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CREATIVITY BEYOND ENGINEERING

EXHIBIT "E"

Wetland Delineation Report

Warner Park Beach

City of Madison
Dane County, Wisconsin

SWS PCP PWS EDUCATION EXPERIENCE CTHOD
THERAN P. STAUTZ
2570
PROFESSIONAL WETLAND SCIENTIST

raSmith Project No. 1191177

November 14, 2019

Prepared for:
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November 14, 2019

1.0 INTRODUCTION

raSmith is pleased to provide this Wetland Delineation Report for Warner Park Beach, City of Madison, Dane County, Wisconsin (Appendix 1, Figure 1) (Section 36, T8N, R9E). The delineation was completed at the request of the City of Madison Parks Division.

The purpose of the wetland delineation was to identify the proximity and extent of wetlands within the Study Area (2.63 acres) for park improvements. On October 28, 2019, Theran Stautz, PWS, delineated one wetland feature within the Study Area: a wetland stream terrace (389 ft^2) (Appendix 1, Figure 2). The delineation is presented here in terms of qualifications, methodology, results, and conclusions.

2.0 STATEMENT OF QUALIFICATIONS

raSmith provides wetland and ecological services including wetland delineation, assessment, permitting, and restoration. raSmith ecologists offer a wide variety of technical experience in the natural resource field and have successfully completed projects throughout the Midwestern and Northeastern United States.

Mr. Stautz was the technical lead and author on this delineation project. Theran has a B.S. degree in Natural Resources from the University of Wisconsin – Madison and over 16 years of ecological experience, including wetland delineation, monitoring, native habitat restoration and forestry. He is a Professional Wetland Scientist (PWS) with the Society of Wetland Scientists and a Wisconsin Department of Natural Resources (WDNR) Assured Wetland Delineator.

3.0 WETLAND DETERMINATION METHODOLOGY

The wetland delineation consisted of a review of available maps and information followed by a site visit on October 28, 2019, to document field conditions. The presence and absence of hydrophytic vegetation, wetland hydrology and hydric soil indicators were documented using methodology defined in the *US Army Corps of Engineers* (USACE) *1987 Wetland Delineation Manual*, *Regional Supplement to the 1987 Corps of Engineers Wetland Delineation Manual: Northcentral & Northeast Regions* (USACE ERDC, 2012) and *Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and the Wisconsin Department of Natural Resources* (USACE St. Paul District, 2015). See References section for a complete list of guidance and sources utilized.

3.1 VEGETATION

At the sampling points, herbaceous, shrub/sapling, tree and vine strata were measured using 5-foot, 15-foot, and 30-foot radius plots, respectively. When necessary, plot sizes were adjusted to fit the plant community represented. Percent cover was visually estimated within the plots, and dominant species were determined by applying the 50/20 Rule and/or Prevalence Index. *The National Wetland Plant List: 2016 wetland ratings* (Lichvar, et al., 2016) was used to determine the wetland indicator status of observed vegetation.

3.2 HYDROLOGY

The nearest available Natural Resource Conservation Service (NRCS) WETS Table and the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) Advanced Hydrologic Prediction Service (AHPS) 90-day Percent of Normal Precipitation Map were analyzed to determine the antecedent hydrologic condition of the Study Area. Inundation, water table, and/or saturation were measured at the sampling points, if present. Soil pits were generally left open for at least one half hour to one hour prior to measurement to allow for the normalization of the water level, if any. Primary and secondary indicators of wetland hydrology were investigated and if present were noted on the data sheets.

3.3 SOILS

At the sampling points, a soil pit was excavated to a depth of at least 20-24 inches, where possible. The color and texture of the soil matrix and associated mottling was recorded for each observed soil layer within the pit. The Munsell Soil Color Book was used to determine the color of observed moist soils. The soil was analyzed for hydric soil characteristics and, if met, hydric soil(s) was/were indicated on the data sheets.

3.4 SOURCES REVIEWED

The United States Geological Survey (USGS) topographic map (Appendix 1, Figure 1), a one-foot contour map (Appendix 1, Figure 3), Wisconsin Wetland Inventory (WWI) and Water Resources map (Appendix 1, Figure 4), a NRCS soils map and table (Appendix 1, Figure 5 and Appendix 2), aerial photos from the years 2000, 2005, 2010, 2014, and 2017 (Appendix 1, Figures 6A-E), and a NOAA 90-day percent of normal precipitation map (Appendix 1, Figure 7) were reviewed prior to the wetland delineation in order to gain familiarity with the site's topography, wetland history, soils, and past land uses.

3.5 SITE PHOTOS

Photos taken of the upland and wetland plant communities are located in Appendix 4.

4.0 RESULTS

4.1 EXISTING ENVIRONMENTAL MAPPING

The topographic/site location map shows the Study Area is located within the limits of Warner Park and abutting Lake Mendota. The one-foot contour map indicates elevations within the Study Area range from 850 feet to 857 feet.

The WWI and Water Resources map shows no wetlands within the Study Area. However, it shows Lake Mendota to the southwest and an unnamed waterway to the south.

The NRCS soil map shows two mapped soil type within the Study Area: Watseka loamy sand (somewhat poorly drained) and Marsh (very poorly drained). Watseka loamy sand and Marsh are considered wetland indicator soils. The table in Appendix 2 provides details about the components of these soil types.

Based on a review of aerial photographs from 2000, 2005, 2010, 2014, and 2017, the study are has remained unchanged as an urban lakeside park.

4.2 ANTECEDENT HYDROLOGIC CONDITION

Based on the WETS Analysis Worksheet in Appendix 3, precipitation was wetter than normal for the months of August - October, 2019. The NOAA AHPS precipitation map indicates the Study Area was within 150-200% of normal precipitation in the 90 days before the site visit, which is also considered wetter than normal. According to the Daily Precipitation Table in Appendix 3, in the two weeks prior to conducting field work, 0.82 inches of precipitation was recorded. Based on the recorded data, raSmith determined that precipitation was wetter than the normal range.

4.3 FIELD INVESTIGATION

All areas containing wetland indicators on the maps and analysis mentioned above were evaluated in the field on October 28, 2019. No previous agency consultation or wetland delineation are known for this site. A total of four sampling points were examined and one wetland feature was delineated within the Study Area: a wetland stream

terrace (389 ft^2). A Trimble Geo7X GPS unit with sub-meter accuracy was used to locate the wetland boundaries and the sampling points. Cursory sampling points in both upland and wetland areas were sampled in the field to determine the wetland boundaries. Data sheets were compiled and are included in Appendix 5.

4.3.1 UPLANDS

Uplands within the Study Area are generally mowed lawn, with a small amount of unmaintained grassland and forest near the northern end of the Study Area. Dominant vegetation at the upland sampling points (Points 1, 2, and 3) included: box elder (*Acer negundo*), black willow (*Salix nigra*), Kentucky bluegrass (*Poa pratensis*), white clover (*Trifolium repens*), and creeping-Charlie (*Glechoma hederacea*). No wetland hydrology indicators or hydric soil indicators were present at any of the upland sampling points.

4.3.2 WETLANDS

Wetland Stream Terrace

Wetland 1 is a 389 ft^2 wetland that lies along the shoreline of Lake Mendota. One sampling point (Point 4) was examined within the wetland. The wetland is not mapped on the WWI.

Hydrophytic vegetation was present within the wetland and was dominated by black birch (*Betula nigra*), silver maple (*Acer saccharinum*), American elder (*Sambucus nigra ssp. canadensis*) and bittersweet nightshade (*Solanum dulcamara*).

The wetland occurs in a drainageway between Woodward Drive and Lake Mendota. Two primary (High Water Table and Saturation) and two secondary indicators of wetland hydrology (Geomorphic Position and FAC-Neutral Test) were observed in the wetland. Several inches of surface water were present within the channel of the waterway.

The wetland occurs in mapped Wateska loamy sand (somewhat poorly drained). Soil within the wetland met the Sandy Mucky Mineral and Sandy Redox hydric soil indicators.

4.3.3 OTHER AQUATIC FEATURES

Lake Mendota lies along the edge of the Study Area to the southwest and the Warner Park Lagoon outlet is located to the south. A narrow channel is present within the delineated wetland that drains stormwater from the roadway and railroad to Lake Mendota.

5.0 CONCLUSION

Based on the wetland delineation completed by raSmith, one wetland feature was identified within the Study Area: a wetland stream terrace (389 ft^2).

raSmith ecologists are required by the WDNR to provide their professional judgment on wetland susceptibility per revised NR 151 guidance (Guidance #3800-2015-02) (Appendix 6). It is our opinion that the susceptibility is *moderate* for the delineated wetland.

Theran Stautz, lead delineator, is an Assured Delineator as explained on the WDNR web site, http://dnr.wi.gov/topic/wetlands/assurance.html. The WDNR considers Mr. Stautz's wetland determination/delineation work to be "Assured" for purposes of Wisconsin waterway and wetland permits, such that Mr. Stautz's clients do not need to wait for concurrence letters from the WDNR before relying on such determinations and delineations and may expect that wetland issues should not be the cause of delays in state

waterway and wetland permit decisions. Per communication with USACE staff, concurrence from the United States Army Corps of Engineers is not necessary unless the project is associated with a wetland fill permit application.

The wetland boundary staked in the field by raSmith is a professional finding based on accepted USACE and WDNR methodology at the time the wetlands were delineated. This wetland delineation field work and the report are not intended to meet the requirements of a WDNR Endangered Species Review, a navigability determination, or the location of either the Ordinary High Water Mark or floodplain.

Wetlands and waterways that are considered waters of the U.S. are subject to regulation under Section 404 of the Clean Water Act (CWA) and the jurisdictional regulatory authority lie with the USACE. Additionally, the WDNR has regulatory authority over wetlands, navigable waters, and adjacent lands under Chapters 30 and 281 Wisconsin State Statutes, and Wisconsin Administrative Codes NR 103, 299, 350, and 353. In addition, the USACE and WDNR have jurisdictional authority to determine which features are exempt including stormwater ponds and conveyance features. If the client proposes to modify an existing stormwater feature, an Artificial Determination Exemption would need to be submitted. See the form on the WDNR Wetland Identification website (fee involved), http://dnr.wi.gov/topic/wetlands/identification.html. Furthermore, municipalities, townships, and counties may have local zoning authority over certain areas or types of wetland and waterways. The determination that a wetland or waterway is subject to regulatory jurisdiction is made independently by the agencies.

Any activity in the delineated wetland may require U.S. Army Corps of Engineers permits and State of Wisconsin Department of Natural Resources Water Quality Certification and local government permits. If the Client proceeds to change, modify or utilize the property in question without obtaining authorization from the appropriate regulatory agency, it will be done at the Client's risk and raSmith shall not be responsible or liable for any resulting damages.

6.0 REFERENCES

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Appendices

Appendix 1: Figures

Appendix 2: NRCS Soil Report – All Components

Appendix 3: WETS Table Analysis, NRCS WETS Table & Daily Precipitation Table

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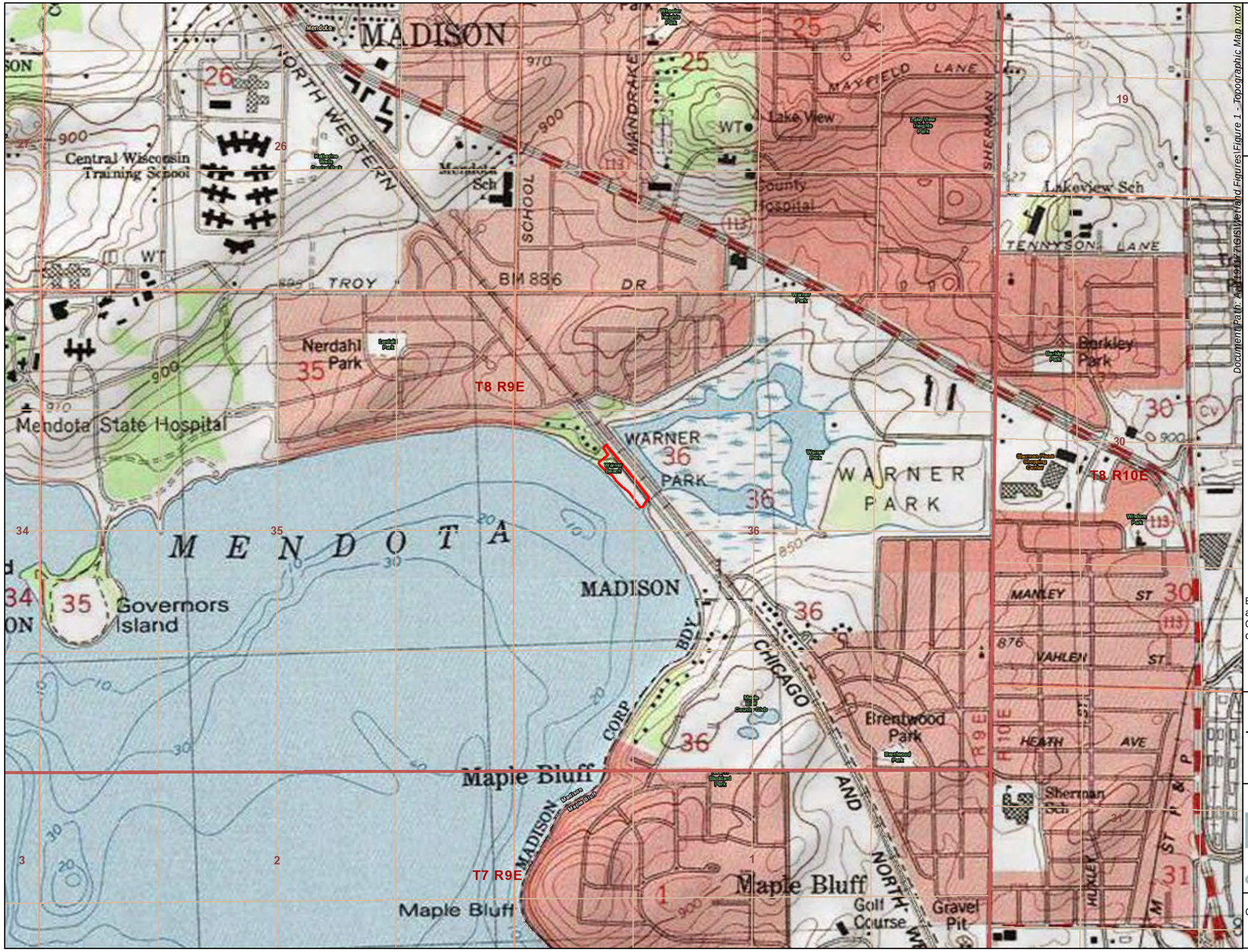

Document Path: A:\1191177\GIS\Wetland Figures\Figure 1 - Topographic Map.mxd

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

Study Area (2.63 Acres)

Figure 1
Topographic/Site Location Map

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0 500 1,000
1 inch = 1,000 feet

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Culvert
- Sampling Point
- Ditch
- Off-site Ditch
- Off-site Lake Mendota
- Off-site Wetland
- Delineated Wetland (389 sqft)
- Lake Mendota (5,990 sqft)
- Study Area (2.63 Acres)

Esri, HERE, Garmin, (c) OpenStreetMap contributors
NA

Figure 2
Wetland Boundary Map

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0 37.5 75
1 inch = 75 feet

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City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)

Na
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NA

Figure 3
Contour Map

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0 37.5 75
1 inch = 75 feet

Project Path: A:\1191177\GIS\Wetland Figures\Figure 3 - Contour Map.mxd

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)
- Wisconsin Wetland Inventory

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Figure 4
WI Wetland Inventory and Water Resources Map

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0 37.5 75
1 inch = 75 feet

T:\GIS\Wetland\Figures\Figure 4 - WWI and Water Resources Map.mxd

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- NRCS Wisconsin Soils
- Study Area (2.63 Acres)
- Somewhat poorly drained
- Poorly Drained
- Very poorly drained
- Water/Other

Document Path: A:\1191177\GIS\Wetland Figures\Figure 5 - NRCS Soil Map.mxd

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NA

Figure 5
NRCS Soil Map

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0 37.5 75
1 inch = 75 feet

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)

Document Path: A:\1191177\GIS\Wetland Figures\Figure 6 - Aerial Photo Map.mxd

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Figure 6A
2000 Aerial Photo

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0 50 100
1 inch = 100 feet

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)

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Figure 6B
2005 Aerial Photo

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0 50 100
1 inch = 100 feet

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

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Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)

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Figure 6C
2010 Aerial Photo

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0 50 100
1 inch = 100 feet

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

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Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)

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Figure 6D
2014 Aerial Photo

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0 50 100
1 inch = 100 feet

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

Map Legend

- Off-site Wetland/Lake Mendota
- Delineated Wetland/Lake Mendota (8,538 sqft)
- Study Area (2.63 Acres)

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Figure 6E
2017 Aerial Photo

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0 50 100
1 inch = 100 feet

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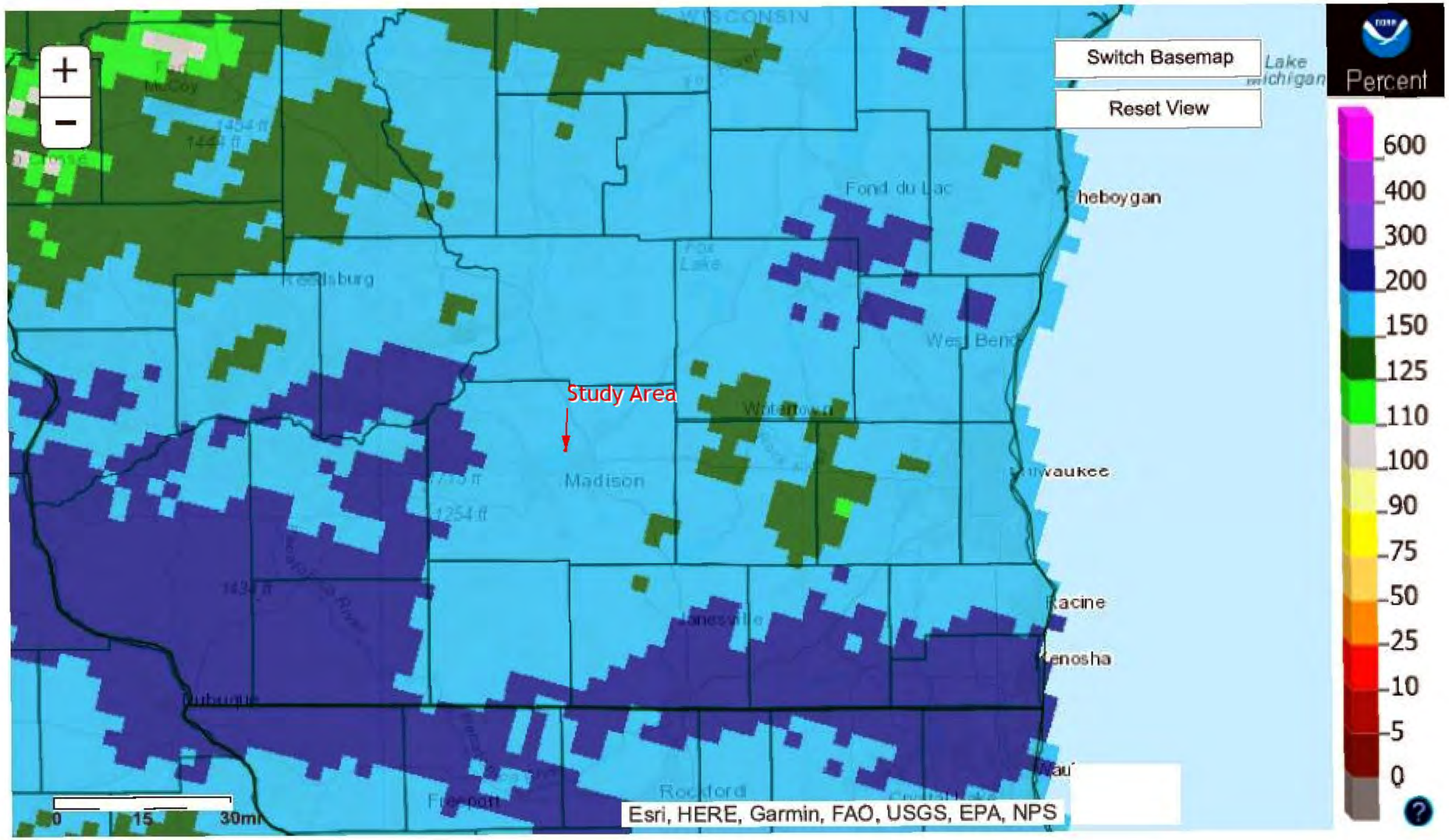

Milwaukee/Sullivan, WI: Last 90-Day Percent of Normal Precipitation
Valid on: October 28, 2019 12:00 UTC

The Study Area falls within 150 - 200% of normal precipitation.

Document Path: A:\1191177\GIS\Wetland Figures\Figure 7 - NOAA Precipitation Map.mxd

City of Madison
Warner Park Beach
City of Madison
Dane County, Wisconsin

NOAA AHPS website

Figure 7
90 Day % Normal Precipitation Map

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November 1, 2019
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Appendix 2:

NRCS Soil Report – All Components

Report — Hydric Soil List - All Components

WI025-Dane County, Wisconsin

Map symbol and map unit name	Component/Local Phase	Comp. pct.	Landform	Hydric status	Hydric criteria met (code)
Mb: Marsh	Marsh	100	Depressions	Yes	1,3
W: Water	Water greater than 40 acres	100	—	Unranked	—
Wt: Watseka loamy sand	Watseka	90	Outwash plains	No	—
	Granby	5	Depressions	Yes	2,3
	Marshan	3	Depressions	Yes	2,3
	Brems	2	Outwash plains	No	—

Appendix 3:

WETS Table Analysis, NRCS WETS Table & Daily Precipitation Table

WETS Analysis Worksheet

Project Name: Warner Park Beach
Project Number: 1191177
Period of interest: August - October, 2019
County: Dane

Long-term rainfall records (from WETS table)

	Month	3 years in 10 less than	Normal	3 years in 10 greater than
1st month prior:	October	1.66	2.56	3.08
2nd month prior:	September	1.99	3.18	3.84
3rd month prior:	August	2.67	4.34	5.25
		Sum =	**10.08**	

Site determination

Site Rainfall (in)	Condition Dry/Normal*/Wet	Condition** Value	Month Weight	Product
5.85	Wet	3	3	9
6.80	Wet	3	2	6
2.85	Normal	2	1	2
Sum = **15.50**			Sum*** =	**17**

***Normal precipitation with 30% to 70% probability of occurrence**

Determination: **X** Wet
_____ Normal
_____ Dry

****Condition value:**

Dry = 1
Normal = 2
Wet = 3

*****If sum is:**

6 to 9	then period has been drier than normal
10 to 14	then period has been normal
15 to 18	then period has been wetter than normal

Precipitation data source: WETS Table: MADISON DANE COUNTY REGIONAL AP, WI

Reference: Donald E.Woodward, ed. 1997. *Hydrology Tools for Wetland Determination* , Chapter 19. Engineering Field Handbook. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX.

WETS Table

WETS Station: MADISON DANE COUNTY REGIONAL AP, WI								
Requested years: 1988 - 2018								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	27.7	11.9	19.8	1.41	0.96	1.68	4	12.9
Feb	31.3	14.5	22.9	1.41	0.82	1.72	4	11.8
Mar	44.0	25.0	34.5	2.27	1.34	2.76	5	6.8
Apr	57.4	35.7	46.5	3.69	2.83	4.28	7	2.5
May	69.5	46.9	58.2	3.85	2.49	4.64	7	0.2
Jun	79.0	57.1	68.1	5.05	2.99	6.13	8	0.0
Jul	82.4	61.3	71.8	4.26	3.14	5.00	6	0.0
Aug	80.4	59.5	70.0	4.34	2.67	5.25	6	0.0
Sep	73.3	50.7	62.0	3.18	1.99	3.84	5	0.0
Oct	60.1	39.5	49.8	2.56	1.66	3.08	5	0.4
Nov	45.3	28.6	37.0	2.20	1.36	2.66	5	3.0
Dec	32.0	17.3	24.6	1.66	1.02	2.01	4	12.2
Annual:					31.92	39.18		
Average	56.9	37.3	47.1	-	-	-	-	-
Total	-	-	-	35.88			69	49.8

GROWING SEASON DATES			
Years with missing data:	24 deg = 0	28 deg = 0	32 deg = 0
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 31	28 deg = 31	32 deg = 31
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	4/6 to 10/30: 207 days	4/20 to 10/15: 178 days	5/5 to 10/7: 155 days
70 percent *	4/2 to 11/4: 216 days	4/15 to 10/20: 188 days	5/2 to 10/11: 162 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1939										1.67	0.24	0.29	2.20
1940	0.91	0.76	1.07	2.40	2.70	5.04	2.88	6.76	0.81	2.39	2.49	1.21	29.42
1941	2.72	0.78	1.82	1.93	3.03	3.42	2.93	1.29	9.87	2.86	0.93	1.29	32.87
1942	1.16	0.50	1.46	0.81	4.49	4.26	3.58	4.14	3.43	2.44	3.27	2.55	32.09
1943	2.15	0.76	2.48	0.99	2.88	2.33	1.54	2.31	0.37	0.83	3.15	0.99	20.78
1944	1.40	1.69	2.46	3.74	2.33	3.42	2.77	1.54	3.05	0.29	1.54	1.14	25.37
1945	0.31	1.40	1.40	2.89	5.27	2.81	2.65	4.07	6.27	0.78	2.34	1.47	31.66
1946	1.97	0.88	2.88	0.94	2.14	2.81	0.95	1.63	1.28	1.79	2.08	1.54	20.89

1947	2.26	0.29	1.73	3.68	4.35	3.98	2.17	1.58	6.03	1.85	2.82	1.72	32.46
1948	0.49	2.13	2.85	2.97	2.90	2.55	2.55	0.70	1.87	1.29	3.56	1.75	25.61
1949	1.97	1.26	2.35	1.10	2.22	6.43	5.76	2.20	1.12	1.86	1.04	1.70	29.01
1950	2.43	1.65	2.34	2.67	3.43	6.24	10.93	2.69	2.09	1.23	1.04	1.97	38.71
1951	1.44	1.70	2.13	4.42	3.00	2.55	3.08	3.08	1.56	5.37	2.17	1.47	31.97
1952	2.21	0.60	2.92	1.21	3.18	4.08	7.60	4.73	0.49	0.06	2.94	1.67	31.69
1953	0.64	2.77	2.58	3.12	1.02	5.15	4.28	3.49	2.11	1.81	0.52	2.17	29.66
1954	0.76	0.63	1.19	4.09	2.98	7.36	5.73	2.78	3.82	3.72	0.81	1.20	35.07
1955	0.65	1.67	0.96	3.65	2.10	2.78	3.93	1.55	0.80	3.24	0.57	0.59	22.49
1956	0.43	1.00	2.53	3.54	5.11	3.24	4.50	5.64	1.42	0.31	2.78	1.01	31.51
1957	0.41	0.38	1.19	2.40	5.80	6.41	4.00	4.86	0.95	2.14	2.91	1.41	32.86
1958	0.52	0.08	0.38	2.73	3.93	2.16	1.69	2.06	2.44	2.50	2.29	0.31	21.09
1959	1.40	1.58	2.90	4.01	3.06	3.86	4.12	5.68	3.44	5.55	2.29	2.45	40.34
1960	2.19	1.14	1.93	4.02	6.26	2.09	6.04	6.18	3.90	3.32	1.47	0.25	38.79
1961	0.19	1.01	3.42	1.33	1.17	1.84	3.67	1.78	7.92	3.75	3.94	1.02	31.04
1962	1.12	1.39	1.73	1.43	3.01	2.09	4.39	2.04	1.31	1.68	0.34	0.90	21.43
1963	0.76	0.39	2.33	1.67	1.82	8.15	2.29	3.23	2.30	0.64	1.96	0.65	26.19
1964	0.93	0.26	2.12	3.15	3.87	2.28	4.28	2.52	1.85	0.08	1.94	0.34	23.62
1965	1.80	0.74	2.51	2.94	1.86	2.31	3.30	6.77	9.22	1.69	1.96	2.50	37.60
1966	1.07	1.36	2.11	1.54	4.31	2.91	3.24	3.83	0.51	1.65	1.28	2.62	26.43
1967	1.63	1.17	1.49	2.57	3.53	6.46	2.51	2.71	2.68	5.52	1.83	1.89	33.99
1968	0.56	0.49	0.59	4.18	2.02	7.82	2.54	2.58	4.45	0.85	1.74	2.89	30.71
1969	2.26	0.18	1.47	2.72	3.45	7.96	4.28	0.96	1.35	2.65	0.70	1.66	29.64
1970	0.44	0.16	1.17	2.53	6.09	2.26	2.42	0.97	8.82	2.65	1.06	2.12	30.69
1971	1.48	2.59	1.52	2.42	0.98	2.27	1.65	3.96	1.87	1.30	3.48	3.64	27.16
1972	0.40	0.42	2.23	2.02	2.83	1.65	3.49	7.47	5.26	2.42	0.86	1.91	30.96
1973	1.54	1.20	5.04	7.11	5.27	0.81	2.68	2.53	3.59	2.30	1.48	1.98	35.53
1974	2.45	1.17	3.43	4.24	5.77	3.86	2.69	4.60	1.08	3.18	1.79	1.80	36.06
1975	0.98	1.54	3.09	4.19	4.57	4.30	6.05	5.25	0.84	0.64	2.79	0.29	34.53
1976	0.56	1.72	4.75	4.80	1.95	1.38	1.46	1.99	0.50	1.49	0.11	0.37	21.08
1977	0.53	1.44	3.03	2.59	2.52	2.63	6.63	5.19	2.84	1.41	2.12	1.60	32.53
1978	1.03	0.24	0.28	3.50	3.96	9.95	4.54	1.63	5.44	1.11	3.05	1.71	36.44
1979	1.69	0.90	2.67	2.46	2.70	2.53	2.80	4.96	0.11	3.10	2.27	1.93	28.12
1980	1.11	0.64	0.68	2.36	2.08	3.43	2.67	9.49	7.84	1.13	1.33	1.62	34.38

1981	0.14	2.47	0.33	3.42	0.64	4.99	4.81	7.06	3.10	2.68	1.71	0.75	32.10
1982	1.42	0.17	2.11	3.26	4.34	3.40	3.47	2.67	1.42	1.46	4.21	3.65	31.58
1983	0.53	2.26	2.70	2.23	4.21	1.85	1.92	5.05	2.85	2.59	3.18	2.30	31.67
1984	0.36	1.26	1.15	3.86	3.32	7.01	1.96	1.89	2.79	5.63	1.83	2.66	33.72
1985	1.43	1.89	3.13	1.52	3.35	3.06	4.48	2.98	5.00	4.58	5.13	2.39	38.94
1986	1.02	2.72	1.55	2.27	1.97	3.24	4.31	4.38	6.82	1.85	1.03	0.69	31.85
1987	0.68	0.62	1.99	2.46	3.90	1.17	3.26	7.16	3.61	1.24	3.24	4.09	33.42
1988	1.82	0.46	1.20	2.65	0.92	2.06	2.44	2.95	3.33	1.60	3.58	1.56	24.57
1989	0.61	0.57	1.69	1.69	1.72	1.67	4.97	6.46	0.89	1.88	0.98	0.26	23.39
1990	1.60	0.99	4.18	1.90	5.35	4.88	2.61	6.03	1.64	2.25	1.65	3.46	36.54
1991	1.17	0.44	4.24	4.89	2.20	3.75	5.18	2.34	3.96	5.35	3.86	1.71	39.09
1992	0.78	1.34	1.90	3.17	1.12	1.53	5.54	2.48	5.99	1.06	4.83	2.39	32.13
1993	1.60	1.18	3.29	5.33	3.81	6.67	9.34	5.57	3.74	0.91	1.55	0.35	43.34
1994	1.46	2.76	0.46	2.57	1.33	5.66	4.10	4.56	6.14	0.65	2.77	1.08	33.54
1995	2.12	0.06	2.17	4.14	3.92	1.22	4.36	5.58	1.78	4.29	3.17	0.77	33.58
1996	2.53	0.53	0.82	2.76	2.95	9.69	4.08	1.84	1.07	3.14	1.01	1.27	31.69
1997	1.24	2.52	1.54	2.50	1.94	5.23	6.23	2.33	1.38	1.23	1.25	1.25	28.64
1998	2.24	1.44	5.46	4.10	4.58	7.46	2.50	4.24	2.48	3.20	1.95	0.29	39.94
1999	2.10	0.91	0.47	6.91	3.72	5.57	4.49	3.26	1.55	0.88	1.21	0.86	31.93
2000	0.91	1.95	1.17	3.18	9.63	8.63	3.27	3.94	3.59	0.68	2.00	1.39	40.34
2001	0.99	2.64	0.59	3.07	4.16	5.40	3.09	7.64	5.53	2.62	1.59	1.13	38.45
2002	0.63	2.17	1.70	3.45	2.92	3.70	2.06	3.04	2.74	2.10	1.01	0.67	26.19
2003	0.36	0.50	1.72	2.95	3.67	2.10	4.24	0.87	4.24	1.60	7.49	2.00	31.74
2004	0.62	1.44	3.61	1.76	10.84	3.93	6.05	3.96	1.00	3.20	1.51	1.46	39.38
2005	2.20	1.45	1.56	1.68	3.96	1.65	3.92	1.22	1.95	0.76	3.36	0.99	24.70
2006	1.96	0.81	2.34	5.04	4.61	2.29	4.45	5.43	3.33	2.87	2.24	1.36	36.73
2007	0.84	1.59	3.39	4.68	1.40	4.82	2.69	15.18	2.45	3.35	0.39	3.63	44.41
2008	2.17	3.30	2.47	6.43	2.55	10.93	5.62	1.41	2.23	2.20	1.46	3.29	44.06
2009	0.54	1.91	6.19	4.43	3.68	4.17	1.94	2.49	4.68	3.80	1.32	3.20	38.35
2010	0.88	1.02	0.71	3.65	3.79	8.38	7.98	3.92	2.65	2.30	1.09	1.49	37.86
2011	1.28	1.59	2.96	3.61	2.40	3.55	1.85	3.06	3.31	1.35	3.35	2.23	30.54
2012	1.40	1.03	2.61	2.85	3.19	0.31	4.00	1.58	1.33	4.56	0.90	2.60	26.36
2013	2.87	2.41	2.41	5.83	6.57	10.86	4.00	1.53	3.19	1.89	2.20	1.62	45.38
2014	0.65	1.24	1.26	5.13	3.47	9.55	1.08	5.43	1.84	3.09	1.54	1.03	35.31

2015	0.66	0.54	0.76	4.38	4.18	3.15	5.02	4.10	5.99	2.73	4.75	3.33	39.59
2016	0.98	0.52	3.96	2.11	2.22	5.35	5.23	7.87	8.46	4.96	1.87	2.03	45.56
2017	2.76	1.94	2.83	5.30	2.83	6.73	6.52	3.85	0.55	3.56	0.68	0.73	38.28
2018	1.68	2.50	0.74	2.14	9.78	5.67	3.12	10.40	5.46	5.36	1.69	2.10	50.64
2019	2.56	2.94	0.92	3.22	6.17	5.16	5.77	2.85	6.80	5.85	M0.19		42.43

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2016-07-22

Climatological Data for MADISON DANE COUNTY REGIONAL AP, WI - October 2019

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-10-01	76	61	68.5	29	19	2.40	0.0	0
2019-10-02	61	53	57.0	17	7	0.95	0.0	0
2019-10-03	59	45	52.0	12	2	0.03	0.0	0
2019-10-04	54	42	48.0	8	0	0.00	0.0	0
2019-10-05	58	47	52.5	13	3	0.53	0.0	0
2019-10-06	65	48	56.5	17	7	0.00	0.0	0
2019-10-07	66	44	55.0	15	5	0.00	0.0	0
2019-10-08	69	40	54.5	15	5	0.00	0.0	0
2019-10-09	70	44	57.0	17	7	0.00	0.0	0
2019-10-10	71	53	62.0	22	12	0.07	0.0	0
2019-10-11	65	38	51.5	12	2	0.40	0.0	0
2019-10-12	49	33	41.0	1	0	0.01	0.0	0
2019-10-13	41	36	38.5	0	0	0.03	0.0	0
2019-10-14	52	33	42.5	3	0	0.00	0.0	0
2019-10-15	59	36	47.5	8	0	0.02	0.0	0
2019-10-16	53	41	47.0	7	0	T	0.0	0
2019-10-17	52	35	43.5	4	0	0.00	0.0	0
2019-10-18	59	33	46.0	6	0	0.00	0.0	0
2019-10-19	62	48	55.0	15	5	0.01	0.0	0
2019-10-20	66	48	57.0	17	7	0.00	0.0	0
2019-10-21	64	48	56.0	16	6	0.34	0.0	0
2019-10-22	50	44	47.0	7	0	0.02	0.0	0
2019-10-23	54	39	46.5	7	0	0.14	0.0	0
2019-10-24	45	30	37.5	0	0	0.00	0.0	0
2019-10-25	50	26	38.0	0	0	0.00	0.0	0
2019-10-26	48	30	39.0	0	0	0.29	0.0	0
2019-10-27	59	35	47.0	7	0	T	0.0	0
2019-10-28	43	32	37.5	0	0	0.14	1.0	0
2019-10-29	41	26	33.5	0	0	0.16	2.0	3
2019-10-30	35	25	30.0	0	0	0.11	1.1	1
2019-10-31	32	20	26.0	0	0	0.20	4.0	3
Average|Sum	55.7	39.1	47.4	275	87	5.85	8.1	0.2

Appendix 4:

Site Photographs

Photograph 1 (10/28/19): Warner Park Lagoon outlet to Lake Mendota, looking southwest.

Photograph 2 (10/28/19): Lake Mendota shoreline between Sampling Point 1 and Warner Park Lagoon outlet, looking southeast.

Photograph 3 (10/28/19): Upland mowed lawn, looking northwest toward Sampling Point 1. Sampling Point 2 can be seen above the bench, center right.

Photograph 4 (10/28/19): Upland mowed lawn, southeast toward Sampling Point 2.

Photograph 5 (10/28/19): Warner Park Beach, looking west.

Photograph 6 (10/28/19): Forested wetland drainage swale, looking northeast.

Photograph 7 (10/28/19): Upland mowed lawn, looking north toward Sampling Point 3.

Photograph 8 (10/28/19): Wet meadow terrace, looking southwest toward Sampling Point 4.

Photograph 9 (10/28/19): Wet meadow terrace, looking northeast toward Sampling Point 4.

Appendix 5:

Wetland Determination Data Forms – Northcentral & Northeast Region

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Warner Park Beach **City/County:** City of Madison/Dane **Sampling Date:** 28-Oct-19

Applicant/Owner: City of Madison **State:** WI **Sampling Point:** 01

Investigator(s): Stautz **Section, Township, Range: S.** 36 **T.** 8N **R.** 9E

Landform (hillslope, terrace, etc.): Backslope **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR K **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Watseka loamy sand **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

The sampling point is located in a mowed upland lawn. Normal circumstances not present due to regular mowing.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ○	No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NRCS WETS Table (Madison Dane County Rgnl Ap, WI); NOAA AHPS 90 day % Norm Precip Map; 2000, 2005, 2010, 2014 and 2017 aerial photos

Remarks:

Wetland hydrology not present. Based on NRCS WETS Table and NOAA Precip Map, precipitation is wetter than normal (Wet, 150-200%).

VEGETATION - Use scientific names of plants

Sampling Point: 01

Tree Stratum (Plot size: 30' r)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. *Acer negundo*	10	☑	FAC
2. *Salix nigra*	10	☑	OBL
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	20	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5' r)			
1. *Poa pratensis*	90	☑	FACU
2. *Trifolium repens*	10	☐	FACU
3. *Glechoma hederacea*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	105	**= Total Cover**	
Woody Vine Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	10	x 1 =	10	
FACW species	0	x 2 =	0	
FAC species	10	x 3 =	30	
FACU species	105	x 4 =	420	
UPL species	0	x 5 =	0	
Column Totals:	125	(A)	460	(B)

Prevalence Index = B/A = 3.680

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc²	Texture	Remarks
0-9	10YR	2/2						Loam	
9-16	5YR	4/4						Loamy Sand	w/rock
16+									rock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rock

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil not present.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Warner Park Beach **City/County:** City of Madison/Dane **Sampling Date:** 28-Oct-19

Applicant/Owner: City of Madison **State:** WI **Sampling Point:** 02

Investigator(s): Stautz **Section, Township, Range: S.** 36 **T.** 8N **R.** 9E

Landform (hillslope, terrace, etc.): Backslope **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR K **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Watseka loamy sand **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

The sampling point is located in a mowed upland lawn. Normal circumstances not present due to regular mowing.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NRCS WETS Table (Madison Dane County Rgnl Ap, WI); NOAA AHPS 90 day % Norm Precip Map; 2000, 2005, 2010, 2014 and 2017 aerial photos

Remarks:

Wetland hydrology not present. Based on NRCS WETS Table and NOAA Precip Map, precipitation is wetter than normal (Wet, 150-200%).

VEGETATION - Use scientific names of plants

Sampling Point: 02

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5' r)			
1. *Trifolium repens*	70	☑	FACU
2. *Poa pratensis*	30	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	100	x 4 =	400	
UPL species	0	x 5 =	0	
Column Totals:	100	(A)	400	(B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ○ **No** ◉

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation not present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	2/2							Loam	
12-21	7.5YR	4/4	80	7.5YR	4/6	10	C	M	Sandy Clay Loam	
12-21	10YR	2/2	20						Loam	
21-27	10YR	7/2							Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil not present.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Warner Park Beach **City/County:** City of Madison/Dane **Sampling Date:** 28-Oct-19

Applicant/Owner: City of Madison **State:** WI **Sampling Point:** 03

Investigator(s): Stautz **Section, Township, Range: S.** 36 **T.** 8N **R.** 9E

Landform (hillslope, terrace, etc.): **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR K **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Watseka loamy sand **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

The sampling point is located in a mowed upland lawn. Normal circumstances not present due to regular mowing.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NRCS WETS Table (Madison Dane County Rgnl Ap, WI); NOAA AHPS 90 day % Norm Precip Map; 2000, 2005, 2010, 2014 and 2017 aerial photos

Remarks:

Wetland hydrology not present. Based on NRCS WETS Table and NOAA Precip Map, precipitation is wetter than normal (Wet, 150-200%).

VEGETATION - Use scientific names of plants

Sampling Point: 03

Tree Stratum (Plot size: n/a)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5' r)			
1. *Poa pratensis*	60	☑	FACU
2. *Glechoma hederacea*	30	☑	FACU
3. *Trifolium repens*	10	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	100	x 4 =	400	
UPL species	0	x 5 =	0	
Column Totals:	100	(A)	400	(B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ○ **No** ◉

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation not present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc²	Texture	Remarks
0-8	10YR 2/2						Loam	
8-12	10YR 4/3		10YR 4/6	10	C	M	Clay Loam	
12-24	10YR 6/2						Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil not present.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Warner Park Beach **City/County:** City of Madison/Dane **Sampling Date:** 28-Oct-19

Applicant/Owner: City of Madison **State:** WI **Sampling Point:** 04

Investigator(s): Stautz **Section, Township, Range: S.** 36 **T.** 8N **R.** 9E

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR K **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Watseka loamy sand **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

The sampling point is located in a wetland stream terrace. The portion near the sampling point is wet meadow, while the downstream portion is more forested.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	10
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NRCS WETS Table (Madison Dane County Rgnl Ap, WI); NOAA AHPS 90 day % Norm Precip Map; 2000, 2005, 2010, 2014 and 2017 aerial photos

Remarks:

Wetland hydrology present. Based on NRCS WETS Table and NOAA Precip Map, precipitation is wetter than normal (Wet, 150-200%).

VEGETATION - Use scientific names of plants

Sampling Point: 04

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula nigra*	30	☑	FACW
2. *Acer saccharinum*	10	☑	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Sambucus nigra ssp. canadensis*	20	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	20	**= Total Cover**	

Herb Stratum (Plot size: 5' r)			
1. *Solanum dulcamara*	10	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	10	**= Total Cover**	

Woody Vine Stratum (Plot size: n/a)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		150 (B)

Prevalence Index = B/A = 2.143

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	2/1		10YR	3/6	5	C	M	Loamy Sand	high organic matter content
10-14	10YR	4/1							Sand	
14-23	2.5Y	5/1							Fine Sand	
23-26	10YR	2/1							Sandy Muck	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☑ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil present.

Appendix 6:

NR 151 Susceptibility Table

Wetland Category for Stormwater Permitting *			
Wetland	**Highly Susceptible**	**Moderately Susceptible**	**Less Susceptible**
Wetland 1		X	

Less Susceptible: Dominated by 90% or greater invasive species

Moderately Susceptible: Sedge meadows, fens, bogs, forested wetlands, fresh wet meadows, shallow/deep marshes, various swamps

Highly Susceptible: Trout streams, threatened and endangered species, fish and wildlife refuges, calcareous fens, wild and scenic rivers

* These designations apply to any project requiring NR 151 stormwater permitting and are based on wetland delineation field work and the professional opinion of raSmith. Final determination of wetland susceptibilty ress with the WDNR. Some of the characteristics of a Highly Suscetible wetland may not be apparent to RASN due to confidential data or data beyond the scope of this delineation (i.e. rare species, high quality trout stream etc). Navigable waterways may also be subject to NR 151 protective area standards.