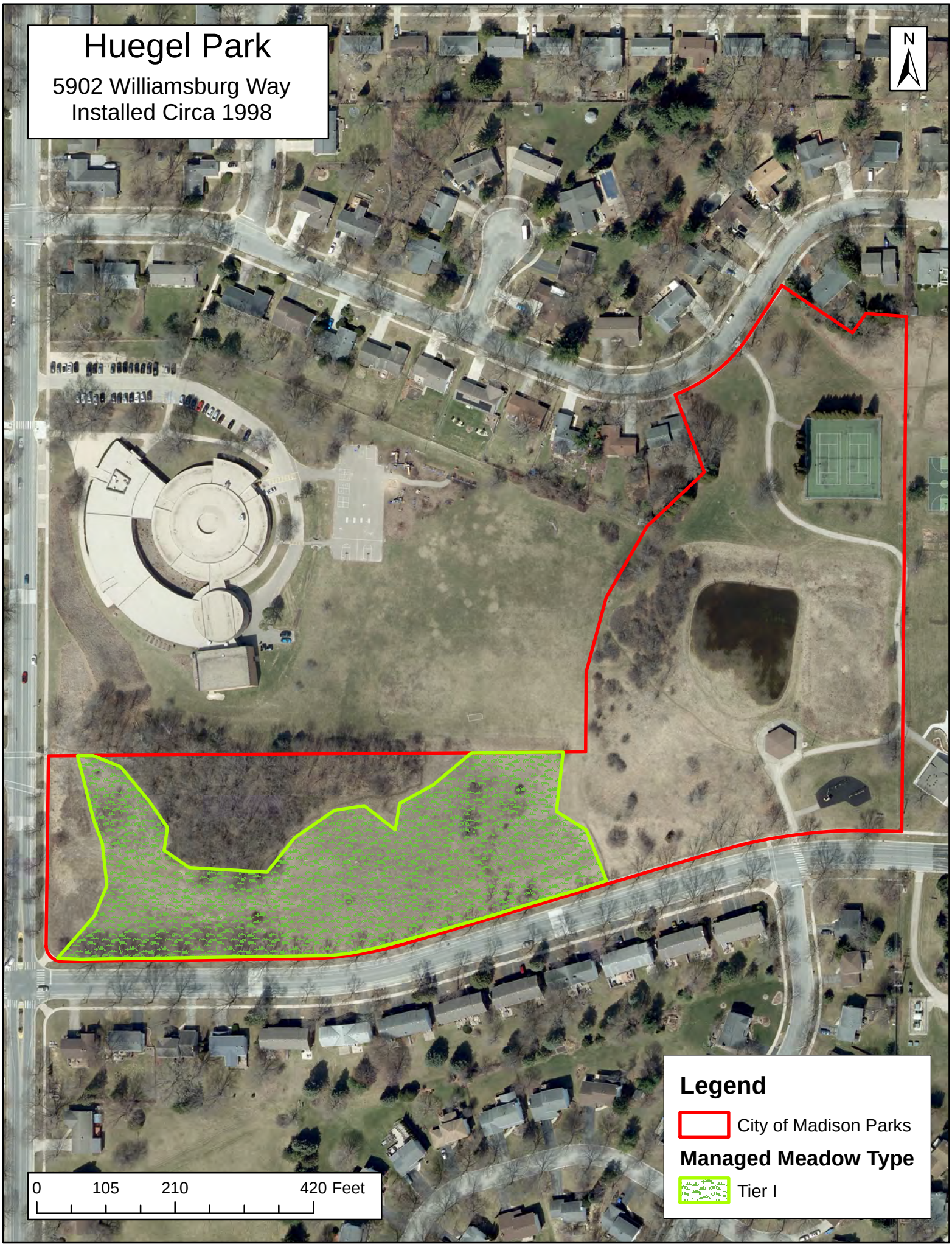

Baxter Park
777 Englehart Dr.
Install Date Unknown
N
Legend
City of Madison Parks
Managed Meadow Type
Tier I
0
65
130
260 Feet


Blackhawk Park
741 Bear Claw Way
Installed Circa 2002
N
0
150
300
600 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Door Creek Park
6901 Bluff Point Dr
Installed Circa 2000, 2008
N
0
400
800
1,600 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Flagstone Park
8325 Flagstone Rd
Installed Circa 2006
N
0
160
320
640 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Haen Family Park
7702 Tree Ln
Installed Circa 2013
N
0
40
80
160 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Huegel Park
5902 Williamsburg Way
Installed Circa 1998
N
0
105
210
420 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Mayfair Park
1102 Mendota St
Installed Circa 2015
N
0
50
100
200 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


McClellan Park
703 McClellan Dr
Installed Circa 2006
N
0
40
80
160 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I

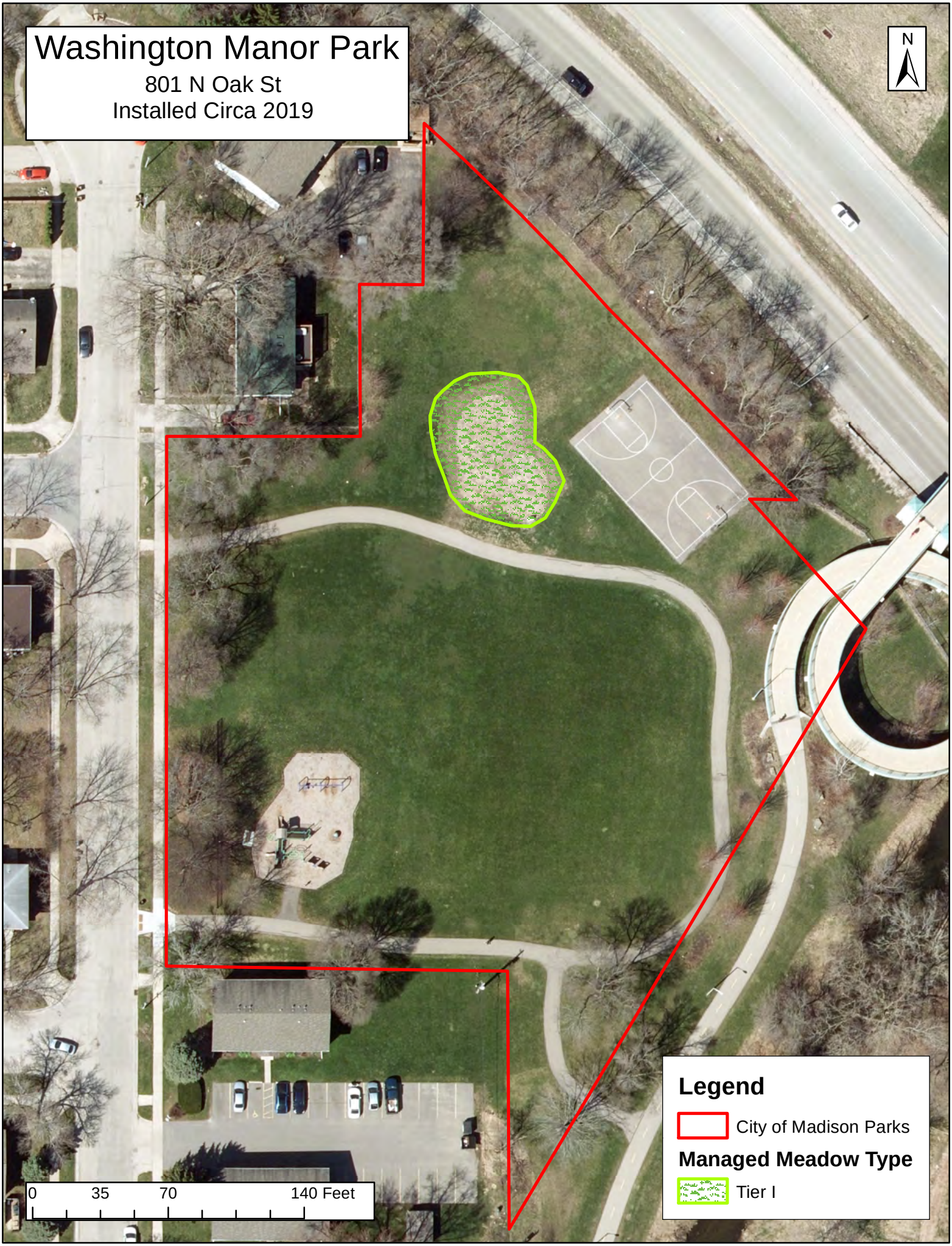

McGinnis Park
9 Crystal Ln
Installed Circa 2018
N
0
60
120
240 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Olin Park
1156 Olin-Turville Ct
Install Date Unknown
N
0
240
480
960 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Portland Park
4210 Portland Pkwy
Installed 2020
N
0
62.5
125
250 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Raymond Ridge Park
2138 Muir Field Rd
Installed Circa 1990
N
0
100
200
400 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Reston Heights Park
217 Summertown Dr
Installed Circa 2008
N
0
55
110
220 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Washington Manor Park
801 N Oak St
Installed Circa 2019
N
0
35
70
140 Feet
Legend
City of Madison Parks
Managed Meadow Type
Tier I


Woodland Hills Park
834 Pebble Beach Dr
Install Date Unkown
N
Legend
City of Madison Parks
Managed Meadow Type
Tier I
0
80
160
320 Feet

Appendix B. Typical Native Plant Species – Tier I Meadows

Scientific name	Common name
Ambrosia artemisiifolia elatior	Common ragweed
Andropogon gerardi	Big blue stem
Arctium minus	Common burdock
Asclepias syriaca	Common milkweed
Asclepias tuberosa	Butterfly weed
Aster spp.	Aster species
Aquilegia canadensis	Columbine
Baptisia leucantha	White Wild indigo
Bouteloua curtipendula	Side oats grama
Cacalia atriplicifolia	Pale Indian plantain
Cornus racemosa	Gray dogwood
Echinacea pallida	Pale purple coneflower
Eryngium yuccifoIium	Rattlesnake master
Helianthus divaricatus.	Woodland sunflower
Helianthus occidentalis	Western sunflower
Heliopsis helianthoides	False sunflower, ox-eye sunflower
Liatris pycnostachya	Prairie blazing star
Lupinus perennis	Wild lupine
Monarda fistulosa	Wild bergamot
Oenothera biennis	Common evening primrose
Panicum virgatum	Switch grass
Penstemon digitalis	Foxglove beard tongue
Petatostemum purpureum	Purple prairie clover
Pycnanthemum virginianum	Common mountain mint
Ratibida pinnata	Yellow coneflower
Rhus glabra	Smooth sumac
Rosa arkansana	Prairie wild rose
Rudbeckia hirta	Black-eyed Susan
Silphium integrifolium	Rosin weed
Silphium laciniatum	Compass plant
Silphium perfoliatum	Cup plant
Silphium terebinthinaceum	Prairie dock
Solidago nemoralis	Old-field goldenrod
Solidago speciosa	Showy goldenrod
Solidago rigidum (*Oligoneuron rigidum*)	Stiff goldenrod
Sorghastrum nutans	Indian grass
Tradescantia ohiensis	Common spiderwort
Veronicastrum virginicum	Culver's root
Zizia aurea	Golden alexanders

Appendix C. Managed Meadow Scorecard Example

EXAMPLE

Managed Meadow Scorecard					
Park Name: Example Park					
Year	2022	2023	2024	2025	2026
Assessment date	6/15/2022	7/10/2023	6/30/2024	7/20/2025	6/15/2026
Current Tier assignment	2	2	2	1	1
Quality Rank (see below)	3	2	2	1	1
Native species richness	40	45	52	61	65
Invasive plant dominance (combined % cover of targeted weeds)	20%	15%	10%	5%	2%
Woody species abundance (% cover)	10	5	1	1	1
Dedicated volunteer support (Y/N)	N	N	Y	Y	Y

Quality Rank

1 = high native diversity, few invasive species
2 = moderate native diversity, moderate invasive species populations
3 = moderate native diversity, newly established
4 = low native diversity, large populations of invasive species
5 = non-native (fallow bluegrass)

*With volunteer support for plant monitoring, we will eventually be able to add Floristic Quality Index (FQI) as a metric as well.

Madison Parks
Natural Areas Monitoring Goals
August 2023

Monitoring is necessary to track the success of restoration efforts as well as the overall quality of the habitat being managed. Data collected can quantify results, show trends in natural area health, and reveal potential concerns. The following framework identifies some possible monitoring subjects and strategies. Objectives and tasks can be implemented and completed as staff and volunteer capacity allow.

Much information can be gained by engaging and supporting various formal community science programs, and less formal community-populated databases. Data from many of these are accessible from the individual host organizations, as well as through clearing houses such as the Global Biodiversity Information Facility (GBIF) Many volunteers currently conduct monitoring within conservation parks and other natural areas. These programs are recognized below as well.

Taxa: Plants

Objectives:

1. Complete and update species inventories for each park, and each management unit where applicable (Managed Meadow, Woodland, management unit within a conservation park, etc.).

   Tasks:

   a. Conduct meander surveys three times during the growing season to compile and update plant species list.

2. Determine and track floristic quality in managed natural areas

   Tasks:

   a. Establish permanent transects with randomized $1m^2$ plots (quadrats)

   b. Survey quadrats and record percent cover of each species present.

   c. Analyze data to calculate species richness, diversity, and Floristic Quality Index.

Taxa: Insects

Objectives:

1. Complete overall species inventory per park

   Tasks:

   a. Conduct daytime surveys with sweep nets

   b. Conduct nighttime surveys with light traps

   c. Conduct surveys of soil surface insect fauna

2. Monitor pollinator abundance and species composition

   Tasks:

   a. Collect data using Wisconsin Bumble Bee Brigade protocols

   b. Support the Integrated Monarch Monitoring Program

   c. Collect data using Pollard transects to target butterflies

   d. Support the Wisconsin Odonata Survey

Taxa: Herptiles

Objectives:

1. Complete overall species inventory per park

   Tasks:

   a. Conduct surveys with funnel traps

2. Conduct breeding survey

   Tasks:

   a. Establish Wisconsin Frog and Toad Survey phenology survey locations where appropriate

Taxa: Birds

Objectives:

1. Conduct surveys and document species present.
2. Analyze data available from eBird through the Global Biodiversity Information Facility (GBIF)

   Tasks:

   a. Download data sets for each park