



# **Wetland Delineation Report**



## Warner Park Beach

## City of Madison Dane County, Wisconsin



raSmith Project No. 1191177

## November 14, 2019

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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<sup>2</sup>) (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, 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.



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### 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



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terrace (389 ft<sup>2</sup>). 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<sup>2</sup> 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<sup>2</sup>).

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, <u>http://dnr.wi.gov/topic/wetlands/assurance.html</u>. 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



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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), <a href="http://dnr.wi.gov/topic/wetlands/identification.html">http://dnr.wi.gov/topic/wetlands/identification.html</a>. 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.



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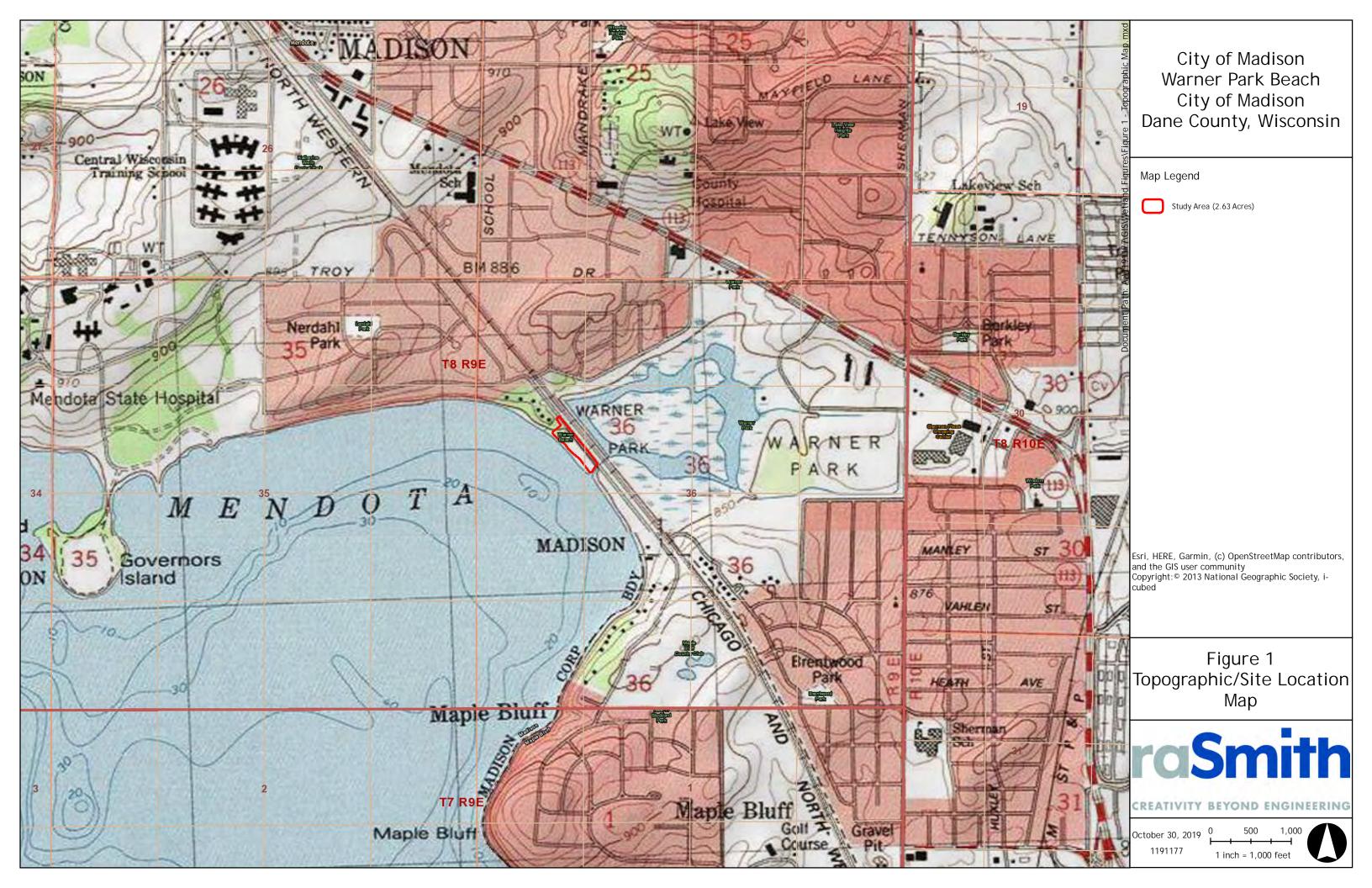
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# <u>Appendices</u>

- Appendix 1: Figures
- Appendix 2: NRCS Soil Report All Components
- Appendix 3: WETS Table Analysis, NRCS WETS Table & Daily Precipitation Table
- Appendix 4: Site Photographs
- Appendix 5: Wetland Determination Data Forms – Northcentral & Northeast Region
- Appendix 6: NR 151 Susceptibility Table

# Appendix 1: Figures

- Figure 1: Topographic/Site Location Map
- Figure 2: Wetland Boundary Map
- Figure 3: Contour Map
- Figure 4: WWI & Water Resources Map
- Figure 5: NRCS Soil Map
- Figures 6A-E: Aerial Photographs (2000, 2005, 2010, 2014 & 2017)
- Figure 7: 90-day Percent of Normal Precipitation Map



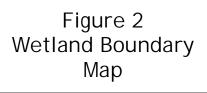


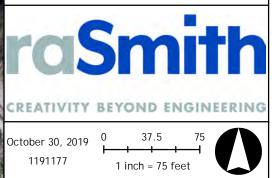
## Map Legend

0	Culvert
•	Sampling Point
	Ditch
1	Off-site Ditch
1-	Off-site Lake Mendota
1	Off-site Wetland
$\bigcirc$	Delineated Wetland (389 sqft)
$\square$	Lake Mendota (5,990 sqft)

Study Area (2.63 Acres)

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







Map Legend

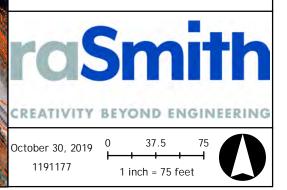
Off-site Wetland/Lake Mendota

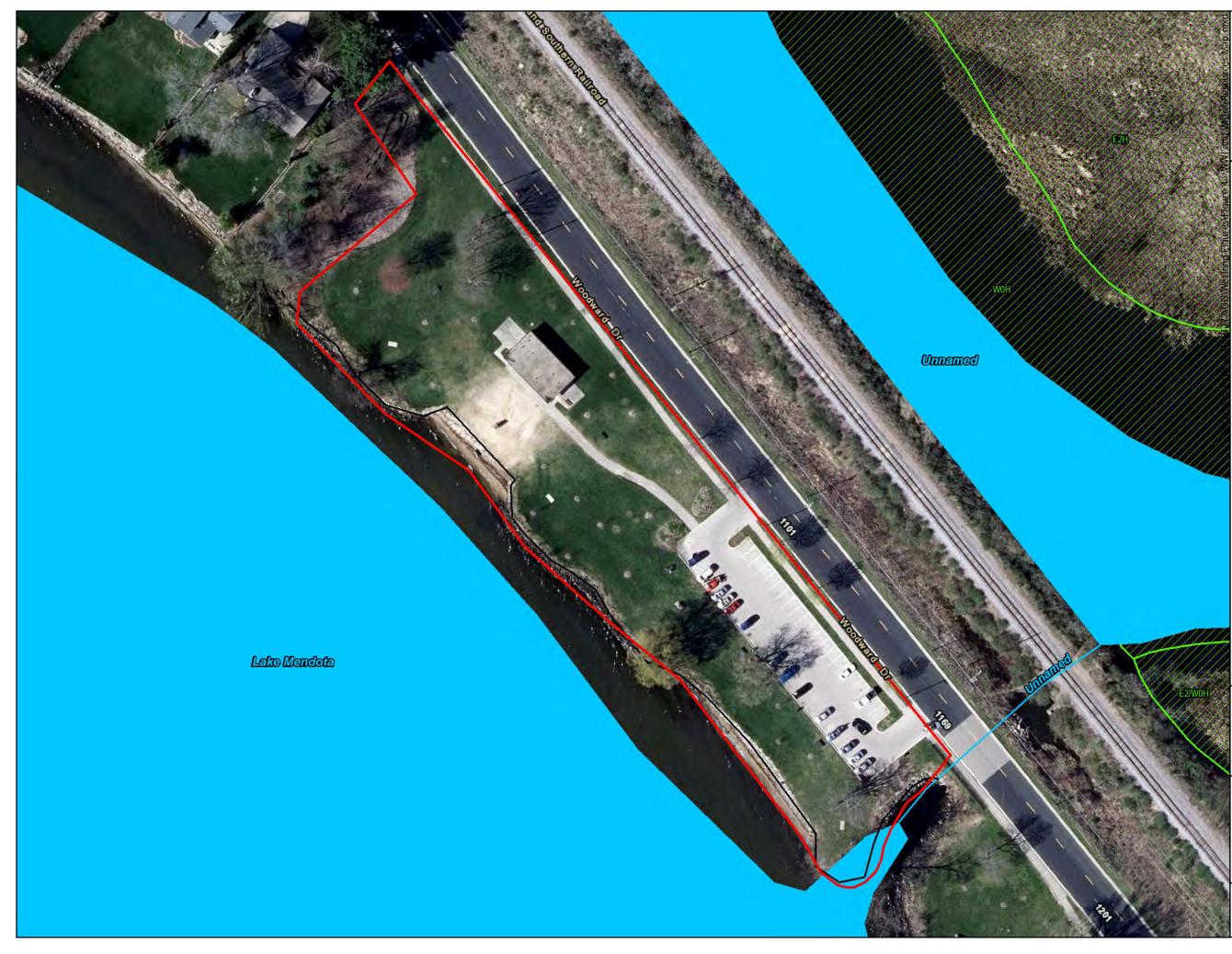
Delineated Wetland/Lake Mendota (8,538 sqft)

Study Area (2.63 Acres)

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

## Figure 3 Contour Map



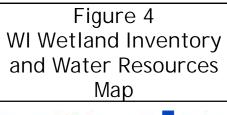


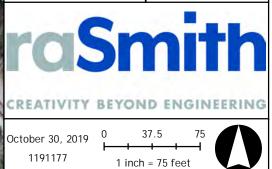
## Map Legend

-

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

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





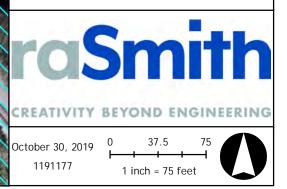


### Map Legend

- 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

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

## Figure 5 NRCS Soil Map





Map Legend

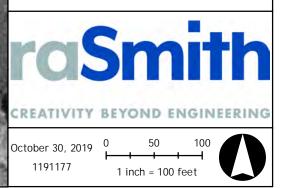
Off-site Wetland/Lake Mendota

Delineated Wetland/Lake Mendota (8,538 sqft)

Study Area (2.63 Acres)

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

## Figure 6A 2000 Aerial Photo





Map Legend

-

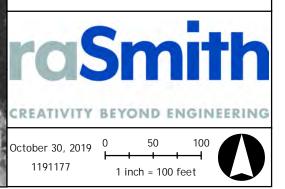
Off-site Wetland/Lake Mendota

Delineated Wetland/Lake Mendota (8,538 sqft)

Study Area (2.63 Acres)

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

## Figure 6B 2005 Aerial Photo





Map Legend

-

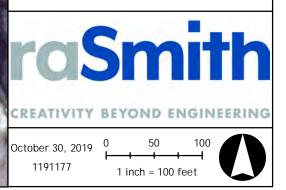
Off-site Wetland/Lake Mendota

Delineated Wetland/Lake Mendota (8,538 sqft)

Study Area (2.63 Acres)

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

## Figure 6C 2010 Aerial Photo





Map Legend

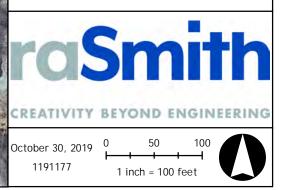
Off-site Wetland/Lake Mendota

Delineated Wetland/Lake Mendota (8,538 sqft)

Study Area (2.63 Acres)

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

## Figure 6D 2014 Aerial Photo





Map Legend

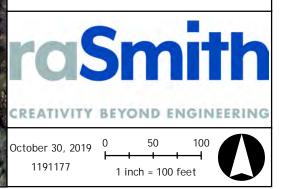
Off-site Wetland/Lake Mendota

Delineated Wetland/Lake Mendota (8,538 sqft)

Study Area (2.63 Acres)

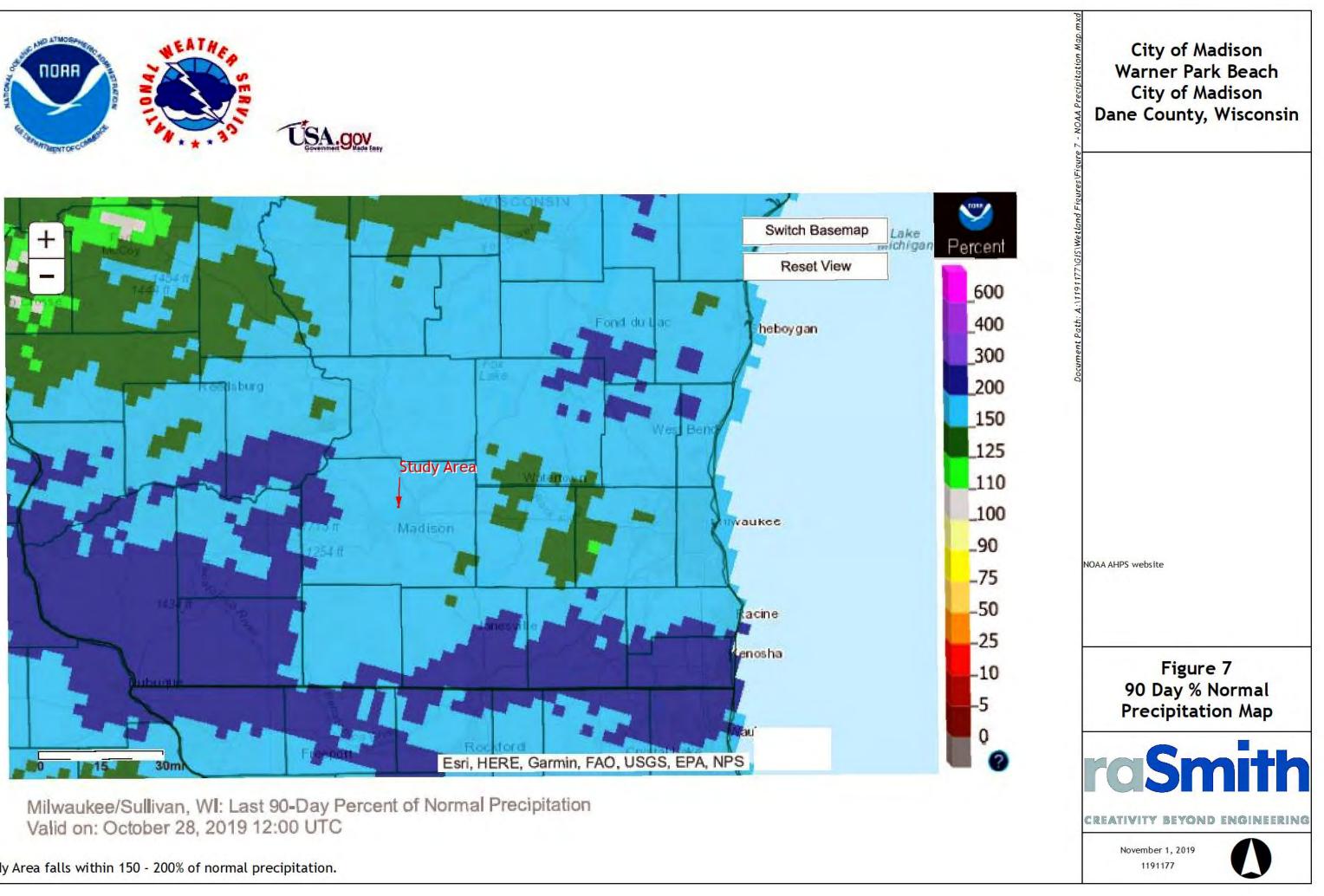
Esri, HERE, Garmin, (c) OpenStreetMap contributors NA

# Figure 6E 2017 Aerial Photo









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

# 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	—				

# <u>Appendix 3:</u>

WETS Table Analysis, NRCS WETS Table & Daily Precipitation Table

## WETS Analysis Worksheet

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

years in 10 less than 1.66	Normal	3 years in 10 greater than		Site	Condition	Condition**	Manth	
1.66		areater than			Condition	Condition	Month	
	0.50	greater than		Rainfall (in)	Dry/Normal*/Wet	Value	Weight	Product
r	2.56	3.08		5.85	Wet	3	3	9
1.99	3.18	3.84		6.80	Wet	3	2	6
2.67	4.34	5.25		2.85	Normal	2	1	2
Sum =	10.08		Sum =	15.50			Sum*** =	17
ne:		***If sum is:				-		Normal Dry
le:		***If sum is: 6 to 9	then pe	riod has beer	n drier than normal	-		
le:			•	riod has beer riod has beer		-		
it	Sum =	Sum = 10.08	Sum = 10.08	Sum = 10.08 Sum =		Sum = 10.08 Sum = 15.50	Sum = 10.08 Sum = 15.50	Sum =         10.08         Sum =         15.50         Sum*** =

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 Station: MADISON DANE COUNTY REGIONAL AP, WI

#### Requested years: 1988 - 2018

riequeoteu yeuro. 1500 2010									
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

1968         0.56         0.49         0.59         4.18         2.02         7.82         2.54         2.58         4.5         5.6         1.74         2.9         7.11           1969         2.26         0.18         1.47         2.72         3.45         7.96         4.28         0.96         1.5         2.6         0.70         1.6         2.9         7.9           1970         0.44         0.16         1.17         2.53         6.09         2.26         2.42         0.97         8.2         6.7         1.6         7.96         4.28         0.96         1.5         1.6         2.9         7.9         7.96         4.28         0.96         1.5         1.6         7.9         8.2         6.7         1.6         7.9         8.2         6.7         1.6         7.9         8.2         6.7         1.6         7.9         8.2         6.7         7.9         7.9         7.47         5.8         7.9         8.3         6.7         7.9         8.3         7.47         7.8         7.9         8.3         7.9         8.3         7.7         7.8         7.9         7.9         7.9         7.9         7.9         7.9         7.9         7.9														
1944       0.49       2.13       2.85       2.77       2.00       2.55       2.55       0.70       2.7       2.8       2.15       2.25       2.43       5.76       2.20       1.2       2.8       1.05       2.22       6.43       5.76       2.20       1.2       2.10       1.0	1947	2.26	0.29	1.73	3.68	4.35	3.98	2.17	1.58			2.82		
1949         1.97         126         2.35         1.00         2.22         6.41         5.76         2.20         1.0         2.40         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.00         2.69         2.0         1.0        <	1948	0.49	2.13	2.85	2.97	2.90	2.55	2.55	0.70	1.	1.	3.56	1.	25.
1950       2.49       1.55       2.49       2.67       3.43       6.24       10.93       2.69       3.9       1.9       1.4       1.7       1.7       1.7       3.10       2.55       3.08       3.08       1.6       5.9       2.7       1.7       1.7       3.18       4.08       7.00       4.73       0.0       0.0       2.92       1.21       3.18       4.08       7.00       4.73       0.0       0.0       2.92       1.21       3.18       4.08       7.00       4.73       0.0       0.0       2.92       1.0       2.73       3.93       3.2       0.7       0.9       0.9       2.9       1.0       1.0       0.9 <td>1949</td> <td>1.97</td> <td>1.26</td> <td>2.35</td> <td>1.10</td> <td>2.22</td> <td>6.43</td> <td>5.76</td> <td>2.20</td> <td>1.</td> <td>1.</td> <td>1.04</td> <td>1.</td> <td>29.</td>	1949	1.97	1.26	2.35	1.10	2.22	6.43	5.76	2.20	1.	1.	1.04	1.	29.
1951         1.44         1.70         2.13         4.42         3.00         2.55         3.08         3.08         1.6         5.         9.         1.7         1.7         9.           1952         2.21         0.60         2.92         1.21         3.18         4.08         7.60         4.73         0.         0.         2.4         1.7         7.8           1953         0.64         2.77         2.58         3.12         1.02         5.15         4.28         3.49         2.         0.81         1.0         8.5         0.7         7.8         7.8         5.73         2.73         3.8         3.0         0.81         1.0         8.5         0.8         1.0         0.81         1.0         8.5         0.8         1.0         7.8         7.8         7.3         7.8 <t< td=""><td>1950</td><td>2.43</td><td>1.65</td><td>2.34</td><td>2.67</td><td>3.43</td><td>6.24</td><td>10.93</td><td>2.69</td><td>2.</td><td>1.</td><td>1.04</td><td>1.</td><td>38.</td></t<>	1950	2.43	1.65	2.34	2.67	3.43	6.24	10.93	2.69	2.	1.	1.04	1.	38.
1952       2.21       0.60       2.92       1.21       3.18       4.06       7.60       4.73       0.9       0.6       2.9       1.0         1953       0.64       2.77       2.56       3.12       1.02       5.15       4.28       3.49       2.1       1.0       0.5       1.0       2.78       3.2       3.2       0.0       3.0       0.5       0.0       3.0       0.5       0.0       3.0       0.5       0.0       3.0       0.5       0.0       3.0       0.5       0.0       3.0       0.0       0.0       3.0       0	1951	1.44	1.70	2.13	4.42	3.00	2.55	3.08	3.08	1.	5.	2.17	1.	31.
1933       0.64       2.77       2.58       3.12       1.02       5.15       4.28       9.49       2.1       1.       0.0       2.2       7.36         1954       0.76       0.63       1.19       4.09       2.38       7.36       5.73       2.78       3.2       3.0       0.8       1.0       5.70       0.278       3.93       1.55       0.0       3.4       0.7       0.9       2.78       3.93       1.55       0.0       3.4       0.7       0.9       2.78       3.93       1.55       0.0       3.4       0.1       0.1       1.1	1952	2.21	0.60	2.92	1.21	3.18	4.08	7.60	4.73	0.	0.	2.94	1.	31.
1964       0.76       0.69       1.19       4.09       2.89       7.36       5.79       2.79       8.2       9.       0.8       1.9       5.7         1955       0.65       1.67       0.96       3.65       2.10       2.78       3.99       1.55       8.0       2.0       1.78       1.9       9.1       2.70       1.1       1.9       1	1953	0.64	2.77	2.58	3.12	1.02	5.15	4.28	3.49	2.		0.52	2.	29.
1965       0.65       1.67       0.96       3.65       2.10       2.79       3.99       1.55       6.       3.4       0.5       0.9       2.49         1966       0.43       1.00       2.53       3.54       5.11       3.24       4.50       5.64       1.2       0.1       2.16       1.69       2.65       2.4       2.9       1.1       2.6         1965       0.52       0.08       0.38       2.73       3.93       2.16       1.69       2.66       3.4       5.5       2.29       2.5       0.4         1969       1.40       1.58       2.90       4.01       3.06       3.86       4.12       5.68       3.4       5.5       2.29       2.5       2.4         1960       2.19       1.14       1.93       4.02       6.26       2.09       6.04       6.18       3.3       1.47       0.5       3.4       0.5       2.5 <td>1954</td> <td>0.76</td> <td>0.63</td> <td>1.19</td> <td>4.09</td> <td>2.98</td> <td>7.36</td> <td>5.73</td> <td>2.78</td> <td>3.</td> <td>3.</td> <td>0.81</td> <td>1.</td> <td>35.</td>	1954	0.76	0.63	1.19	4.09	2.98	7.36	5.73	2.78	3.	3.	0.81	1.	35.
1956       0.43       1.00       2.53       3.54       5.11       3.24       4.50       5.64       1.1       0.1       0.1       0.1       0.38       1.19       2.40       5.80       6.41       4.00       4.86       0.8       2.4       2.0       1.1       2.0       2.0       3.93       2.16       1.69       2.00       2.0       2.0       3.0       2.0       3.0       2.10       1.60       2.00       2.0       2.0       3.0       2.0       2.00       3.00       2.00       3.00       2.00       3.00       2.00       3.00       2.00       2.00       3.00       2.00       2.00       3.00       2.00       2.00       3.00       2.00       3.00       2.00       3.00       2.00       3.00	1955	0.65	1.67	0.96	3.65	2.10	2.78	3.93	1.55	0.	3.	0.57	0.	22.
1957       0.41       0.38       1.19       2.40       5.80       6.41       4.00       4.86       0.9       2.2       2.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9       1.1       1.9	1956	0.43	1.00	2.53	3.54	5.11	3.24	4.50	5.64			2.78		31.
1958       0.52       0.08       0.39       2.73       3.93       2.16       1.69       2.06       2.4       5.6       2.9       5.0       7.0         1959       1.40       1.58       2.90       4.01       3.06       3.86       4.12       5.68       3.4       5.6       2.9       3.6       3.40       3.93       3.47       1.84       3.67       1.76       7.6       3.6       2.9       3.4       3.9         1960       0.19       0.10       3.42       1.33       1.17       1.84       3.67       1.78       7.6       3.6       0.4       0.9       2.04       1.1       1.69       0.9       2.0       1.3       0.6       0.9       2.0       1.3       0.6       0.9       2.0       0.4       0.9       0.7       0.9       2.3       2.0       0.6       0.9       0.7       0.9       2.3       2.0       0.6       0.9       2.3       2.0       0.0       0.9       2.3       2.0       0.0       0.9       2.3       2.0       0.0       0.9       2.3       2.0       0.0       0.9       2.3       2.0       0.0       0.1       2.3       2.0       0.0       0.0       0.3<	1957	0.41	0.38	1.19	2.40	5.80	6.41	4.00	4.86			2.91		
1960         2.19         1.14         1.93         4.02         6.26         2.09         6.04         6.18         3.         3.7         1.7         1.9           1961         0.19         1.01         3.42         1.33         1.17         1.84         3.67         1.78         7.2         7.5         8.0         1.2         1.39         1.73         1.43         3.01         2.09         4.39         2.04         1.1         6.0         0.0         7.3         7.4         0.0         7.3         7.4         0.0         7.3         7.4         0.0         7.3         7.4         0.0         7.3         7.4         0.0         7.3         7.4         0.0         7.3         7.4         0.0         7.4         7.5         7.6         7.3         7.4         0.0         7.4         7.5 <td>1958</td> <td>0.52</td> <td>0.08</td> <td>0.38</td> <td>2.73</td> <td>3.93</td> <td>2.16</td> <td>1.69</td> <td>2.06</td> <td></td> <td></td> <td>2.29</td> <td></td> <td>21.</td>	1958	0.52	0.08	0.38	2.73	3.93	2.16	1.69	2.06			2.29		21.
1960       2.19       1.14       1.93       4.02       6.26       2.09       6.04       6.18       3.0       3.2       1.47       0.5       8.79         1961       0.19       1.01       3.42       1.33       1.17       1.84       3.67       1.78       7.5       8.6       0.94       0.3       0.24       1.1       0.84       0.7       0.34         1962       1.12       1.39       1.73       1.43       3.01       2.09       4.39       2.04       1.1       0.6       0.7       0.3       0.26       0.23       0.66       2.29       3.23       2.6       0.4       0.4       0.5       0.7       0.2       1.5       0.8       0.24       2.8       2.52       1.5       0.8       1.47       0.2       0.7       0.2       0.5 <t< td=""><td>1959</td><td>1.40</td><td>1.58</td><td>2.90</td><td>4.01</td><td>3.06</td><td>3.86</td><td>4.12</td><td>5.68</td><td></td><td></td><td>2.29</td><td></td><td></td></t<>	1959	1.40	1.58	2.90	4.01	3.06	3.86	4.12	5.68			2.29		
1962         1.12         1.39         1.73         1.43         3.01         2.09         4.39         2.04         1.1         6.8         0.34         0.3         1.33           1963         0.76         0.39         2.33         1.67         1.82         8.15         2.29         3.23         2.3         0.4         1.96         0.4         0.8         0.5         0.9         0.4         0.8         0.5         0.9         0.4         0.8         0.5         0.9         0.4         0.9         0.5         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.7         0.8         0.8         0.7         0.8	1960	2.19	1.14	1.93	4.02	6.26	2.09	6.04	6.18			1.47		38.
1         6.8         100         8.3         1.67         1.82         8.15         2.29         3.23         2.3         0.6         1.6         0.5           1964         0.93         0.26         2.12         3.15         3.87         2.28         4.28         2.52         1.5         0.8         0.6         1.6         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.7         0.2         1.5         0.33         0.6         0.7         0.2         1.5         0.33         0.6         0.7         0.2         1.5         0.5         0.4         0.5         0.4         0.5         0.4         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5	1961	0.19	1.01	3.42	1.33	1.17	1.84	3.67	1.78			3.94		
1964         0.93         0.26         2.12         3.15         3.87         2.28         4.28         2.52         1.8         0.8         1.96         2.3           1965         1.80         0.74         2.51         2.94         1.86         2.31         3.30         6.77         2.9         1.9         2.9         2.6         3.6         3.6         7.7         2.9         1.9         2.2         2.6         3.8         3.6         6.77         2.9         1.9         2.2         2.6         3.8         3.6         6.77         2.9         1.9         2.2         2.6         3.8         3.6         1.7         2.9         2.57         3.53         6.46         2.51         2.71         2.8         4.8         0.9         1.7         2.9         9.9         9           1969         2.26         0.18         1.47         2.72         3.45         7.96         4.28         0.96         1.5         2.6         1.6         2.9         9.9         9           1969         2.26         0.18         1.47         2.53         6.9         2.26         2.42         0.9         1.5         2.4         9.9         1.5         2.9	1962	1.12	1.39	1.73	1.43	3.01	2.09	4.39	2.04			0.34		21.
185         08         74         2.51         2.94         1.86         2.31         3.30         6.77         2         6         1.86         2.3           1965         1.07         1.36         2.11         1.54         4.31         2.91         3.24         3.83         6.5         1.85         1.88         2.57         3.53         6.46         2.51         2.71         2.6         5.5         1.83         1.8         3.9           1967         1.63         1.17         1.49         2.57         3.53         6.46         2.51         2.71         2.6         5.5         1.83         1.8         3.9           1968         0.56         0.49         0.59         4.18         2.02         7.82         2.54         2.58         4.8         8.8         1.7         2.9         3.4           1969         2.26         0.18         1.47         2.72         3.45         7.96         4.28         0.97         8.8         2.5         1.6         2.4         0.97         8.9         2.5         1.6         2.4         0.97         8.9         1.6         2.4         0.97         8.9         1.7         1.6         3.49         1.5 <td>1963</td> <td>0.76</td> <td>0.39</td> <td>2.33</td> <td>1.67</td> <td>1.82</td> <td>8.15</td> <td>2.29</td> <td>3.23</td> <td></td> <td></td> <td>1.96</td> <td></td> <td></td>	1963	0.76	0.39	2.33	1.67	1.82	8.15	2.29	3.23			1.96		
1966         1.07         1.36         2.11         1.54         4.31         2.91         3.24         3.83         0.1         1.5         1.82         2.62         3.53           1967         1.63         1.17         1.49         2.57         3.53         6.46         2.51         2.71         2.8         5.         1.83         1.9         3.9           1968         0.56         0.49         0.59         4.18         2.02         7.82         2.54         2.58         4.8         5.         1.4         2.9         7.9           1969         2.26         0.18         1.47         2.72         3.45         7.96         4.28         0.96         1.5         2.6         0.4         2.5         7.6         2.44         0.97         8.2         2.6         1.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         2.9         7.6         3.9         2.0         7.6         3.6         7.7         7.6         3.9         2.9         7.6	1964	0.93	0.26	2.12	3.15	3.87	2.28	4.28	2.52			1.94		
1967       1.63       1.17       1.49       2.57       3.53       6.46       2.51       2.71       2.6       52       1.83       9       9         1968       0.56       0.49       0.59       4.18       2.02       7.82       2.54       2.58       4.5       0.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       2.5       0.7       0.5       0.7 <td>1965</td> <td>1.80</td> <td>0.74</td> <td>2.51</td> <td>2.94</td> <td>1.86</td> <td>2.31</td> <td>3.30</td> <td>6.77</td> <td></td> <td></td> <td>1.96</td> <td></td> <td></td>	1965	1.80	0.74	2.51	2.94	1.86	2.31	3.30	6.77			1.96		
1968         0.56         0.49         0.59         4.18         2.02         7.82         2.54         2.58         4.5         5.6         1.74         2.9         7.11           1969         2.26         0.18         1.47         2.72         3.45         7.96         4.28         0.96         1.5         2.6         0.70         1.6         2.9         7.9           1970         0.44         0.16         1.17         2.53         6.09         2.26         2.42         0.97         8.2         6.7         1.6         7.96         4.28         0.96         1.5         1.6         2.9         7.9         7.96         4.28         0.96         1.5         1.6         7.9         8.2         6.7         1.6         7.9         8.2         6.7         1.6         7.9         8.2         6.7         1.6         7.9         8.2         6.7         7.9         7.9         7.47         5.8         7.9         8.3         6.7         7.9         8.3         7.47         7.8         7.9         8.3         7.9         8.3         7.7         7.8         7.9         7.9         7.9         7.9         7.9         7.9         7.9         7.9	1966	1.07	1.36	2.11	1.54	4.31	2.91	3.24	3.83			1.28		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1967	1.63	1.17	1.49	2.57	3.53	6.46	2.51	2.71			1.83		33. 99
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1968	0.56	0.49	0.59	4.18	2.02	7.82	2.54	2.58			1.74		30. 71
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1969	2.26	0.18	1.47	2.72	3.45	7.96	4.28	0.96			0.70		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1970	0.44	0.16	1.17	2.53	6.09	2.26	2.42	0.97			1.06		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1971	1.48	2.59	1.52	2.42	0.98	2.27	1.65	3.96			3.48		27. 16
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1972	0.40	0.42	2.23	2.02	2.83	1.65	3.49	7.47			0.86		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1973	1.54	1.20	5.04	7.11	5.27	0.81	2.68	2.53			1.48		35. 53
1976       0.56       1.72       4.75       4.80       1.95       1.38       1.46       1.99       0.       1.       0.11       0.       21.         1976       0.53       1.44       3.03       2.59       2.52       2.63       6.63       5.19       2.       1.       2.12       1.       32.         1977       0.53       1.44       3.03       2.59       2.52       2.63       6.63       5.19       2.       1.       2.12       1.       32.         1978       1.03       0.24       0.28       3.50       3.96       9.95       4.54       1.63       5.       1.       3.05       1.       3.4         1979       1.69       0.90       2.67       2.46       2.70       2.53       2.80       4.96       0.       3.       2.27       1.       34.         1980       1.11       0.64       0.68       2.36       2.08       3.43       2.67       9.49       7.       1.       1.33       1.       34.	1974	2.45	1.17	3.43	4.24	5.77	3.86	2.69	4.60			1.79		
1977       0.53       1.44       3.03       2.59       2.52       2.63       6.63       5.19       2.       1.       2.12       1.       32.         1978       1.03       0.24       0.28       3.50       3.96       9.95       4.54       1.63       5.       1.       3.05       1.       36.         1978       1.69       0.90       2.67       2.46       2.70       2.53       2.80       4.96       0.       3.       2.27       1.       3.43       3.267       9.49       7.       1.       1.33       1.       34.         1980       1.11       0.64       0.68       2.36       2.08       3.43       2.67       9.49       7.       1.       1.33       1.       34.	1975	0.98	1.54	3.09	4.19	4.57	4.30	6.05	5.25			2.79		34. 53
1978       1.03       0.24       0.28       3.50       3.96       9.95       4.54       1.63       5.       1.       3.05       1.       36.         1979       1.69       0.90       2.67       2.46       2.70       2.53       2.80       4.96       0.       3.       2.27       1.       28.         1980       1.11       0.64       0.68       2.36       2.08       3.43       2.67       9.49       7.       1.       1.33       1.       34.	1976	0.56	1.72	4.75	4.80	1.95	1.38	1.46	1.99			0.11		
44       11       71       44         1979       1.69       0.90       2.67       2.46       2.70       2.53       2.80       4.96       0.       3.       2.27       1.       28.         1980       1.11       0.64       0.68       2.36       2.08       3.43       2.67       9.49       7.       1.       1.33       1.       34.	1977	0.53	1.44	3.03	2.59	2.52	2.63	6.63	5.19			2.12		32. 53
11 10 93 12 1980 1.11 0.64 0.68 2.36 2.08 3.43 2.67 9.49 7. 1. 1.33 1. 34.	1978	1.03	0.24	0.28	3.50	3.96	9.95	4.54	1.63			3.05		
	1979	1.69	0.90	2.67	2.46	2.70	2.53	2.80	4.96		3. 10	2.27		
	1980	1.11	0.64	0.68	2.36	2.08	3.43	2.67	9.49			1.33		34. 38

1981       0.14       2.47       0.20       3.42       0.64       4.90       4.81       7.06       1.       2.8       1.7       0.7       0.7       0.17       2.10       2.26       4.34       3.40       3.47       2.67       1.2       1.4       4.2       3.6       3.8         1982       0.50       0.52       2.26       2.70       2.23       4.21       1.85       1.97       5.66       2.6       2.8       8.6       1.85       2.6       3.2       3.9       1.67         1984       0.36       1.26       1.16       3.86       3.32       7.01       1.96       1.89       2.6       8.6       8.5       1.83       2.6       3.3       1.03       3.33       1.52       3.36       4.44       2.99       8.3       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.04       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       0.83       1.03       1.03       0.83       1.04														
192       142       0.17       2.11       3.26       4.34       3.40       5.47       2.07       3.2       4.21       1.85       192       5.00       3.5       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       4.0       3.0       3.0       3.0       4.0       3.0	1981	0.14	2.47	0.33	3.42	0.64	4.99	4.81	7.06			1.71		
1989       0.63       2.26       2.70       2.23       4.21       1.85       1.92       5.05       2.8       2.9       3.8       2.9       3.7         1984       0.36       1.25       1.15       3.86       3.32       7.01       1.96       1.99       2.6       3.7       3.9       3.	1982	1.42	0.17	2.11	3.26	4.34	3.40	3.47	2.67	1.	1.	4.21	3.	31.
1844       0.66       1.76       1.86       3.82       7.01       1.96       1.89       2.8       5.0       3.0       3.9       3.96       4.44       2.89       5.0       4.0       5.0       3.0       3.0       3.96       4.44       2.89       5.0       4.0       5.0       3.0 <td>1983</td> <td>0.53</td> <td>2.26</td> <td>2.70</td> <td>2.23</td> <td>4.21</td> <td>1.85</td> <td>1.92</td> <td>5.05</td> <td>2.</td> <td>2.</td> <td>3.18</td> <td>2.</td> <td>31.</td>	1983	0.53	2.26	2.70	2.23	4.21	1.85	1.92	5.05	2.	2.	3.18	2.	31.
188         1.43         1.89         3.13         1.52         3.36         3.06         4.48         2.88         5.         4.8         5.         4.8         5. </td <td>1984</td> <td>0.36</td> <td>1.26</td> <td>1.15</td> <td>3.86</td> <td>3.32</td> <td>7.01</td> <td>1.96</td> <td>1.89</td> <td>2.</td> <td>5.</td> <td>1.83</td> <td>2.</td> <td>33.</td>	1984	0.36	1.26	1.15	3.86	3.32	7.01	1.96	1.89	2.	5.	1.83	2.	33.
1986       1.92       2.72       1.57       3.24       4.31       4.88       6.2       1.9       2.46       3.90       1.17       3.26       7.16       8.1       1.2       2.65       0.92       2.06       2.44       2.95       3.3       1.0       8.0       9.0       0.0	1985	1.43	1.89	3.13	1.52	3.35	3.06	4.48	2.98	5.	4.	5.13	2.	38.
1987         0.68         0.62         1.99         2.46         3.90         1.17         3.26         7.16         3.         1.6         3.8         1.5         3.4         3.8         1.5         3.8         3.8         1.5         3.8         3.8         1.5         3.8         3.8         3.5         3.8         3.8         3.5         3.8 <th< td=""><td>1986</td><td>1.02</td><td>2.72</td><td>1.55</td><td>2.27</td><td>1.97</td><td>3.24</td><td>4.31</td><td>4.38</td><td>6.</td><td>1.</td><td>1.03</td><td>0.</td><td>31.</td></th<>	1986	1.02	2.72	1.55	2.27	1.97	3.24	4.31	4.38	6.	1.	1.03	0.	31.
1988       1.82       0.46       1.20       2.65       0.92       2.06       2.44       2.95       3.       1.0       9.5       1.0       0.5       1.69       1.69       1.72       1.67       4.97       6.40       0.0       1.0       0.5       0.5       2.35       1.68       2.61       6.03       1.0       2.5       1.60       0.9       4.18       1.90       5.35       4.88       2.61       6.03       1.0       2.5       1.60       1.0       1.40       2.42       4.89       2.20       3.75       5.18       2.48       5.9       1.6       8.3       2.0       1.33       5.66       4.10       4.56       1.0       4.5       1.0       1.	1987	0.68	0.62	1.99	2.46	3.90	1.17	3.26	7.16	3.		3.24	4.	33.
1989       0.61       0.57       1.69       1.69       1.72       1.67       4.97       6.46       6.9       8.1       0.90       0.1       2.5       1.65       2.8       2.61       6.03       1.4       2.5       1.65       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       3.6       7.1       3.0       3.75       5.18       2.44       5.5       3.6       3.6       7.1       3.0       5.54       2.46       5.5       1.48       3.2       3.2       3.3       5.66       4.10       4.55       6.6       3.6       7.7       3.6       3.6       3.2       7.7       3.8       3.81       6.67       0.34       5.55       1.8       2.9       7.7       1.8       3.9	1988	1.82	0.46	1.20	2.65	0.92	2.06	2.44	2.95	3.	1.	3.58	1.	24.
1990       1.60       0.99       4.18       1.90       5.35       4.88       2.61       6.03       1.1       2.       1.6       3.       5.       3.8       5.18       2.34       3.6       5.       3.8       1.0       0.0       1.0       0.0       1.0       0.0	1989	0.61	0.57	1.69	1.69	1.72	1.67	4.97	6.46	0.	1.	0.98	0.	23.
1991       1.17       0.44       4.29       4.89       2.20       3.75       5.18       2.34       3.6       5.5       8.8       1.1       9.0         1992       0.78       1.34       1.90       3.17       1.12       1.53       5.54       2.48       5.9       1.6       4.83       2.9       7.3         1993       1.60       1.18       3.29       5.33       3.81       6.67       9.34       5.57       7.4       6.8       5.8       3.4         1994       1.46       2.76       0.46       2.57       1.33       5.66       4.10       4.58       7.4       3.9       1.9       9.9       1.84       1.9       3.1       1.17       7.7       3.8         1996       2.53       0.53       0.82       2.76       2.95       9.69       4.88       1.84       1.9       3.1       1.01       1.2       2.5       1.54       2.50       1.94       3.23       1.33       1.5       1.8       1.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9       9.9<	1990	1.60	0.99	4.18	1.90	5.35	4.88	2.61	6.03	1.	2.	1.65	3.	36.
1992       0.78       1.34       1.90       3.17       1.12       1.53       5.54       2.48       5.9       1.6       4.83       2.9       7.3         1993       1.60       1.18       3.29       5.33       3.81       6.67       9.34       5.57       7.4       0.6       2.77       1.83       5.66       4.10       4.56       6.4       0.6       2.77       1.8       3.4         1994       1.46       2.76       0.66       2.77       4.14       3.92       1.22       4.36       5.68       1.8       4.9       0.7       7.8       3.8         1995       2.12       0.06       2.17       4.14       3.92       1.22       4.36       5.88       1.8       1.2       1.2       2.9       3.4       1.9       3.8       1.9       3.9	1991	1.17	0.44	4.24	4.89	2.20	3.75	5.18	2.34			3.86		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1992	0.78	1.34	1.90	3.17	1.12	1.53	5.54	2.48	5.	1.	4.83	2.	32.
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1993	1.60	1.18	3.29	5.33	3.81	6.67	9.34	5.57	3.	0.	1.55	0.	43.
1996         2.53         0.53         0.82         2.76         2.95         9.69         4.08         1.44         1.7         8.1         1.1         1.21         1.25         2.55         2.55         2.53         2.53         2.51         2.51         2.55         2.55         2.57         2.57         2.44         2.62         2.50         1.94         5.25         2.44         2.62         2.50         2.57         2.49         2.50         2.57         2.49         3.26         1.58         2.6         3.6         3.7         3.6         3.7         3.6         3.7         3.6         3.7         3.6         3.7         3.6         3.7         3.4         3.7         3.6         3.7         3.6         3.7         3.7         3.6         3.7         3.7         3.6         3.7	1994	1.46	2.76	0.46	2.57	1.33	5.66	4.10	4.56			2.77		33.
1996       2.53       0.53       0.82       2.76       2.95       9.69       4.08       1.84       1,07       3,1       1.01       1,7       3,6         1997       1.24       2.52       1.54       2.50       1.94       5.23       6.23       2.33       1,8       1,2       1,2       2,5       2,4         1998       2.24       1.44       5.46       4.10       4.58       7.46       2.50       4.24       2,8       3,0       1,9       0,9       3,4         1999       2.10       0.91       0.47       6.91       3.72       5.57       4.49       3,26       1,5       8,8       3,12       0,8       1,9       0,9       3,4       1,9       0,9       3,4       1,9       0,9       3,4       1,0       1,0       0,9       3,07       4,16       5,40       3,09       7,64       5,5       2,6       1,59       1,3       8,5         2001       0.99       2,64       0.59       3,07       4,16       5,40       3,09       7,64       5,5       2,6       1,59       1,3       8,5         2002       0,63       2,17       1,70       3,45       2,92       3,70	1995	2.12	0.06	2.17	4.14	3.92	1.22	4.36	5.58			3.17		
198         2.24         1.44         5.46         4.10         4.58         7.46         2.50         4.24         2.8         2.9         5.9         3.4           1999         2.10         0.91         0.47         6.91         3.72         5.57         4.49         3.26         1.5         8.8         1.0         8.3         3.4           2000         0.91         1.95         1.17         3.18         9.63         8.63         3.27         3.94         3.5         2.8         1.7         3.8         3.7         3.04         3.9         6.5         2.2         1.7         3.8         3.07         4.16         5.40         3.09         7.64         5.5         2.6         1.5         1.7         3.8           2002         0.63         2.17         1.70         3.45         2.92         3.70         2.06         3.04         2.4         1.6         1.8         3.9           2003         0.36         0.50         1.72         2.95         3.67         2.10         4.24         0.87         1.4         3.6         1.4         3.9         1.4         3.9         1.4         3.9         1.4         3.9         3.4         3.9 <td>1996</td> <td>2.53</td> <td>0.53</td> <td>0.82</td> <td>2.76</td> <td>2.95</td> <td>9.69</td> <td>4.08</td> <td>1.84</td> <td></td> <td></td> <td>1.01</td> <td></td> <td></td>	1996	2.53	0.53	0.82	2.76	2.95	9.69	4.08	1.84			1.01		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1997	1.24	2.52	1.54	2.50	1.94	5.23	6.23	2.33			1.25		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1998	2.24	1.44	5.46	4.10	4.58	7.46	2.50	4.24			1.95		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1999	2.10	0.91	0.47	6.91	3.72	5.57	4.49	3.26			1.21		
111 <th< td=""><td>2000</td><td>0.91</td><td>1.95</td><td>1.17</td><td>3.18</td><td>9.63</td><td>8.63</td><td>3.27</td><td>3.94</td><td></td><td></td><td>2.00</td><td></td><td></td></th<>	2000	0.91	1.95	1.17	3.18	9.63	8.63	3.27	3.94			2.00		
74 $74$	2001	0.99	2.64	0.59	3.07	4.16	5.40	3.09	7.64			1.59		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2002	0.63	2.17	1.70	3.45	2.92	3.70	2.06	3.04			1.01		26. 19
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2003	0.36	0.50	1.72	2.95	3.67	2.10	4.24	0.87			7.49		
76 $99$ $70$ $2006$ $1.96$ $0.81$ $2.34$ $5.04$ $4.61$ $2.29$ $4.45$ $5.43$ $3.3$ $2.7$ $2.24$ $1.6$ $3.6$ $2007$ $0.84$ $1.59$ $3.39$ $4.68$ $1.40$ $4.82$ $2.69$ $15.18$ $2.5$ $3.5$ $0.99$ $3.6$ $4.41$ $2008$ $2.17$ $3.30$ $2.47$ $6.43$ $2.55$ $10.93$ $5.62$ $1.41$ $2.6$ $2.9$ $1.46$ $3.9$ $4.41$ $2009$ $0.54$ $1.91$ $6.19$ $4.43$ $3.68$ $4.17$ $1.94$ $2.49$ $4.8$ $3.9$ $1.32$ $3.9$ <	2004	0.62	1.44	3.61	1.76	10.84	3.93	6.05	3.96			1.51		
1       1.59       3.39       4.68       1.40       4.82       2.69       15.18       2.5       3.5       0.39       3.4       4.4         2008       2.17       3.30       2.47       6.43       2.55       10.93       5.62       1.41       2.3       2.0       1.46       3.9       4.4         2009       0.54       1.91       6.19       4.43       3.68       4.17       1.94       2.49       4.8       3.0       1.32       3.0       3.5         2010       0.88       1.02       0.71       3.65       3.79       8.38       7.98       3.92       2.6       3.0       1.9       3.6       3.5         2011       1.28       1.59       2.96       3.61       2.40       3.55       1.85       3.06       3.1       3.5       2.2       3.5       3.5         2012       1.40       1.03       2.61       2.85       3.19       0.31       4.00       1.58       1.3       3.6       2.0       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6       2.6	2005	2.20	1.45	1.56	1.68	3.96	1.65	3.92	1.22			3.36		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2006	1.96	0.81	2.34	5.04	4.61	2.29	4.45	5.43			2.24		
2009       0.54       1.91       6.19       4.43       3.68       4.17       1.94       2.49       4.       3.       3.0       3.8       3.5         2010       0.88       1.02       0.71       3.65       3.79       8.38       7.98       3.92       2.       2.       2.       1.09       1.9       3.7         2011       1.28       1.59       2.96       3.61       2.40       3.55       1.85       3.06       3.       1.       3.35       2.3       3.65       3.61       2.40       3.55       1.85       3.06       3.       1.       3.05       2.3       3.65       3.65       3.61       2.40       3.55       1.85       3.06       3.       1.       3.35       2.3       3.65       3.65       3.61       2.40       3.55       1.85       3.06       3.       1.       3.35       2.2       3.0       3.55       3.61       2.40       3.55       3.61       3.61       2.40       3.55       1.85       3.06       3.1       1.5       3.0       2.2       2.6       3.6       3.6       3.1       3.5       2.60       3.6       3.6       3.6       3.6       3.6       3.6       3.6	2007	0.84	1.59	3.39	4.68	1.40	4.82	2.69	15.18			0.39		
2010       0.88       1.02       0.71       3.65       3.79       8.38       7.98       3.92       2.       2.       3.       1.09       1.       37.         2011       1.28       1.59       2.96       3.61       2.40       3.55       1.85       3.06       3.       1.       3.35       2.       30       54       30       54       30       54       30       3.5       3.06       3.       1.       3.35       2.       30       30       54       3.06       3.       1.       3.35       2.       30       30       54       30       54       30       54       30       54       30       54       30       54       30       54       30       54       30       54       30       54       30       54       30       54       30       55       30       54       30       54       30       54       30       54       30       54       30       54       30       55       30       54       30       54       30       56       60       36       36       36       30       54       10       56       60       36       36       36       30	2008	2.17	3.30	2.47	6.43	2.55	10.93	5.62	1.41			1.46		
2011       1.28       1.59       2.96       3.61       2.40       3.55       1.85       3.06       3.       1.       3.35       2.3       30.         2012       1.40       1.03       2.61       2.85       3.19       0.31       4.00       1.58       1.       4.       0.90       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       2.       3.       3.       1.       3.       3.       1.       3.       2.       3.       3.       3.       1.       3.	2009	0.54	1.91	6.19	4.43	3.68	4.17	1.94	2.49			1.32		
31       35       23       54         2012       1.40       1.03       2.61       2.85       3.19       0.31       4.00       1.58       1.       4.       0.90       2.       26.         2013       2.87       2.41       2.41       5.83       6.57       10.86       4.00       1.53       3.       1.       2.20       1.       45.         2014       0.65       1.24       1.26       5.13       3.47       9.55       1.08       5.43       1.       3.       1.54       1.       35.	2010	0.88	1.02	0.71	3.65	3.79	8.38	7.98	3.92			1.09		
33       56       60       36         2013       2.87       2.41       5.83       6.57       10.86       4.00       1.53       3.       1.       2.20       1.       45.         2014       0.65       1.24       1.26       5.13       3.47       9.55       1.08       5.43       1.       3.       1.54       1.       35.	2011	1.28	1.59	2.96	3.61	2.40	3.55	1.85	3.06			3.35		
19 89 62 38 2014 0.65 1.24 1.26 5.13 3.47 9.55 1.08 5.43 1. 3. 1.54 1. 35.	2012	1.40	1.03	2.61	2.85	3.19	0.31	4.00	1.58			0.90		
2014         0.65         1.24         1.26         5.13         3.47         9.55         1.08         5.43         1.         3.         1.54         1.         35.           84         09         03         31	2013	2.87	2.41	2.41	5.83	6.57	10.86	4.00	1.53			2.20		
	2014	0.65	1.24	1.26	5.13	3.47	9.55	1.08	5.43			1.54		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	Т	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	Т	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

Project/Site: Warner Park Beach	City/County:	City of Madiso	n/Dane	Sampli	ng Date: 2	8-Oct-19
Applicant/Owner: City of Madison		State:	WI	Sampling Point:		01
Investigator(s): Stautz	Section, To	ownship, Ran	<b>ge: S.</b> 36	<b>T.</b> 8N		<b>R.</b> 9E
Landform (hillslope, terrace, etc.): Backslope	Local relief (c	oncave, conve	ex, none):	convex	Slope:	<u>0.0</u> % / <u>0.0</u> °
Subregion (LRR or MLRA): LRR K Lat.:		I	.ong.:	-	Dat	um:
Soil Map Unit Name: Watseka loamy sand	-		ſ	NWI classification:	None	
Are Vegetation , Soil , or Hydrology naturally p Summary of Findings - Attach site map showing s Hydrophytic Vegetation Present? Yes No O		(If need	ed, explain ions, tra		marks.)	-
Hydric Soil Present?     Yes ○     No ●       Wetland Hydrology Present?     Yes ○     No ●	withi	n a Wetland?	Yes	○ <sub>No</sub>		
<b>Remarks: (Explain alternative procedures here or in a separate repo</b> The sampling point is located in a mowed upland lawn. Normal circ	2	present due	to regular	mowing.		

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)		Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	Uther (Explain in Remarks)	FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No O	Depth (inches):	
Water Table Present? Yes O No 🖲	Depth (inches):	drology Present? Yes 🔿 No 🖲
Saturation Present? (includes capillary fringe) Yes O No •	Depth (inches):	drology Present? Yes 🔾 No 鱼
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if ava	ailable:
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:		
	S WETS Table and NOAA Precip Map, precipitation i	s wetter than normal (Wet 150-200%)
Wedding Hydrology not present. Dased on Nice		

VEGETATION - Ose scientific names of pla	iits			Sampling Point: 01
	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' r</u> )	% Cover	Species?	Status	Number of Dominant Species
1. Acer negundo	10	$\checkmark$	FAC	That are OBL, FACW, or FAC:(A)
2. Salix nigra	10	$\checkmark$	OBL	
3	0			Total Number of Dominant Species Across All Strata: 3 (B)
4	-			
5	-		<u>.</u>	Percent of dominant Species
6				That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
				Prevalence Index worksheet:
7				
Sapling/Shrub Stratum (Plot size: n/a )	=	Total Cover		Total % Cover of: Multiply by:
1	0			OBL species <u>10</u> x 1 = <u>10</u>
2				FACW species $0 \times 2 = 0$
			<u>.</u>	FAC species $10 \times 3 = 30$
3				FACU species $105 \times 4 = 420$
4				UPL species x 5 =
5			u	Column Totals: 125 (A) 460 (B)
6	-			
7				Prevalence Index = $B/A = 3.680$
Herb Stratum (Plot size: <u>5' r</u> )	=	Total Cover		Hydrophytic Vegetation Indicators:
Herb Stratum (Hot size:/				Rapid Test for Hydrophytic Vegetation
1. Poa pratensis		$\checkmark$	FACU	✓ Dominance Test is > 50%
2. Trifolium repens	10		FACU	$\square \text{ Prevalence Index is } \leq 3.0^{-1}$
3. Glechoma hederacea	5		FACU	
4	0			Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5	0			Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6	-			
7				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
8				be present, unless disturbed or problematic.
				Definitions of Vegetation Strata:
9				
10				Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11				at breast height (DBH), regardless of height.
12				Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: n/a )	105 =	Total Cover		greater than 3.28 ft (1m) tall
	0			
1				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0			
3				Woody vine - All woody vines greater than 3.28 ft in
4	0			height.
	0 =	Total Cover		
				Hydrophytic
				Vegetation Present? Yes • No ·
				I
Remarks: (Include photo numbers here or on a separate she	eet.)			
Hydrophytic vegetation present.				

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

			pth needed to documen			iiirin the a	ausence of indicator	5.j
Depth (inches)	 Color (m	latrix oist) %		dox Featu %	Type 1	Loc <sup>2</sup>	Texture	Remarks
0-9	10YR	2/2					Loam	
9-16		4/4					Loamy Sand	w/rock
								rock
16+			<u></u>				p	
				-				
			p					
Type: C=Cor	ncentration. D=I	Depletion. RM=	Reduced Matrix, CS=Cover	ed or Coate	d Sand Grai	ns <sup>2</sup> Loca	ation: PL=Pore Lining.	M=Matrix
	Indicators:		· · ·					roblematic Hydric Soils : <sup>3</sup>
Histosol			Polyvalue Belo	w Surface (	S8) (LRR R,			
Histic Ep	ipedon (A2)		MLRA 149B)				_	A10) (LRR K, L, MLRA 149B)
Black His			Thin Dark Sur	face (S9) (I	_RR R, MLRA	A 149B)		Redox (A16) (LRR K, L, R) Peat or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)		Loamy Mucky					(S7) (LRR K, L, M)
Stratified	l Layers (A5)		Loamy Gleyed		)			low Surface (S8) (LRR K, L)
Depleted	Below Dark Su	rface (A11)	Depleted Matr					rface (S9) (LRR K, L)
Thick Da	rk Surface (A12	)	Redox Dark Su		_,			ese Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S1)	)	Depleted Dark		7)			odplain Soils (F19) (MLRA 149B)
Sandy Gl	leyed Matrix (S4	)	Redox Depres	sions (F8)				(TA6) (MLRA 144A, 145, 149B)
_	edox (S5)						Red Parent M	
	Matrix (S6)						Very Shallow	Dark Surface (TF12)
Dark Sur	face (S7) (LRR I	२, MLRA 149B)					Other (Explai	n in Remarks)
<sup>3</sup> Indicators o	of hydrophytic v	egetation and v	vetland hydrology must be	present, un	less disturbe	ed or proble	ematic.	
Restrictive I	Layer (if obser	ved):						
Type: r								
	ches): 16						Hydric Soil Prese	nt? Yes 🔾 No 🖲
Remarks:								
	ot present.							
yunc son n	ot present.							

Project/Site: Warner Park Beach	City/County:	City of Madison/Dane	Sampli	ng Date: 28-Oct-19
Applicant/Owner: City of Madison		State: WI	Sampling Point:	02
Investigator(s): Stautz	Section, T	ownship, Range: S. 36	<b>T.</b> 8N	<b>R.</b> 9E
Landform (hillslope, terrace, etc.): Backslope	Local relief (c	oncave, convex, none):	convex	Slope: <u>0.0</u> % / <u>0.0</u> °
Subregion (LRR or MLRA): LRR K Lat.	:	Long.:	-	Datum:
Soil Map Unit Name: Watseka loamy sand	<u>1</u>		NWI classification:	None
Are Vegetation , Soil , or Hydrology naturally Summary of Findings - Attach site map showing Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Yes No Yes No No No No No No No No	Is the	(If needed, explain oint locations, tr	mstances" present? n any answers in Re <b>ansects, impo</b> ; ○ No ●	emarks.)
Wetland Hydrology Present? Yes 🔾 No 🖲				
<b>Remarks: (Explain alternative procedures here or in a separate rep</b> The sampling point is located in a mowed upland lawn. Normal ci	2	t present due to regular	mowing.	

ors (minimum of 2 required)
racks (B6)
erns (B10)
es (B16)
ater Table (C2)
ws (C8)
ble on Aerial Imagery (C9)
essed Plants (D1)
osition (D2)
ard (D3)
hic Relief (D4)
est (D5)
Yes 🔿 No 🖲
2014 and 2017 aerial photos
al (Wet, 150-200%).
ul (Wel, 150 200 /0).

vederation - use scientific names of pla	1105			Sampling Point: 02
	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: n/a )	% Cover	Species?	Status	Number of Dominant Species
1	0			That are OBL, FACW, or FAC: (A)
2	0			Total Number of Dominant
3	0			Species Across All Strata: 2 (B)
4				
5				Percent of dominant Species
6				That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
7				Prevalence Index worksheet:
		Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: n/a )				OBL species $0 \times 1 = 0$
1	0			FACW species $0 \times 2 = 0$
2	0			
3				
4				FACU species <u>100</u> x 4 = <u>400</u>
5	-			UPL species $0 \times 5 = 0$
6.				Column Totals: <u>100</u> (A) <u>400</u> (B)
7				Prevalence Index = B/A = 4.000
		Total Cover		
Herb Stratum (Plot size: 5' r )				Hydrophytic Vegetation Indicators:
1. Trifolium repens	70	$\checkmark$	FACU	Rapid Test for Hydrophytic Vegetation
2. Poa pratensis			FACU	Dominance Test is > 50%
			17400	Prevalence Index is $\leq$ 3.0 $^1$
3				Morphological Adaptations <sup>1</sup> (Provide supporting
4				data in Remarks or on a separate sheet)
5				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6				1 Indicators of hydric call and watland hydrology much
7				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8				
9	0			Definitions of Vegetation Strata:
10				Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0			at breast height (DBH), regardless of height.
12	0			Sapling/shrub - Woody plants less than 3 in. DBH and
		Total Cover		greater than 3.28 ft (1m) tall.
Woody Vine Stratum (Plot size: n/a )				
1				Herb - All herbaceous (non-woody) plants, regardless of
2	0			size, and woody plants less than 3.28 ft tall.
3	0			Woody vine - All woody vines greater than 3.28 ft in
4	0			height.
	0 =	Total Cover		
				Hydrophytic
				Vegetation Present? Yes O No •
Remarks: (Include photo numbers here or on a separate she	pot)			
Hydrophytic vegetation not present.				

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

12-21		2/2 4/4 2/2 7/2	<u>    %                                </u>		<u>4/6</u>	<u>%</u> 10 	C	 M 	Texture         Loam         Sandy Clay Loam         Loam         Sand	Remarks
12-21	7.5YR 10YR 10YR 10YR 10YR 10YR 10YR 10YR 10	4/4 2/2 7/2		7.5YR	4/6			M	Sandy Clay Loam Loam	
12-21	10YR	2/2 7/2		7.5YR				M	Loam	
21-27	10YR	7/2	20							
Type: C=Concent	ration. D=E								Sand	
Hydric Soil Indi		Pepletio								
Hydric Soil Indi		Depletio								
Hydric Soil Indi		Depletio								
Hydric Soil Indi		Depletio	·				·			
lydric Soil Indi		Depletio	·							
lydric Soil Indi		Pepletio	·							
lydric Soil Indi		epletio								
lydric Soil Indi		epletio								
Hydric Soil Indi		epletio								
lydric Soil Indi		epletio								
-	cators:		n. RM=Red	uced Matrix, (	CS=Covere	d or Coate	d Sand Gr	ains <sup>2</sup> Loca	tion: PL=Pore Lining. M=M	atrix
Histosol (A1)									Indicators for Proble	ematic Hydric Soils : <sup>3</sup>
□				Polyv MI RA	value Belov A 149B)	v Surface (	S8) (LRR F	<b>ξ</b> ,		(LRR K, L, MLRA 149B)
<ul> <li>Histic Epipedo</li> <li>Black Histic (A</li> </ul>					Dark Surfa	ice (S9) (L	.RR R, MLF	RA 149B)	Coast Prairie Redo	x (A16) (LRR K, L, R)
Black Histic (# Hydrogen Sult					ny Mucky №				_	or Peat (S3) (LRR K, L, R)
Stratified Laye				Loam	ny Gleyed I	Matrix (F2)			Dark Surface (S7)	
Depleted Belo		face (A	11)	Deple	eted Matrix	(F3)			Thin Dark Surface	urface (S8) (LRR K, L)
Thick Dark Su	ırface (A12)				x Dark Sur	• • •				(39) (LKK K, L) lasses (F12) (LRR K, L, R)
Sandy Muck N	uck Mineral (S1)				Depleted Dark Surface (F7)     Informatigatiese masses (12) (LRCK)       Redox Depressions (F8)     Piedmont Floodplain Soils (F19) (MLR4)					
Sandy Gleyed		)			x Depressi	ons (F8)			_	) (MLRA 144A, 145, 149B)
Sandy Redox									Red Parent Materi	al (F21)
Stripped Matr			1400)						Very Shallow Dark	Surface (TF12)
Dark Surface									Other (Explain in F	Remarks)
Indicators of hyd	drophytic ve	getatio	n and wetla	nd hydrology	must be p	resent, un	less disturt	ped or proble	ematic.	
estrictive Laye	r (if observ	/ed):								
Type: <u>n/a</u>									Hydric Soil Present?	Yes 🔾 No 🖲
Depth (inches)	):								Hydric Son Fresent:	
emarks:										
dric soil not pr	resent.									

Project/Site: Warner Park Beach	City/County:	City of Madiso	on/Dane	Sampli	ng Date: 28-Oct-19	_
Applicant/Owner: City of Madison		State:	WI	Sampling Point:	03	
Investigator(s): Stautz	Section, T	ownship, Ran	<b>ge: S.</b> 36	<b>T.</b> 8N	<b>R.</b> 9E	
Landform (hillslope, terrace, etc.):	Local relief (c	oncave, conve	ex, none):		Slope: 0.0 % / 0.	.0 °
Subregion (LRR or MLRA): LRR K Lat.:		I	ong.:	-	Datum:	
Soil Map Unit Name: Watseka loamy sand	-			NWI classification:	None	
Are Vegetation , Soil , or Hydrology naturally Summary of Findings - Attach site map showing Hydrophytic Vegetation Present? Yes No •		(If need oint locat	ed, explair ions, tra		emarks.)	
Hydric Soil Present?YesNoWetland Hydrology Present?YesNo		e Sampled Are n a Wetland?	a Yes	i 🔾 No 🖲		
<b>Remarks: (Explain alternative procedures here or in a separate report</b> The sampling point is located in a mowed upland lawn. Normal circ	,	present due	to regular	mowing.		

ors (minimum of 2 required)
racks (B6)
erns (B10)
es (B16)
ater Table (C2)
ws (C8)
ble on Aerial Imagery (C9)
essed Plants (D1)
osition (D2)
ard (D3)
hic Relief (D4)
est (D5)
Yes 🔿 No 🖲
2014 and 2017 aerial photos
al (Wet, 150-200%).
ul (Wel, 150 200 /0).

VEGETATION - Ose scientific names of pla	iits			Sampling Point: 03
	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: n/a )	% Cover		Status	Number of Dominant Species
1				That are OBL, FACW, or FAC:(A)
2				Total Number of Dominant
3	0			Species Across All Strata: <u>2</u> (B)
4				
5	0			Percent of dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
6	0			
7	0			Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: n/a )		Total Cover		Total % Cover of: Multiply by:
	0			OBL species x 1 =
1				FACW species $0 \times 2 = 0$
2				FAC species $0 \times 3 = 0$
3				<b>FACU species</b> $100$ x 4 = $400$
4				UPL species x 5 =
5				Column Totals: 100 (A) 400 (B)
6				
7		Tabal Care		Prevalence Index = B/A =4.000
Herb Stratum (Plot size: 5' r )	=	Total Cover		Hydrophytic Vegetation Indicators:
	60	$\checkmark$	FACU	Rapid Test for Hydrophytic Vegetation
		$\checkmark$	FACU	Dominance Test is > 50%
			FACU	<b>Prevalence Index is</b> $\leq$ <b>3.0</b> <sup>1</sup>
			170	Morphological Adaptations <sup>1</sup> (Provide supporting
4				data in Remarks or on a separate sheet)
5				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
8				Definitions of Vegetation Strata:
9				
10				Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
11				at breast height (DBH), regardless of height.
12				Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: n/a )	100 =	Total Cover		greater than 3.28 ft (1m) tall
<u> </u>	0			Herb - All herbaceous (non-woody) plants, regardless of
2	0			size, and woody plants less than 3.28 ft tall.
3				Woody vine - All woody vines greater than 3.28 ft in
а	0			height.
Τ	0 =	Total Cover		
				Hydrophytic
				Vegetation Present? Yes O No •
Remarks: (Include photo numbers here or on a separate she	not )			
	eel.)			
Hydrophytic vegetation not present.				

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

0-8         10Y           8-12         10Y           12-24         10Y           12-24         10Y           yee:         C=Concentrati           ype:         C=Concentrati           ydric Soil Indicat         Histosol (A1)           Histosol (A1)         Histic Epipedon (C)           Black Histic (A3)         Hydrogen Sulfide           Stratified Layers         Stratified Layers	R       2/2         R       4/3         R       6/2		4/6 10	Type         1         Loc2           C         M           C         M	Texture           Loam           Clay Loam           Sand           Sand	Remarks
8-12 10Y 12-24 10Y 12-24	'R       4/3         'R       6/2         'R       6/2         ''       '' </th <th>=Reduced Matrix, CS=</th> <th>=Covered or Coated S</th> <th></th> <th>Clay Loam Sand</th> <th></th>	=Reduced Matrix, CS=	=Covered or Coated S		Clay Loam Sand	
12-24 10Y	'R       6/2         'R       6/2         'R	=Reduced Matrix, CS=	=Covered or Coated S		Sand	
ype: C=Concentrati ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	on. D=Depletion. RM	🗌 Polyvalı				
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı				
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı				
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı				
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı				
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı		Gand Grains <sup>2</sup> Lc		
ydric Soil Indicat   Histosol (A1)   Histic Epipedon (.   Black Histic (A3)   Hydrogen Sulfide   Stratified Layers (.	ors:	🗌 Polyvalı		Giand Grains <sup>2</sup> Lc		
dric Soil Indicat Histosol (A1) Histic Epipedon (. Black Histic (A3) Hydrogen Sulfide Stratified Layers (	ors:	🗌 Polyvalı		iand Grains <sup>2</sup> Lc		
dric Soil Indicat Histosol (A1) Histic Epipedon (. Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı		Gand Grains <sup>2</sup> Lc		
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı		iand Grains <sup>2</sup> Lo		
ydric Soil Indicat Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı		Sand Grains <sup>2</sup> Lo		
ydric Soil Indicat   Histosol (A1)   Histic Epipedon (   Black Histic (A3)   Hydrogen Sulfide   Stratified Layers	ors:	🗌 Polyvalı		Sand Grains <sup>2</sup> Lo	ocation: PL=Pore Lining. M=N	Actuix
dric Soil Indicat Histosol (A1) Histic Epipedon (. Black Histic (A3) Hydrogen Sulfide Stratified Layers	ors:	🗌 Polyvalı			Cauon: PL=Pore Lining. M=N	
Histosol (A1) Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers		Polyvalu MLRA 1	e Below Surface (S8)			
Histic Epipedon ( Black Histic (A3) Hydrogen Sulfide Stratified Layers	A2)	MLRA 1				lematic Hydric Soils: <sup>3</sup>
Black Histic (A3) Hydrogen Sulfide Stratified Layers			49B)			(LRR K, L, MLRA 149B)
Hydrogen Sulfide         Stratified Layers		🔄 Thin Da	rk Surface (S9) (LRR	R, MLRA 149B)		ox (A16) (LRR K, L, R)
Stratified Layers	(A4)	Loamy I	Mucky Mineral (F1) LF	RR K, L)		or Peat (S3) (LRR K, L, R)
		Loamy (	Gleyed Matrix (F2)		Dark Surface (S7	
	Dark Surface (A11)		d Matrix (F3)		Thin Dark Surface	Surface (S8) (LRR K, L)
Thick Dark Surfac	ce (A12)		Dark Surface (F6)			Masses (F12) (LRR K, L, R)
] Sandy Muck Mine	eral (S1)		d Dark Surface (F7)			ain Soils (F19) (MLRA 149B)
Sandy Gleyed Ma	trix (S4)	🛄 Redox [	Depressions (F8)			6) (MLRA 144A, 145, 149B)
Sandy Redox (S5	)				Red Parent Mater	
Stripped Matrix (					Very Shallow Dar	
Dark Surface (S7	) (LRR R, MLRA 1498	3)			Other (Explain in	Remarks)
ndicators of hydrop	hytic vegetation and	wetland hydrology mu	ust be present, unless	disturbed or pro	blematic.	
strictive Layer (if	f observed):					
Type: <u>n/a</u>						
Depth (inches):					Hydric Soil Present?	Yes 🔾 No 🖲
marks:						
Iric soil not prese	ent.					

Project/Site: Warner Park Beach		City/County:	City of Madison/Dane	Samplir	ng Date: 28-Oct-19
Applicant/Owner: City of Madison			State: WI	Sampling Point:	04
Investigator(s): Stautz		Section, To	ownship, Range: S. 36	<b>T.</b> 8N	<b>R.</b> 9E
Landform (hillslope, terrace, etc.): Toe	slope	Local relief (co	oncave, convex, none):	concave	Slope: <u>0.0</u> % / <u>0.0</u> °
Subregion (LRR or MLRA): LRR K	Lat.:		Long.:		Datum:
Soil Map Unit Name: Watseka loamy sar	nd		1	WI classification:	None
Are Vegetation , Soil , or Summary of Findings - Attac Hydrophytic Vegetation Present? Ye Hydric Soil Present? Ye	Hydrology  aturally p h site map showing s s  No s  No No No No	Is the	oint locations, tra	any answers in Re	-
Wetland Hydrology Present? Ye	es 🔍 No 🔾				
Remarks: (Explain alternative procedu The sampling point is located in a weth forested.		-	ampling point is wet me	adow, while the do	wnstream portion is more

Wetland Hydrology Indicators:			Secondary Indicators (minimum of 2 required)				
Primary Indicators (minimum c	of one required; c	Surface Soil Cracks (B6)					
Surface Water (A1)		Water-Stained Leaves (B9)	Drainage Patterns (B10)				
✓ High Water Table (A2)		Aquatic Fauna (B13)	Moss Trim Lines (B16)				
Saturation (A3)		Marl Deposits (B15)	Dry Season Water Table (C2)				
Water Marks (B1)		Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)		Oxidized Rhizospheres along Living Ro	oots (C3) Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)		Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)		C6) Geomorphic Position (D2)					
Iron Deposits (B5)		Thin Muck Surface (C7)	Shallow Aquitard (D3)				
Inundation Visible on Aerial Image	nagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)				
Sparsely Vegetated Concave Su	urface (B8)		FAC-neutral Test (D5)				
Field Observations:							
Surface Water Present? Yes	s 🔾 No 🖲	Depth (inches):					
Water Table Present? Yes	s 🔍 No 🔾	Depth (inches):10					
Saturation Present? (includes capillary fringe)	s 🔍 No 🔾	Depth (inches):0	Wetland Hydrology Present? Yes $ullet$ No $igodoldsymbol{ imes}$				
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. Ba	ased on NRCS WE	TS Table and NOAA Precip Map, prec	ipitation is wetter than normal (Wet, 150-200%).				

VEGETATION - Use scientific fiames of pla	Sampling Point: 04			
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' r</u> )	% Cover	Species?	Status	Number of Dominant Species
1. Betula nigra	30	$\checkmark$	FACW	That are OBL, FACW, or FAC: (A)
2. Acer saccharinum	10	$\checkmark$	FACW	
3	0			Total Number of Dominant Species Across All Strata: 4 (B)
4				
5				Percent of dominant Species
6				That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
7		$\square$		Prevalence Index worksheet:
		Total Cove	-	Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15' r )				OBL species $0 \times 1 = 0$
1 <u>Sambucus nigra ssp. canadensis</u>	20	$\checkmark$	FACW	FACW species $60 \times 2 = 120$
2	0			· · · · · · · · · · · · · · · · · · ·
3				FAC species $10 \times 3 = 30$
4				FACU species $0 \times 4 = 0$
5	-			UPL species $0 \times 5 = 0$
6.				Column Totals: (A) (B)
7	_			Prevalence Index = $B/A = 2.143$
		Total Cove		
Herb Stratum (Plot size: 5' r )				Hydrophytic Vegetation Indicators:
1. Solanum dulcamara	10	$\checkmark$	FAC	Rapid Test for Hydrophytic Vegetation
2				✓ Dominance Test is > 50%
				$\checkmark$ Prevalence Index is ≤3.0 <sup>1</sup>
3	_			Morphological Adaptations <sup>1</sup> (Provide supporting
4				data in Remarks or on a separate sheet)
5	_			Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6				
7				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0			
9	0			Definitions of Vegetation Strata:
10	0			Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0			at breast height (DBH), regardless of height.
12				Sapling/shrub - Woody plants less than 3 in. DBH and
		Total Cove	r	greater than 3.28 ft (1m) tall.
Woody Vine Stratum (Plot size: n/a )		_		
1	0			Herb - All herbaceous (non-woody) plants, regardless of
2	0			size, and woody plants less than 3.28 ft tall.
3	0			Woody vine - All woody vines greater than 3.28 ft in
4	0			height.
	0 =	Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes • No ·
				I
Remarks: (Include photo numbers here or on a separate sh	eet.)			
Hydrophytic vegetation present.				

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

Depth						ntirm the	absence of indicators	5.)	
(inches)	N Color (m	Matrix Ioist) %	Color (moist)	Redox Featu %	ires Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Ren	narks
0-10	10YR	2/1	10YR 3/6		C	 M	Loamy Sand		matter content
10-14		4/1					Sand		
14-23	2.5Y	5/1					Fine Sand		
							-		
23-26	10YR	2/1					Sandy Muck		
		<u>_</u>							
Type: C=Cor	ncentration. D=	Depletion. RM=R	educed Matrix, CS=Cov	vered or Coate	ed Sand Gra	ains <sup>2</sup> Loca	ation: PL=Pore Lining.	M=Matrix	
_	Indicators:						Indicators for P	roblematic Hydri	c Soils: <sup>3</sup>
Histosol	. ,		Polyvalue B MLRA 1498	elow Surface	(S8) (LRR R	1		(LRR K, L, ML	
	ipedon (A2)			, urface (S9) (	IRR R. MIR	A 149B)	Coast Prairie	Redox (A16) (LRR	K, L, R)
Black His				ky Mineral (F1			<ul> <li>5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</li> <li>Dark Surface (S7) (LRR K, L, M)</li> </ul>		.RR K, L, R)
_	n Sulfide (A4)			ed Matrix (F2					
	Layers (A5)	(A11)			/		Polyvalue Bel	ow Surface (S8) (L	RR K, L)
	Below Dark Su			Surface (F6)			Thin Dark Sur	face (S9) (LRR K,	L)
	rk Surface (A12			ark Surface (F	7)		Iron-Mangane	ese Masses (F12) (	LRR K, L, R)
	uck Mineral (S1			essions (F8)	,)		Piedmont Floo	odplain Soils (F19)	(MLRA 149B)
	eyed Matrix (S4	+)					Mesic Spodic	(TA6) (MLRA 144A	, 145, 149B)
Sandy Re							Red Parent M	laterial (F21)	
	Matrix (S6)						Very Shallow	Dark Surface (TF12	2)
	face (S7) (LRR						• •	n in Remarks)	
<sup>3</sup> Indicators o	of hydrophytic v	egetation and we	tland hydrology must t	oe present, ur	less disturb	ed or probl	ematic.		
	Layer (if obser	rved):							
Type: <u>r</u>							Hydric Soil Preser	nt? Yes 🖲	
Depth (in									
Remarks:	rocont								
Remarks:	resent.								
Remarks:	resent.								
Remarks:	resent.								
Remarks:	resent.								
Remarks:	resent.								
Remarks:	resent.								
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Remarks:	resent.								
Remarks:	resent.								
Remarks:	resent.								

# Appendix 6:

NR 151 Susceptibility Table

Wetland C	Category for Stormwater Permitting *					
	Highly	Moderately Less				
Wetland	Susceptible	Susceptible	Susceptible			
Wetland 1		Х				

**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.