## WETLAND DELINEATION REPORT

Siepmann Tallgrass Project City of Waukesha, Waukesha County, WI Stantec Project #: 193705505 Lead Delineator: Eric C. Parker



Prepared for: Siepmann Realty Corporation

Prepared by: Stantec Consulting Services Inc. 209 Commerce Parkway Cottage Grove, Wisconsin 53527 Phone: (608) 839-1998 Fax: (608) 839-1995

August 4, 2017

## Sign-Off Sheet

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Jacob Eeling, Wetland Technician

Reviewed by \_ (signature)

Eric C. Parker, P.W.S., Senior Scientist

Carol McCoy, Senior Environmental Scientist



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## Introduction

Tallgrass Project Wetland Delineation August 4, 2017

## INTRODUCTION

Stantec Consulting Services Inc. (Stantec) performed a wetland determination and delineation of Siepmann Tallgrass Project (the "Property") on behalf of Siepmann Realty Corporation. Eric C. Parker, PWS, Stantec, completed the wetland delineation on July 7<sup>th</sup>, 2017 (see Appendix E for Delineator Qualifications).

The Property is approximately 16.31 acres in size and located in the southwest quarter of Section 32 and the northwest quarter of Section 29, Township 7 North, Range 19 East, City of Waukesha, Waukesha County, Wisconsin. Specifically, the Property is located southeast of the intersection of Patrick Lane and Northview Road (Figures 1-4, Appendix A). The purpose and objective of the wetland determination and delineation was to identify the presence, extent, and spatial arrangement of wetlands, as well as to identify potentially jurisdictional waterways, within the Property. One wetland area and one waterway were identified within the Property.

The wetlands and waterways identified in this report may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers (USACE), state regulation under the jurisdiction of the Wisconsin Department of Natural Resources (WDNR), and local jurisdiction under the local county, town, city, or village. Stantec recommends this report be submitted to local authorities, the WDNR, and USACE for final jurisdictional review and concurrence.



## Methods

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## **METHODS**

## WETLANDS

Wetland determinations were based on the criteria and methods outlined in the *U.S. Army Corps* of *Engineers Wetlands Delineation Manual*, Technical Report Y-87-1 (1987) and subsequent guidance documents, and applicable Regional Supplements to the *Corps of Engineers Wetland Delineation Manual*.

The wetland determination involved the use of available resources to assist in the assessment such as U.S. Geological Survey (USGS) topographic maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey, WDNR Wisconsin Wetland Inventory (WWI) mapping, and aerial photography.

On-site wetland determinations were made using the three criteria (vegetation, soil, and hydrology) and technical approach defined in the USACE 1987 Manual and applicable Regional Supplement. Per procedures described in the 1987 Manual and applicable Regional Supplement, areas that under normal circumstances reflect a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology (e.g., inundated or saturated soils) are considered wetlands.

Additionally, as climate plays an important role in the formation and identification of wetlands, the antecedent precipitation in the months leading up to the field investigation was reviewed. The current year's precipitation data was compared to long-term (30-year) precipitation averages and standard deviation to determine if precipitation was normal, wet, or dry for the area using a WETS analysis as developed by the NRCS.

The uppermost wetland boundary and sample points were identified and surveyed with a Global Positioning System (GPS) capable of sub-meter accuracy and mapped using Geographical Information System (GIS) software. The wetland boundaries were also flagged on the ground with pink wetland delineation pin flags and, subject to weathering, will remain in the field for use during subsequent site reviews.

### WATERWAYS

Review of waterway characteristics and determination of navigability and jurisdiction was beyond the scope of the investigation. However, if observed, waterways, waterbodies, culverts, and/or other connections to off-site wetland or aquatic features that may be under federal or state authority were surveyed using a GPS and mapped using GIS software.



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## **RESULTS**

## SITE DESCRIPTION

The Property is currently comprised of vacant land dominated by several non-native un-mowed grass species. Based on a review of historical aerial imagery available on Waukesha County's web site, the Property was formerly used as farm land until approximately ten years ago. Elevations range between approximately 861-920 feet mean sea level (msl) with the lowest part of the Property in the southwest corner and the highest elevation along the west side. Vacant land borders the property to the south, and residential properties are present to the west, north, and east. Contiguous off-site wetlands are present just outside the Property to the west.

Soils present within the Property and their hydric status are summarized in Table 1. The wetlands identified during the field investigation are located primarily within areas mapped as poorly drained hydric soils (Appendix A, Figures 2 and 3).

Table 1. Summary of Soils Identified within the Property

Soil Symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric Status
KwB: Knowles silt loam, 2 to 6 percent slopes	Knowles	100	Ground moraines	No
Ph: Pella silt loam, 0 to 2 percent slopes	Pella	80-91	Drainageways	Yes
	Kendall	5-9	Drainageways	No
	Lamartine	4-8	Drainageways	No
	Palms-Muck	1-3	Depressions	Yes
Pm: Pella silt loam, bedrock substratum, 0 to 2 percent slopes	Pella-Bedrock substratum	85-95	Drainageways	Yes
	Pella-Cool	5-15	Interdrumlins	Yes

The WWI map identifies one wetland in the western portion of the Property (Appendix A, Figure 4). The field delineated wetland is in the same vicinity as the wetland identified on the WWI map (Appendix A, Figure 5).

Average precipitation for the investigation area was obtained from the Waukesha (WI) USC00478937 weather station and used for the WETS analysis. A total of 15.20 inches of precipitation occurred in the three-month period prior to the field investigation compared to the long-term average of 12.69 inches. Based on the WETS analysis, conditions were in the wetter than normal range (Appendix D). These wet conditions provided atypical climatic/hydrologic conditions; however, when consideration was given to all three parameters, the wetland determinations were made using indicators for all three parameters, in conjunction with best professional judgment.



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## WETLANDS

One wetland was identified and delineated within the Property comprised of wooded, shrub, and wet meadow cover types. Wetland determination data forms were completed for four (4) sample points in and adjacent to the wetland; and are contained in Appendix B. Photographs of the area determined to be non-wetland, wetland, and the adjacent lands are contained in Appendix C. The wetland boundaries and sample point locations are shown on Figure 5 (Appendix A). The wetland is summarized in Table 2 below and described in detail in the following sections.

Table 2. Summary of Wetlands Identified within the Property

Wetland	Wetland Type	Adjacent Surface Waters	Acreage (on-site)
Wetland 1 (W-1)	Broad-leaved deciduous scrub/shrub & Emergent Wet-meadow narrow- leaved persistent (S3/E2K)	Pebble Creek (WBIC 771300), tributary to the Fox River	1.51 acres

## WETLAND W-1

Wetland 1 (W-1) is a riparian wetland within the floodplain of Pebble Creek (designated by the WDNR with Water Body Identification Code – WBIC 771300). W-1 is comprised of a complex of emergent, shrub, and wooded cover types. Topography on the Property is almost entirely natural and drains westerly and northwesterly to wetland W-1 and the associated Pebble Creek.

## Vegetation

Dominant plant species identified at sample points P1 and P4 (Hardwood Swamp), completed within W-1, consisted of reed canary grass (*Phalaris arundinacea*, FACW), orange jewelweed (*Impatiens capensis*, FACW), box elder (Acer negundo, FAC), black walnut (*Juglans nigra*, FACU), green ash (*Fraxinus pennsylvanica*, FACW), common buckthorn (*Rhamnus cathartica*, FAC), and multiflora rose (*Rosa multiflora*, FACU). Other portions of the wetland dominated by reed canary grass and lacking woody vegetation were comprised of wet meadow, while sandbar willow (*Salix interior*, FACW) and common buckthorn dominated the shrub carr portions of the wetland. Other common species identified in the wetland are listed on the data forms contained in Appendix B. The dominant species within the wetland were comprised mostly of hydrophytic vegetation (OBL, FACW, and/or FAC), and therefore met the hydrophytic vegetation criterion.

## Hydrology

The wetland appears to have a seasonally flooded/saturated to permanently saturated hydroperiod. Although the antecedent precipitation was wetter in the three-month period leading up to the field work than the long-term average, given the time of year and a lack of recent rainfall, conditions were somewhat dry. At the time of the field work W-1 did not have standing water in most of its area, and saturated soils were found only in portions nearest Pebble Creek. Two secondary indicators of wetland hydrology were observed at sample points P1 and P4: Crayfish Burrows (C8) and Geomorphic Position (D2). Therefore, the wetland hydrology criterion was met.



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Soils

As shown in Table 1 (page 3) and on Figure 2 (Appendix A), the NRCS depicts Pella silt loam (Ph) and Pella silt loam, bedrock substratum (Pm), as mapped within wetland W-1. Hydric soils were identified at sample points P1 and P4 with both points having met NRCS Field Indicators A11-Depleted Below Dark Surface and F3-Depleted Matrix. Therefore, the hydric soil criterion was satisfied within W-1.

## Wetland Boundary

The wetland boundary was determined based on distinct differences in vegetation, hydrology, soils, and/or topography consisting of the following: 1) Transition from various wooded and old field uplands to wet meadow, scrub/shrub and hardwood swamp cover types dominated by of reed canary grass, orange jewelweed, box elder, black walnut, green ash, common buckthorn, and multiflora rose in the wetland to an area dominated by bur oak (Quercus macrocarpa, FACU), box elder, black walnut, common buckthorn, Kentucky bluegrass (Poa pratensis, FACU), reed canary grass, and garlic mustard (Alliaria petiolata, FACU) in the upland; 2) Transition from an area exhibiting two secondary wetland hydrology indicators within the wetland to a lack of wetland hydrology indicators within the adjacent upland; and 3) Transition from poorly drained hydric soils in the wetland to well drained non-hydric soils in the adjacent upland. The transition from wetland to upland characteristics generally correlated with a moderately well to poorly-defined slope break.

## UPLANDS

Uplands within the Property included mostly old field vegetation that was formerly farmland used for row crops. Also present on the uplands are tree-lines dominated by trees typically found on uplands in Waukesha county such as box elder, various oak species (Quercus spp.), and black walnut. The perimeter of the Property was observed to be developed as wooded and non-wooded residential lots, or vacant land similar to the Property.

Uplands are represented at sample points P2 and P3 (see data forms in Appendix B). Sample points P2 and P3 were completed for transects across the delineated wetland-upland boundaries. Overall, the uplands on the Property were dominated by bur oak, box elder, black walnut, common buckthorn, Canada thistle (Cirsium arvense, FACU), smooth brome (Bromus inermis, UPL), quack grass (Elymus repens, FACU), Kentucky bluegrass, reed canary grass, and garlic mustard.



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## WATERWAYS

Pebble Creek (WBIC 771300) is a state-navigable waterway located along the west border of the Property. This creek flows generally from north to south, and eventually has a confluence with the Fox River approximately four miles to the southeast. Pebble Creek is a perennial waterway with a channel that is approximately 6-10 feet in width. The creek has a depth that ranges from a few inches to approximately two feet, and possesses well-defined banks. Bedrock appears to be close to ground surface near Pebble Creek in the project area based on rock outcrops observed on a steep slope just outside the Property to the west.

## OTHER ENVIRONMENTAL CONSIDERATIONS

This report is limited to the identification of state and/or federally regulated wetlands and waterways within the Property. However, there may be other regulated environmental features within the Property, including, but not limited to, historical or archeological features, endangered or threatened species, navigable waters and/or floodplains, etc. Federal, state, and local units of government and regional planning organizations may have regulatory authority to control or restrict land uses within or near these features. Stantec can assist with identification and/or assessment of additional regulated resources at your request, to the extent that the work is within our range of expertise.

Specifically, in the state of Wisconsin, Wis. Adm. Code NR 151.12 requires that a "protective area" or buffer be determined from the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands. In accordance with NR 151.12, the width of the "protective area" for less susceptible wetlands is determined by using 10% of the average wetland width, no less than 10 feet or more than 30 feet. Moderately susceptible wetlands, lakes, and perennial and intermittent streams identified on USGS topographic maps or NRCS county soil survey maps (whichever is more current) require a protective buffer of 50 feet, and outstanding or exceptional resource waters, highly susceptible wetlands, and wetlands in areas of special natural resource interest require protective buffers of 75 feet.

The wetland identified within the Property is only partially dominated by invasive plant species and therefore is expected to be a moderately susceptible wetland. Additionally, Pebble Creek and its adjacent wetlands are part of primary environmental corridor as designated by Southeastern Wisconsin Regional Planning Commission (SEWRPC). Therefore, based on the "protective buffer" standards per NR 151.12, a protective area buffer of 75 feet from W-1 may be expected. Please note that the jurisdictional authority on wetland buffers rests with the WDNR. Local zoning authorities, as recommended by SEWRPC, may have more restrictive buffers from wetlands than that imposed under NR 151.



## Conclusion

Lot 3 CSM 9976 Wetland Delineation August 4, 2017

## CONCLUSION

Stantec performed a wetland determination and delineation of the Siepmann Tallgrass Project property on behalf of Siepmann Realty Corporation. Eric C. Parker, PWS, Stantec, completed a wetland delineation on July 7, 2017. The approximately 16.31-acre Property is in the southwest quarter of Section 32 and the northwest quarter of Section 29, Township 7 North, Range 19 East, City of Waukesha, Waukesha County, Wisconsin. The purpose and objective of the wetland determination and delineation was to identify the extent and spatial arrangement of wetlands and potentially jurisdictional waterways within the Property.

One wetland area was identified within the Property. The portion of wetland W-1 that is within the Property is 1.51-acres in size and is comprised of a complex of emergent, shrub, and wooded wetland cover types.

The wetlands identified in this report may be subject to federal regulation under the jurisdiction of the USACE, state regulation under the jurisdiction of the WDNR, and local jurisdiction under the local county, town, city, or village.

Prior to beginning work at this site or disturbing or altering wetlands, waterways, or adjacent lands in any way, Stantec recommends that the owner obtain the necessary permits or other agency regulatory review and concurrence about the proposed work to comply with applicable regulations. Stantec can assist with identification and/or assessment of additional regulated resources at your request, to the extent that the work is within our range of expertise.

The information provided by Stantec regarding wetland boundaries is a scientific-based analysis of the wetland and upland conditions present within the Property at the time of the fieldwork. Experienced and qualified professionals performed the delineation by using standard practices and sound professional judgment. The ultimate decision on wetland boundaries rests with the USACE and, in some cases, the WDNR or a local unit of government. Therefore, there may be adjustments to boundaries based upon review by a regulatory agency. An agency determination can vary from time to time depending on various factors including, but not limited to recent precipitation patterns and the season of the year. In addition, the physical characteristics of the Property can change over time, depending on the weather, vegetation patterns, drainage activities on adjacent parcels, or other events. Any of these factors can change the nature and extent of wetlands within the Property.



## References

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http://dnr.wi.gov/topic/wetlands/documents/WWI Classification.pdf.



# **Appendices**

Tallgrass Project Wetland Delineation Appendix A – Figures August 4, 2017

# APPENDIX A - FIGURES

Figure 1. Project Location and Topography

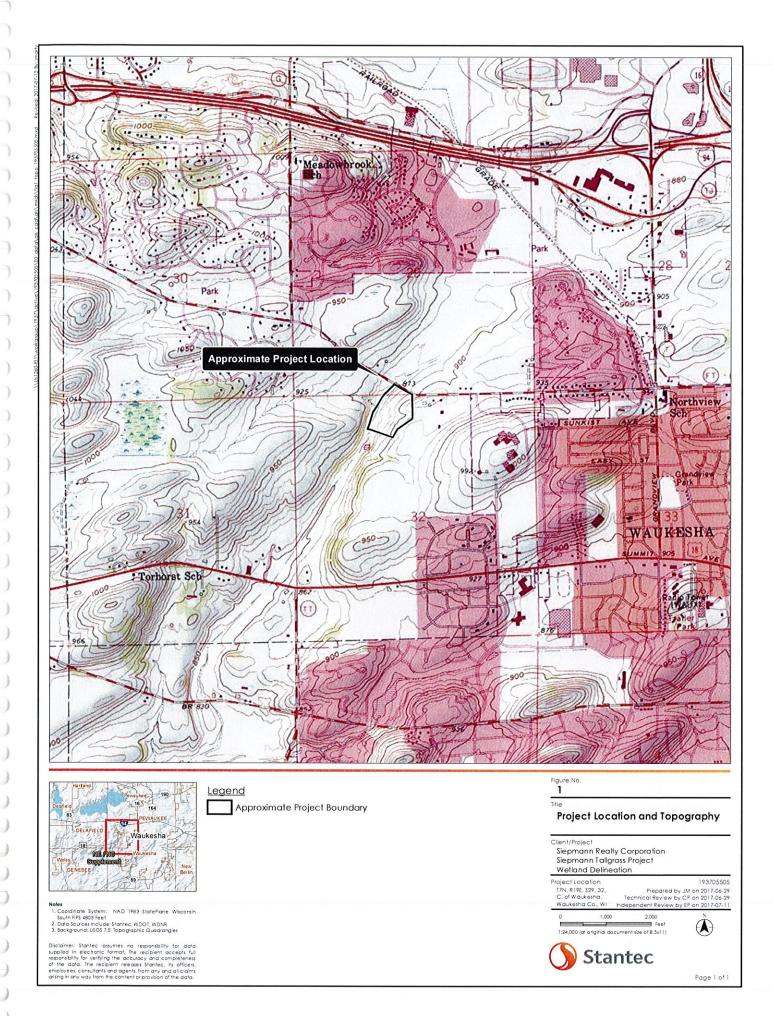
Figure 2. NRCS Soil Survey Data – Hydric Ratings

Figure 3. NRCS Soil Survey Data – Wetland Indicator Soils

Figure 4. Wisconsin Wetland Inventory

Figure 5. Field Collected Data









Approximate Project Boundary NRCS Soil Survey Data Hydric Ratings

Predominantly Hydric Soil Partially Hydric Soil

Non-Hydric Soil

DNR 24k Hydrography

Waterbody

Perennial Stream

Intermittent Stream

## NRCS Soil Survey Data **Hydric Ratings**

Client/Project
Siepmann Realty Corporation

Siepmann Tallgrass Project Wetland Delineation

Project Location 17N, R19E, S29, 32, C. of Waukesha, Waukesha Co., WI

Prepared by JM on 2017-06-29 Technical Review by CP on 2017-06-29 Independent Review by EP on 2017-07-11

0 100 200 Feet 1:2,400 (at original document size of 8.5x11)





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NOBES

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet

2. Data Sources Include: Stantec, WDOT, WDNR, NRCS

3. Orthophotography: 2015 NAIP

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Approximate Project Boundary DNR 24k Hydrography

WWI Wetland Class Points Excavated Pond

WWI Wetland Class Areas

Wetland



Intermittent Stream

Waterbody



Title

## Wisconsin Wetland Inventory

Client/Project

Siepmann Realty Corporation Siepmann Tallgrass Project Wetland Delineation

Project Location 17N, R19E, S29, 32, C. of Waukesha, Waukesha Co., WI

193705505 Prepared by JM on 2017-06-29 Technical Review by CP on 2017-06-29 Independent Review by EP on 2017-07-11





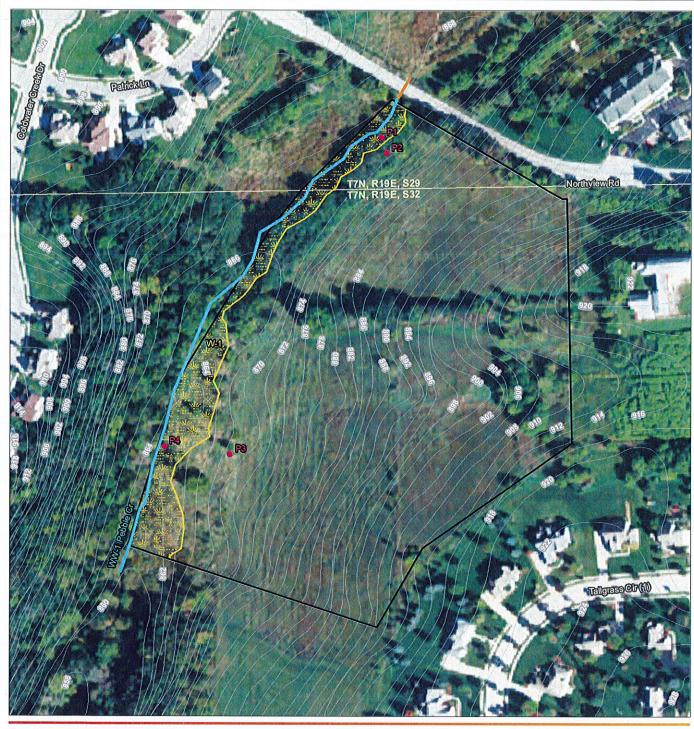
Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet

2. Data Sources Include: Stantec, WDOT, WDNR

3. Otthopholography: 2015 NAIP

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Notes

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2. Data Sources Include: Stantec, WDOT, WDNR

3. Orthopholography: 2015 NAIP

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## **Legend**

Approximate Project Boundary 2ft Elevation Contour

Sample Point

Culvert

Field Delineated Waterway

Field Delineated Wetland

# Figure No.

Title

## Field Collected Data

Client/Project

Siepmann Realty Corporation Siepmann Tallgrass Project Wetland Delineation

Project Location 17N, R19E, S29, 32, C. of Waukesha, Waukesha Co., WI

Prepared by JM on 2017-06-29 Technical Review by CP on 2017-06-29 Independent Review by EP on 2017-07-11

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# **Appendices**

Tallgrass Project Wetland Delineation Appendix B – Wetland Determination Data Forms August 4, 2017

# APPENDIX B - WETLAND DETERMINATION DATA FORMS





# WETLAND DETERMINATION DATA FORM Northcentral-Northeast Region

Applicant: Investigator #1: Soil Unit:	Cianmana	-	roject					Stantec Project #:	193705505		Date:	07/07/17
		Realty Corp	oration			. "0					County:	Waukesha
SOII UIIIL.					Investi	gator #2:	AD A	HAAAAH Olaasifaatiaa	00/50/		State:	Wisconsin
Landform:	Pella silt loa	am			Loo	al Daliaf		VI/WWI Classification	: S3/E2K		Wetland ID:	W-1
Slope (%):	Toeslope 2-4		Latitudo	NI/A		al Relief:		9	Datum:	NI/A	Sample Point:	P1
			Latitude:			ongitude:			- posse		Community ID:	Hardwood Swamp
Are climatic/hyd							(If no, expla	Are normal circums		No	Section:	29
Are Vegetation		or Hydrolog	, _ 0	nificantly				X Yes	No	,	Township:	7N
Are Vegetation SUMMARY OF I		or Hydrolog	gy nai	turally pr	obiemati	C?	SIMPLE	A Tes	NO		Range:	19E
STATE OF THE PROPERTY AND ADDRESS OF	Contract of the Contract of th	ALL STATES	THE PARTY	ALTERNATION OF THE PARTY OF THE	V V						NEW TENNESSEE	
Hydrophytic Veg					X Yes				Hydric Soils F	CONTRACTOR OF THE PARTY OF THE		X Yes N
Wetland Hydrolo Remarks:					X Yes			n normal range. Dete	Is This Samp	ling Point	Within A Wetlar	nd? X Yes N
HYDROLOGY												
Wetland Hydro	ology Indica	tors (Chec	k here if	indicato	rs are no	t present	Γ:				2 3 ( 2 ) 1 S 30 / 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1	
Primary:										Secondary:		
-	A1 - Surface				ļ		er-Stained				B6 - Surface Soil	
-	A2 - High Wa A3 - Saturation				-		atic Fauna			-	B10 - Drainage P	
	B1 - Water M				-		l Deposits ogen Sulfic				B16 - Moss Trim C2 - Dry-Season	
İ	B2 - Sedimen							spheres on Living Roots		X	C8 - Crayfish Bur	
	B3 - Drift Dep					C4 - Pres	ence of Re	educed Iron			C9 - Saturation V	isible on Aerial Imagery
<u>_</u>	B4 - Algal Ma							duction in Tilled Soils		107	D1 - Stunted or S	
-	B5 - Iron Dep B7 - Inundation		Aerial Ima	nerv	-		Muck Surl plain in Re			X	D2 - Geomorphic D3 - Shallow Aqu	
F	B8 - Sparsely				1	Julei (EX	piani iii Re	marks)			D4 - Microtopogra	
750											D5 - FAC-Neutra	
Field Observati	ions:											
Surface Water F	Present?	Yes	X No	Depth:		(in.)	_		Wedler of Head		10 V	Van E Na
Water Table Pre	esent?	Yes	X No	Depth:		(in.)			Wetland Hyd	rology Pr	esent? X	Yes No
	ent?	Yes	X No	Depth:		(in.)						
Saturation Prese	1			Dopti.		(111.)						
Saturation Prese Describe Recorde Remarks:	* ·	am gauge, m	onitoring	well, aeria		previous i		s), if available:	N/A			
Describe Recorde Remarks:	d Data (strea 2 secondary	am gauge, m y indicators	onitoring s show th	well, aeria		previous i	esent					
Describe Recorde Remarks: SOILS Map Unit Name:	d Data (strea 2 secondary	am gauge, m y indicators Pella silt lo	s show th	well, aeria nat wetlar		previous i	esent	s), if available: Series Drainage Class				
Describe Recorde Remarks: SOILS Map Unit Name: Faxonomy (Subg	d Data (streated 2 secondary	am gauge, m y indicators Pella silt lo Typic End	s show the	well, aeria	nd hydrol	previous in	esent	Geries Drainage Class	: poorly	ated Sand Corine		New York
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Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subgerofile Descript Top Depth 0 5 11	group): ion (pescribe to the Bottom Depth 5 11 21	Pella silt lo Typic Endi he depth needed to Horiz 2 3	s show the	well, aeria nat wetlan  redicator or correct  Color  10YR  10YR  10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2	previous in logy is proceed indicators; % 100 97 85	(Type C=Cor	Geries Drainage Class  centration, D=Depletion, RM=Reduce RC Color (Moist) 3/4 4/6	: poorly  Ind Matrix, CS=Covered/Co  edox Features  %   3  15	Type  C C	Location  M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subg Profile Descript Top Depth 0 5 11	group): ion (Describe to the Bottom Depth 5 11	Pella silt lo Typic Endi he depth needed to Horiz 2 3	s show the	well, aeria nat wetlan  andicator or cor  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2	previous is logy is proceed indicators; % 100 97 85	esent  S (Type C=Cor  10YR  10YR	Geries Drainage Class  centration, D=Depletion, RM=Reduce RC Color (Moist) 3/4 4/6	: poorly  Ind Matrix, CS=Covered/Co  edox Features  %   3  15	Type C C	Location M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
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Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subg Profile Descript Top Depth 0 5 11	group): ion (oescribe to to the state of the	Pella silt lo Typic End he depth needed to  Horiz 2 3	enitoring is show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2	previous in logy is proceed indicators;	(Type: C=Cor	Color (Moist)   3/4  4/6	: poorly  Individual Matrix. CS=Covered/Co  Redox Features  %   3  15	Type C C	Location  M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subg Profile Descript Top Depth 0 5 11	group): ion (Describe to to Bottom Depth 21	Pella silt lo Typic End he depth needed to  Horiz 2 3	enitoring is show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2	previous in logy is provided in logy is provided in logy is provided in logy is provided in logy in lo	(Type C=Cor	Series Drainage Class centration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	: poorly  Indicators	Type  C C s for Proble	Location  M M matic Soils <sup>1</sup>	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11	group): ion (oescribe to to the state of the	Pella silt lo Typic Endi the depth needed to  Horiz  1 2 3 dicators (di	enitoring is show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2	previous in logy is provided in section of the sect	(Type: C=Cor 10YR 10YR   sent value Belov	Color (Moist)   3/4  4/6	poorly  Indicators	Type C C s for Proble	Location  M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11	group): ion (pescribe to the period of the p	Pella silt lo Typic End Horiz  1 2 3 dicators (coppedon stic	enitoring is show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2	previous in logy is proceed indicators;  % 100 97 85 e not press S8 - Polys S9 - Thin	(Type: C=Cor 10YR 10YR   sent value Belov	Color (Moist)  3/4 4/6  : v Surface (LRR R, MLRA 149B)	: poorly  Indicators	Type	Location  M M matic Soils <sup>1</sup> Muck (LRR K, L, MLRA	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11	group): ion (Describe to the Bottom Depth 5 11 21 Soil Field In A1 - Histosoil A2 - Histic Eg A3 - Black His A4 - Hydroger	Pella silt lo Typic End Horiz 1 2 3 dicators (colipedon stic n Sulfide	enitoring is show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2	previous in logy is provided in logy is provided in logy is provided in logy is provided in logy in lo	esent  (Type C=Con  10YR  10YR    sent Below Dark Surfa h Chroma in Mucky Mu	Series Drainage Class centration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	: poorly  Indicators	Type C C s for Proble A10 - 2 cm II A16 - Coast S3 - 5cm Mt S7 - Dark St	Location  M M matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRR LOKY Peat of Peat ( urface (LRR K. L. M.)	Texture (e.g. clay, sand, loa silt loam silt loam silt loam LASB) K. L. R) LRR K. L. R)
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Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11 NRCS Hydric S	group): ion (Describe to the state of the st	Pella silt lo Typic Endi the depth needed to Horiz 1 2 3 dicators (coopedon stic in Sulfide I Layers and Below Dark	sonitoring show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is proceed indicators; which is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process is a second of the logical process. The logical process is a second of the logical process is a second of the logical process. The logical process is a second of the logical process. The logical process is a second of the logical process is a	esent  S  (Type C=Cor  10YR  10YR    sent  value Below Dark Surfa h Chroma in yy Mucky M tyy Gleyed M eted Matrix	Color (Moist)  3/4 4/6 : v Surface (LRR R, MLRA 1498) Sands dineral (LRR K, L) Matrix	: poorly  Indicators	Type C C s for Proble A10 - 2 cm I A16 - Coast S3 - 5cm Mt S3 - 5cm Mt S3 - Polyvalt S9 - Thin Da	Location  M M matic Soils  Muck (LRR K. L. MLRA Prairie Redox (LRR K. L. M.) ue Below Surface (LRR K. L. M.) ue Below Surface (LRR K. L. M.) ue Below Surface (LRR K. L. M.)	Texture (e.g. clay, sand, load silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subporofile Descript Top Depth 0 5 11 NRCS Hydric S	group):  ion (Describe to the state of the s	Pella silt lo Typic Endi Horiz  1 2 3 dicators (coppedon stic n Sulfide I Layers da Below Dark Surface	sonitoring show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is proceed indicators.  % 100 97 85	esent  S  (Type C=Cor  10YR  10YR	Color (Moist)  3/4 4/6	: poorly  Indicators	Type	Location  M M matic Soils   Muck (LRR K, L, MLRA Prairie Redox (LRR LUCKY Peat of Peat ( Urface (LRR K, L, MC) Lar K Surface (LRR K, L, MC) Lar K Surface (LRR K, L, MC) Lar Roca (LRR K, L, MC) Lar Roca (LRR K, L, MC)	Texture (e.g. clay, sand, loa silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subporofile Descript Top Depth 0 5 11 NRCS Hydric S	group): ion (Describe to the state of the st	Pella silt lo Typic End he depth needed to  Horiz  1 2 3 dicators (conjection is Sulfide Layers ed Below Dark Surface luck Mineral	sonitoring show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is provious in logy is provious in logy is provided in logy is provided in logy is provided in logy i	esent  (Type C=Con  10YR  10YR  10YR    sent lellow Below Dark Surfah Chroma any Mucky My Gleyed Meted Matrix xx Dark Sur Leted Matrix xx	Geries Drainage Class  certration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	: poorly  Indicators	Type C C s for Proble A10 - 2 cm II A16 - Coast S3 - 5cm Mo S7 - Dark Si S8 - Polyvali S9 - Thin Da F12 - Iron-M F19 - Piedm	Location  M M matic Soils   Muck (LRR K, L, MLRA Prairie Redox (LRR K, L, M) urface (LRR K, L, M) ue Below Surface (LRR K, L) anganese Masses ont Floodplain Soil	Texture (e.g. clay, sand, loa silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11 NRCS Hydric S	group):  ion (Describe to the state of the s	Pella silt lo Typic Endi he depth needed to Horiz 1 2 3 dicators (co pipedon stic n Sulfide I Layers de Below Dark oark Surface uck Mineral leyed Matrix	sonitoring show the sam oaquolls document the i	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is provious in logy is provious in logy is provided in logy is provided in logy is provided in logy i	esent  S  (Type C=Cor  10YR  10YR	Geries Drainage Class  certration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	poorly  Ind Matrix, CS=Covered/Co edox Features  %   3  15   Indicators	Type C C s for Proble A10 - 2 cm II A16 - Coast S3 - 5cm Mt S7 - Dark St S8 - Polyvali S9 - Thin Da F12 - Iron-M	Location  M M matic Soils   Muck (LRR K, L, MLRA Prairie Redox (LRR LUCKY Peat of Peat ( Urface (LRR K, L, MC) Lar K Surface (LRR K, L, MC) Lar K Surface (LRR K, L, MC) Lar Roca (LRR K, L, MC) Lar Roca (LRR K, L, MC)	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11 NRCS Hydric S	group):  ion (Describe to the state of the s	Pella silt lo Typic Endr he depth needed to Horiz  1 2 3 dicators (conjpedon stic in Sulfide I Layers and Below Dark Surface luck Mineral leyed Matrix edox Matrix	sonitoring show the sam oaquolls document the inconstant constant shows the same	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is provious in logy is provious in logy is provided in logy is provided in logy is provided in logy i	esent  (Type C=Con  10YR  10YR  10YR    sent lellow Below Dark Surfah Chroma any Mucky My Gleyed Meted Matrix xx Dark Sur Leted Matrix xx	Geries Drainage Class  certration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	i: poorly  Indicators	Type	Location  M M M matic Soils  Muck (LRR K, L, MLRA Prairie Redox (LRR K, L, MLRA Prairie Redox (LRR K, L, MLRA Prairie Redox Surface (LRR K, L, ML) Langanese Masses ont Floodplain Soil arent Material Spodic (MLRA 144A, Shallow Dark Surf	Texture (e.g. clay, sand, loan silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subgerofile Descript Top Depth 0 5 11 NRCS Hydric S	group): ion (Describe to the state of the st	Pella silt lo Typic Endr he depth needed to Horiz  1 2 3 dicators (conjpedon stic in Sulfide I Layers and Below Dark Surface luck Mineral leyed Matrix edox Matrix	sonitoring show the sam oaquolls document the inconstant constant shows the same	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is provious in logy is provious in logy is provided in logy is provided in logy is provided in logy i	esent  (Type C=Con  10YR  10YR  10YR    sent lellow Below Dark Surfah Chroma any Mucky My Gleyed Meted Matrix xx Dark Sur Leted Matrix xx	Geries Drainage Class  certration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	ind Matrix, CS=Covered/Covered	Type C C s for Proble A10 - 2 cm II A16 - Coast S3 - 5cm Mt S7 - Dark St S8 - Polyvalt S9 - Thin Da F12 - Iron-M F19 - Piedm F21 - Red P TA6 - Mesic TF12 - Very Other (Expla	Location  M M M matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRR k. L. M) ue Below Surface (LRR K. L. M) ue Below Surface (LRR K. L. M) anganese Masses ont Floodplain Soil arent Material Spodic (MLRA 144A, Shallow Dark Surf in in Remarks)	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Faxonomy (Subg Profile Descript Top Depth 0 5 11 NRCS Hydric S	group):  ion (Describe to the state of the s	Pella silt lo Typic Endr he depth needed to Horiz  1 2 3 dicators (conjpedon stic in Sulfide I Layers and Below Dark Surface luck Mineral leyed Matrix edox Matrix	sonitoring show the sam oaquolls document the inconstant constant shows the same	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is provious in logy is provious in logy is provided in logy is provided in logy is provided in logy i	esent  (Type C=Con  10YR  10YR  10YR    sent lellow Below Dark Surfah Chroma any Mucky My Gleyed Meted Matrix xx Dark Sur Leted Matrix xx	Geries Drainage Class  certration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	i: poorly  Indicators of hydro	Type C C s for Proble A10 - 2 cm II A16 - Coast S3 - 5cm Mt S7 - Dark St S8 - Polyvalt S9 - Thin Da F12 - Iron-M F19 - Piedm F21 - Red P TA6 - Mesic TF12 - Very Other (Expla	Location  M M M matic Soils  Muck (LRR K. L. MLRA Prairie Redox (LRR K. L. MLRA Prairie R	Texture (e.g. clay, sand, loa silt loam silt loam silt loam
Describe Recorde Remarks:  SOILS Map Unit Name: Taxonomy (Subgerofile Descript Top Depth 0 5 11 NRCS Hydric S	group): ion (Describe to the state of the st	Pella silt lo Typic Endi he depth needed to Horiz  1 2 3 dicators (conjpedon stic in Sulfide I Layers and Below Dark Surface luck Mineral leyed Matrix edox Matrix	sonitoring show the sam oaquolls document the inconstant constant shows the same	well, aeria nat wetlan  redicator or core  Color 10YR 10YR	firm the absence Matrix (Moist) 3/2 4/2 4/2 cators are	previous in logy is proceed indicators; which is a series of indic	esent  (Type C=Con  10YR  10YR  10YR    sent lellow Below Dark Surfah Chroma any Mucky My Gleyed Meted Matrix xx Dark Sur Leted Matrix xx	Geries Drainage Class  certration, D=Depleton, RM=Reduce Ri Color (Moist) 3/4 4/6	i: poorly  Indicators of hydro	Type  C C s for Proble A10 - 2 cm I A16 - Coast S3 - 5cm Mt S3 - 5cm Mt S9 - Thin Da F12 - Iron-M F12 - Iron-M F12 - Very Other (Explae ophytic vegeta ed or oroblema	Location  M M M matic Soils  Muck (LRR K. L. MLRA Prairie Redox (LRR K. L. MLRA Prairi	Texture (e.g. clay, sand, loa silt loam silt loam silt loam



## WETLAND DETERMINATION DATA FORM

Northcentral-Northeast Region

Project/Site:	Siepmann Tallgrass Project				Wetland ID: W-1 Sample Point: P1
<b>VEGETATION</b>	(Species identified in all uppercase are non-nat	ive specie	s.)		
Tree Stratum (Ple	ot size: 10 meter radius)				
	Species Name	% Cover	Dominant	Ind.Status	Dominance Test Worksheet
1.	Juglans nigra	20	Y	<b>FACU</b>	
2.	Acer negundo	15	Y	FAC	Number of Dominant Species that are OBL, FACW, or FAC:4(A)
3.					
4.					Total Number of Dominant Species Across All Strata: 5 (B)
5.					
6.					Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)
7.					(AB)
8.					Prevalence Index Worksheet
9.	-				
					Total % Cover of: Multiply by:
10.	T-1-10				OBL spp. 0 x 1 = 0
	Total Cover =	35			FACW spp. 88 x 2 = 176
					FAC spp. 35 x 3 = 105
	atum (Plot size: 5 meter radius)				FACU spp. <u>54</u> x 4 = <u>216</u>
1.	Acer negundo	15	Y	FAC	UPL spp. 0 x 5 = 0
2.	Juglans nigra	2	N	FACU	
3.					Total 177 (A) 497 (B)
4.					
5.					Prevalence Index = B/A = 2.808
6.					
7.	-				
8.					Hydrophytic Vegetation Indicators:
9.					
10.					Yes X No Rapid Test for Hydrophytic Vegetation
10.	T-110				X Yes No Dominance Test is > 50%
	Total Cover =	17			X Yes No Prevalence Index is ≤ 3.0 *
					Yes X No Morphological Adaptations (Explain) *
	ot size: 2 meter radius)		- de-		Yes X No Problem Hydrophytic Vegetation (Explain) *
1.	Impatiens capensis	80	Υ	FACW	* Indicators of hydric soil and wetland hydrology must be
2.	ALLIARIA PETIOLATA	15	N	FACU	present, unless disturbed or problematic.
3.	POA PRATENSIS	10	N	<b>FACU</b>	F1-1-11, -11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-
4.	PHALARIS ARUNDINACEA	5	N	<b>FACW</b>	Definitions of Vegetation Strata:
5.	ELYMUS REPENS	5	N	FACU	
6	Poa palustris	3	N	FACW	Tree - Woody plants 3 in. (7.6cm) or more in diameter at
7.	Juglans nigra	2	N	FACU	breast height (DBH), regardless of height.
8.					
9.					Sapling/Shrub - Woody plants less than 3 in. DBH and greater
10.					than 3.28 ft. tall.
11.					
12.					Herb - All herbaceous (non-woody) plants, regardless of
					size, and woody plants less than 3.28 ft. tall.
13.					ones, and mossy pranto loss man size in tank
14.					
15.					Woody Vines - All woody vines greater than 3.28 ft. in height.
	Total Cover =	120			
Woody Vine Strate	um (Plot size: 10 meter radius)				
1.	Vitis riparia	5	Y	FAC	
2.	-				
3.				22	Hydrophytic Vegetation Present X Yes No
4.					
5.					
	Total Cover =	5			
Remarks:	Total Cover -	5			
Memarks.					
7-					
Additional Rea	marks:				
Determined wet	land having met all three paramaters				



# WETLAND DETERMINATION DATA FORM Northcentral-Northeast Region

Project/Site: Applicant:	Sienmann	Tallarana Drainat									
60 1000 000		Tallgrass Project					Stantec Project #:	193705505	5	Date:	07/07/17
		Realty Corporation								County:	Waukesha
	1: Eric Parker			Investi	gator #2:					State:	Wisconsin
Soil Unit:	Knowles sil	t loam				NV	/I/WWI Classification:	S3/E2K		Wetland ID:	Adj. to W-1
Landform:	Side slope			Loc	al Relief:	Convex				Sample Point:	P2
Slope (%):	6-8	Latitude	: N/A	Le	ongitude:	N/A		Datum	: N/A	Community ID:	D-M Hardwoods
	vdrologic cond	ditions on the site t	voical for				ain in remarks)	7	X No	Section:	29
Are Vegetatio			gnificantly			(	Are normal circumsta	1		Township:	7N
Are Vegetatio			aturally pr				X Yes	No			19E
SUMMARY O		or riyarology ha	aturally pr	Oblemat	ic:	West Oak	X 1C3	110		Range:	190
THE PERSON NAMED IN COLUMN	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN					inchite A					
Hydrophytic V				X Yes				Hydric Soils			Yes X No
Wetland Hydr				Yes						Within A Wetla	
Remarks:		d hydrology, and u					an normal range. Dete	ermined non-	wetland bas	sed on lack of ir	ndicators for hydric soils
HYDROLOGY	1						Service Suprem		Maria N		
		ators (Check here	if indicate	ors are r	ot preser	nt X ):					
Prima				-					Secondary:		
	A1 - Surface				B9 - Wate					B6 - Surface Soil	
1	A2 - High Water Table A3 - Saturation B1 - Water Marks				B13 - Aqu B15 - Mar				-	B10 - Drainage F B16 - Moss Trim	
					C1 - Hydr					C2 - Dry-Season	
	B2 - Sedimer						spheres on Living Roots			C8 - Crayfish Bur	
	B3 - Drift Dep			-			educed Iron				isible on Aerial Imagery
	B4 - Algal Ma						eduction in Tilled Soils			D1 - Stunted or S	
	B5 - Iron Dep				C7 - Thin					D2 - Geomorphic	
	B7 - Inundation	on Visible on Aerial Im	nagery		Other (Ex	plain in Re	emarks)			D3 - Shallow Aqu	
	B8 - Sparsely	Vegetated Concave	Surface							D4 - Microtopogr	
										D5 - FAC-Neutra	I Test
Field Observ	ations:										
Surface Wate	er Present?	Yes X No	Depth:		(in.)					_	_
Water Table I	Present?	Yes X No	Depth:		(in.)			Wetland Hy	drology Pi	resent?	Yes X No
Saturation Pre		Yes X No	Depth:		(in.)						
	Cocin:	163 X 140	Depti i.		(111.)						
AND THE PROPERTY OF THE PARTY O											
AND THE PROPERTY OF THE PARTY O	orded Data (str	eam gauge, monitoi	ring well, a	erial pho	tos, previ	ous inspe	ections), if available:	N/A			
AND THE PROPERTY OF THE PARTY O		eam gauge, monitor			otos, previ	ous inspe	ections), if available:	N/A			
Describe Reco					otos, previ	ous inspe	ections), if available:	N/A			
Describe Reco					otos, previ	ous inspe	ections), if available:	N/A			
Describe Reco Remarks:					otos, previ	ous inspe	ections), if available:	N/A			
Describe Reco Remarks:	No wetland	hydrology indicato			otos, previ						
Describe Reco Remarks: SOILS Map Unit Nam	No wetland	hydrology indicato			otos, previ		eries Drainage Class:				
Describe Reco Remarks: SOILS Map Unit Nam Taxonomy (Su	No wetland ne: ubgroup):	hydrology indicate  Knowles silt loam Typic Hapludalfs	ors observ	ved.		S	eries Drainage Class:	well			
Describe Reco Remarks: SOILS Map Unit Nam Taxonomy (Su Profile Descri	No wetland ne: ubgroup): iption (Describe to	hydrology indicate  Knowles silt loam Typic Hapludalfs	ors observ	ved.	ce of indicators.)	S	eries Drainage Class:	Well  Matrix, CS=Covered/C		Location PL=Pore Lining.	M=Matrix)
Describe Reco Remarks: SOILS Map Unit Nam Taxonomy (Su Profile Descri	No wetland ne: ubgroup):	hydrology indicate  Knowles silt loam Typic Hapludalfs	e indicator or con	ved.	ce of indicators.)	S	eries Drainage Class:	well			Texture
Describe Reco Remarks: SOILS Map Unit Nam Taxonomy (Su Profile Descri	No wetland ne: ubgroup): iption (Describe to	hydrology indicate  Knowles silt loam Typic Hapludalfs	e indicator or con	ved.	ce of indicators.)	S	eries Drainage Class:	Well  Matrix, CS=Covered/C		Location PL=Pore Lining.	Texture
Describe Reco Remarks: SOILS Map Unit Nam Taxonomy (Su Profile Descri	No wetland  ne: ubgroup): iption (Describe to	hydrology indicate  Knowles silt loam Typic Hapludalfs the depth needed to document th	e indicator or con	ved.	ce of indicators.)	S	eries Drainage Class: ncentration, D=Depletion, RM=Reduced Red	well  Matrix, CS=Covered/C  dox Features	3		Texture (e.g. clay, sand, loam)
Describe Reco Remarks:  SOILS Map Unit Nam Taxonomy (Su Profile Descri Top Depth 0	No wetland  ne:  ubgroup):  iption (Describe to Depth  6	Knowles silt loam Typic Hapludalfs the depth needed to document the Horizon	e indicator or con  Color  10YR	red.  Infirm the absenting Matrix (Moist)  3/2	ce of indicators.) % 100	S (Type C=Cor	eries Drainage Class: centration, D=Depletion, RM=Reduced Red Color (Moist)	well  Matrix, CS=Covered/C  dox Features  %	Type	Location 	Texture (e.g. clay, sand, loam
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Describe Reco Remarks: SOILS Map Unit Nam Taxonomy (Su Profile Descri Top Depth 0 6 11 15	No wetland  ne: Libgroup): Liption (Describe to Bottom Depth 6 11 15 21	Knowles silt loam Typic Hapludalfs the depth needed to document th  Horizon 1 2 3 4	e indicator or corona 10YR 10YR 10YR 10YR	mfirm the absent Matrix (Moist) 3/2 4/2 4/3 5/4	ce of indicators.]  % 100 100 100 100	S (Type C=Cor	eries Drainage Class: centration, D=Depletion, RM=Reduced Rec Color (Moist)	well  Matrix, CS=Covered/C  dox Features  %	Type	Location	Texture (e.g. clay, sand, loam silt loam silt loam silt loam silt loam
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Describe Reco Remarks:  SOILS Map Unit Nam Taxonomy (Su Profile Descri Top Depth 0 6 11 15 NRCS Hydri  Restrictive La (If Observed)	No wetland  ne: ubgroup): iption (Describe to Bottom Depth 6 11 15 21 c Soil Field Ir A1- Histosol A2 - Histic E A3 - Black Hi A4 - Hydroge A5 - Straiffec A11 - Deplete A12 - Thick E S1 - Sandy R S4 - Sandy R S4 - Sandy R S6 - Stripped S7 - Dark Su	Knowles silt loam Typic Hapludalfs the depth needed to document the Horizon  1 2 3 4 ndicators (check hoppedon stic m Sulfide di Layers ad Below Dark Surface luck Mineral sleeyed Matrix eledox Matrix fface (LRR R, MLRA 149B)	cors observed and control of the con	Matrix (Moist) 3/2 4/3 5/4	9% 100 100 100 re not pre 88 - Polyn S9 - Thin S11 - Hig F1 - Loan F2 - Loan F3 - Deple F6 - Redo	S  (Type C=Cor  esent   X  Aralle Belo  Dark Surfin  n Chroma  ny Mucky    ny Gleyed  eted Matrix  xx Dark Su  eted Dark Su	eries Drainage Class:  Rec Color (Moist)  ): w Surface (LRR R. MLRA 1498) ace (LRR R. MLRA 1498) Sands Wineral (LRR K. L) Matrix x triface Surface Surface Surface Surface Surface Surface Surface	well  Matrix, CS=Covered dox Features % Indicato  Indicators of hydistures	Type   Location	Texture  (e.g. clay, sand, loam) silt loam silt loam silt loam silt loam	
Describe Reco Remarks:  SOILS Map Unit Nam Taxonomy (Su Profile Descri Top Depth 6 11 15 NRCS Hydri	No wetland  ne: ubgroup): iption (Describe to Bottom Depth 6 11 15 21 c Soil Field Ir A1- Histosol A2 - Histic E A3 - Black Hi A4 - Hydroge A5 - Straiffec A11 - Deplete A12 - Thick E S1 - Sandy R S4 - Sandy R S4 - Sandy R S6 - Stripped S7 - Dark Su	Knowles silt loam Typic Hapludalfs the depth needed to document the Horizon  1 2 3 4 ndicators (check hoppedon stic m Sulfide di Layers ad Below Dark Surface luck Mineral sleeyed Matrix eledox Matrix fface (LRR R, MLRA 149B)	cors observed and control of the con	Matrix (Moist) 3/2 4/3 5/4	9% 100 100 100 re not pre 88 - Polyn S9 - Thin S11 - Hig F1 - Loan F2 - Loan F3 - Deple F6 - Redo	S  (Type C=Cor  esent   X  Aralle Belo  Dark Surfin  n Chroma  ny Mucky    ny Gleyed  eted Matrix  xx Dark Su  eted Dark Su	eries Drainage Class:  Rec Color (Moist)  ): w Surface (LRR R. MLRA 1498) ace (LRR R. MLRA 1498) Sands Wineral (LRR K. L) Matrix x triface Surface Surface Surface Surface Surface Surface Surface	well  Matrix, CS=Covered dox Features % Indicato  Indicators of hydistures	Type   Location	Texture  (e.g. clay, sand, loam) silt loam silt loam silt loam silt loam	



# WETLAND DETERMINATION DATA FORM

Northcentral-Northeast Region

Project/Site:	Siepmann Tallgrass Project				Wetland ID: Adj. to W-1 Sample Point: P2
VEGETATION	(Species identified in all unpersons are no	dia a a a a	100		
	(Species identified in all uppercase are non-na lot size: 10 meter radius)	tive spec	des.)		
		% Cover	Dominant	Ind.Status	Dominance Test Worksheet
1.	Quercus macrocarpa	50	Y	FACU	
2.	Acer negundo	30	Y	FAC	Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)
3.					
4.					Total Number of Dominant Species Across All Strata: 6 (B)
5.					
6.					Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)
7.				-	
8.	-				Prevalence Index Worksheet
9.					Total % Cover of: Multiply by:
10.					OBL spp. 0 x 1 = 0
	Total Cover =	80			FACW spp. 0 x 2 = 0
					FAC spp. 135 x 3 = 405
Sapling/Shrub St	ratum (Plot size: 5 meter radius)				FACU spp. 143 x 4 = 572
1.	RHAMNUS CATHARTICA	60	Y	FAC	UPL spp. 0 x 5 = 0
2.	Acer negundo	5	N	FAC	
3.					Total <u>278</u> (A) <u>977</u> (B)
4.					3 8
5.					Prevalence Index = B/A = 3.514
6.	-				Weeken and the second s
7.					
8.	-				Hydrophytic Vegetation Indicators:
9.	-				Yes X No Rapid Test for Hydrophytic Vegetation
10.	<b>-</b>				X Yes No Dominance Test is > 50%
	Total Cover =	65			Yes x No Prevalence Index is ≤ 3.0 *
					Yes X No Morphological Adaptations (Explain) *
Herb Stratum (PI	ot size: 2 meter radius)				Yes X No Problem Hydrophytic Vegetation (Explain) *
1.	ALLIARIA PETIOLATA	80	Y	FACU	
2.	RHAMNUS CATHARTICA	30	Υ	FAC	<ul> <li>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</li> </ul>
3.	Ribes cynosbati	5	N	FACU	present, unless disturbed of problematic.
4.	Circaea canadensis	5	N	FACU	Definitions of Vegetation Strata:
5.	ELYMUS REPENS	3	N	FACU	
6					Tree - Woody plants 3 in. (7.6cm) or more in diameter
7.					at breast height (DBH), regardless of height.
8.					
9.	_				Sapling/Shrub - Woody plants less than 3 in. DBH and greater
10.					than 3.28 ft. tall.
11.	-				
12.	-				Herb - All herbaceous (non-woody) plants, regardless
13.					of size, and woody plants less than 3.28 ft. tall.
14.	-				
15.					Woody Vines - All woody vines greater than 3.28 ft. in height.
	Total Cover =	123			
Woody Vine Stra	tum (Plot size: 10 meter radius)				
1.	Vitis riparia	10	Y	FAC	
2.					
3.					Hydrophytic Vegetation Present X Yes No
4.	Sime.				
5.					
	Total Cover =	10			
Remarks:	_				
Additional Re	marks:				
	n-wetland based on lack of indicators for t	hudrio c	oile and	uotland h	udralogy

Determined non-wetland based on lack of indicators for hydric soils and wetland hydrology	



# WETLAND DETERMINATION DATA FORM Northcentral-Northeast Region

Applicant: Si Investigator #1: Er Soil Unit: Kr Landform: Si Slope (%): 4- Are climatic/hydrol Are Vegetation Are Vegetation Are Vegetation Wetland Hydrology Remarks: W  HYDROLOGY  Wetland Hydrology Wetland Hydrology At A2	iepmann Fric Parker nowles silt ide slope 6 logic cond , Soil _ , c , Soil _ , c VDINGS tation Pres y Present /ETS anal arameters	Latitude itions on the site to r Hydrology sion Hydrology na sent? rysis indicates ante	:: N/A ypical for gnificantly aturally pr	Loc this time disturbe oblemati	ed? c? X No X No	Convex N/A (If no, expla	Are normal circumsta  X Yes	Datum Yes No No Hydric Soils	N/A No nt? Present? pling Point	Date: County: State: Wetland ID: Sample Point: Community ID: Section: Township: Range: Within A Wetlar ed on a lack of	
Investigator #1: Er Soil Unit: Kr Landform: Si Slope (%): 4- Are climatic/hydrol Are Vegetation Are Vegetation Yegetation Hydrophytic Veget Wetland Hydrology Remarks: W HYDROLOGY Wetland Hydrology Wetland Hydrology A1 A2	ric Parker nowles siltide slope 6 logic cond , Soil , C , Soil , C , Spil , C , Spil , C , Spil , C , Spil , C	Latitude iitions on the site to r Hydrology sior Hydrology na sent? ysis indicates ante	:: N/A ypical for gnificantly aturally pr	Loc this time disturbe oblemati	al Relief: ongitude: of year? ed? c?  X No X No	Convex N/A (If no, expla	in in remarks) Are normal circumsta  X Yes	Datum Yes No No Hydric Soils	No nt?  Present?  pling Point	State: Wetland ID: Sample Point: Community ID: Section: Township: Range:	Wisconsin Adjacent to W-1 P3 Old field 29 7N 19E Yes X No
Soil Unit: Kr Landform: Sic Slope (%): 4- Are Climatic/hydrol Are Vegetation , SUMMARY OF FIN Hydrophytic Veget: Wetland Hydrology Remarks: W Pathydron Wetland Hydrology Wetland Hydrology Wetland Hydrology At At A2	nowles siltide slope 6 logic cond , Soil  , c , Soil  , c NDINGS tation Present' /ETS analiarameters	Latitude itions on the site to r Hydrology sion Hydrology na sent? rysis indicates ante	ypical for gnificantly aturally pr	Loc this time disturbe oblemati	al Relief: ongitude: of year? ed? c?  X No X No	Convex N/A (If no, expla	in in remarks) Are normal circumsta  X Yes	Datum Yes No No Hydric Soils	No nt?  Present?  pling Point	Wetland ID: Sample Point: Community ID: Section: Township: Range:	Adjacent to W-1 P3 Old field 29 7N 19E  Yes X No
Landform: Sic Slope (%): 4- Are climatic/hydrol Are Vegetation Are	ide slope 6 logic cond , Soil , c , Soil , c NDINGS tation Present /ETS analy arameters	Latitude itions on the site to r Hydrology sion Hydrology na sent? rysis indicates ante	ypical for gnificantly aturally pr	this time disturbe oblemati Yes Yes	ongitude: of year? ed? c? X No X No	Convex N/A (If no, expla	in in remarks) Are normal circumsta  X Yes	Datum Yes No No Hydric Soils	No nt?  Present?  pling Point	Sample Point: Community ID: Section: Township: Range:	P3 Old field 29 7N 19E  Yes X No
Slope (%):  Are climatic/hydrol Are Vegetation Are Vegetation Are Vegetation Hydrophytic Veget Wetland Hydrology Remarks: W  HYDROLOGY Wetland Hydrolo Primary: A1 A2	logic cond , Soil , c , Soil , c , Soil , c , NDINGS tation Present /ETS analerameters.	itions on the site to the firm Hydrology site. Hydrology name sent?	ypical for gnificantly aturally pr	this time disturbe oblemati Yes Yes	ongitude: of year? ed? c? X No X No	N/A (If no, expla	Are normal circumsta  X Yes	Yes ) nces preser No Hydric Soils Is This Sam	No nt?  Present?  pling Point	Community ID: Section: Township: Range:	Old field 29 7N 19E Yes X No
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Are climatic/hydrol Are Vegetation Are Vegetation Are Vegetation SUMMARY OF FIN Hydrophytic Veget Wetland Hydrology Remarks: W Pa  HYDROLOGY Wetland Hydrolo Primary A1 A2	, Soil , c , Soil , c NDINGS tation Pres y Present /ETS anal arameters.	itions on the site to the firm Hydrology site. Hydrology name sent?	ypical for gnificantly aturally pr	this time disturbe oblemati Yes Yes	of year? ed? c?  X No X No	(If no, expla	Are normal circumsta  X Yes	nces preser No Hydric Soils Is This Sam	Present?	Section: Township: Range: Within A Wetlar	29 7N 19E Yes X No
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Hydrophytic Veget Wetland Hydrology Remarks: W pa HYDROLOGY Wetland Hydrolo Primary: A1 A2	tation Pres y Present? /ETS anal arameters.	? ysis indicates ante	ecedent p	Yes	X No	vetter tha		Is This Sam	pling Point		nd? Yes X No
Wetland Hydrology Remarks: W pa  HYDROLOGY Wetland Hydrolo Primary: A1 A2	y Present? /ETS anal arameters	? ysis indicates ante	ecedent p	Yes	X No	wetter tha		Is This Sam	pling Point		nd? Yes X No
Remarks: W pa	/ETS anal arameters	ysis indicates ante	ecedent p			vetter tha					
HYDROLOGY  Wetland Hydrolo  Primary: A1 A2	arameters		ecedent p	recipiatio	on is the v	vetter tha	in normal range. Deter	rmined non-	wetland bas	ed on a lack of	indicators for all three
Wetland Hydrolo Primary: A1 A2	ogy Indica										
Primary: A1 A2	gy indica	toro (Chaels bere	if indicat								
A1 A2		itors (Check here	ir indicate	ors are n	ot preser	ıι   <b>Χ</b> ):			Secondary:		
A2	1 - Surface \	Water			B9 - Wate	r-Stained	eaves		Secondary.	B6 - Surface Soil	Cracks
	2 - High Wa				B13 - Aqu					B10 - Drainage P	
	3 - Saturatio			Ė	B15 - Mar					B16 - Moss Trim	
	1 - Water Ma					ogen Sulfic				C2 - Dry-Season	
	2 - Sedimen						spheres on Living Roots		1	C8 - Crayfish Bur	
	3 - Drift Dep			-			duced Iron		-	C9 - Saturation V D1 - Stunted or S	isible on Aerial Imagery
	4 - Algal Ma 5 - Iron Dep			-		Muck Surf	duction in Tilled Soils		-	D2 - Geomorphic	
		on Visible on Aerial Im	nagery	-	Other (Ex					D3 - Shallow Aqu	
		Vegetated Concave			יייייייייייייייייייייייייייייייייייייי	piani iii i to	mano,		<u> </u>	D4 - Microtopogra	
										D5 - FAC-Neutral	Test
Field Observation	ns·										
Surface Water Pre		Yes X No	Depth:		(in )						
Water Table Prese	The state of the s	Yes X No	Depth:		(in.)	1		Wetland Hy	drology Pr	esent?	Yes X No
			STATE OF A CONTRACTOR		(in.)	-					
Saturation Present	tr	Yes X No	Depth:		(in.)						
Describe Recorded	Data (stre	eam gauge, monitor	ring well, a	aerial pho	tos, previ	ous inspe	ctions), if available:	N/A			
SOILS					ACCESSES.	wierwiss.					
Map Unit Name:		Knowles silt loam	OF BUILDING	100							
Taxonomy (Subgro	oup):					Si	eries Drainage Class:	well			
Profile Description		Typic Hapludalfs									
r rome Besonption	n (Describe to the	Typic Hapludalfs	e indicator or cor	nfirm the absen	ce of indicators )		eries Drainage Class:		coated Sand Grains;	Location: PL=Pore Lining, N	
5 N/	n (Describe to the Bottom	Typic Hapludalfs	e indicator or con	ofirm the absence	ce of indicators )		centration, D=Depletion, RM=Reduced M			Location: PL=Pore Lining, N	Texture
Тор	5.41 33937	Typic Hapludalfs		2000 000	ce of indicators )	(Type: C=Con	centration, D=Depletion, RM=Reduced M	Matrix, CS=Covered/C		Location: PL=Pore Lining, N	
Тор	Bottom	Typic Hapludalfs the depth needed to document the		Matrix		(Type: C=Con	centration, D=Depletion, RM=Reduced N	Matrix, CS=Covered/C	3		Texture
Top I Depth	Bottom Depth 7	Typic Hapludalfs the depth needed to document the Horizon 1	Color 10YR	Matrix (Moist) 3/2	% 100	(Type: C=Con	centration, D=Depletion, RM=Reduced N Rec Color (Moist)	Matrix, CS=Covered/C dox Features %	Туре	Location	Texture (e.g. clay, sand, loan silt loam
Top I Depth 0 7	Bottom Depth 7 14	Typic Hapludalfs he depth needed to document th  Horizon  1 2	Color 10YR 10YR	Matrix (Moist) 3/2 4/3	% 100 100	(Type: C=Coni	centration, D=Depletion, RM=Reduced I Rec Color (Moist)  	Matrix, cs=covered/c dox Features % 	Type	Location 	Texture (e.g. clay, sand, loam silt loam silt loam
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Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs the depth needed to document the Horizon  1 2 3	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2 	% 100 100 97 	  10YR	centration, D=Depletion, RM=Reduced I Rec Color (Moist) 4/4	Matrix, CS=Covered/C dox Features %   3	Type C	Location M	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs the depth needed to document the Horizon  1 2 3	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2	% 100 100 97	(Type: C=Cond	centration, D=Depletion, RM=Reduced I Rec Color (Moist) 4/4	Matrix, CS=Covered/C dox Features %   3	Type C	Location M	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs the depth needed to document the Horizon  1 2 3	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2 	% 100 100 97 	  10YR	centration, D=Depletion, RM=Reduced I Rec Color (Moist) 4/4	Matrix, CS=Covered/C dox Features %   3	Type C	Location M	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs the depth needed to document the Horizon  1 2 3	Color 10YR 10YR 10YR 	Matrix (Moist) 3/2 4/3 4/2  	% 100 100 97 	10YR	centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4	Matrix, CS-Covered/C dox Features %  3 	Type	Location M	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document th  Horizon  1 2 3	Color 10YR 10YR 10YR 	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97   		centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4	Matrix, CS=Covered/C dox Features %   3  	Type	Location M	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth 0 7 14 NRCS Hydric Soi	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document th  Horizon  1 2 3	Color 10YR 10YR 10YR 	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre		centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4	Matrix, CS=Covered/C dox Features %   3  	Type	Location M	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth 0 7 14 NRCS Hydric Soi	Bottom Depth 7 14 20 sil Field In	Typic Hapludalfs the depth needed to document the Horizon 1 2 3 ddicators (check in	Color 10YR 10YR 10YR 	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Poly S9 - Thin		centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 149B) ICO (LRR R, MLRA 149B)	Matrix, CS=Covered/C dox Features %   3  	Type	Location   M         matic Soils <sup>1</sup>	Texture (e.g. clay, sand, loam silt loam silt loam
Top Depth 0 7 14 NRCS Hydric Soi A2 A3	Bottom Depth 7 14 20 iii Field In 1- Histosol 2- Histic Ep 3- Black His	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check horizonstic)	Color 10YR 10YR 10YR 	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyx S9 - Thin S11 - Higl	10YR	centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ); v Surface (LRR R, MLRA 149B) Coe (LRR R, MLRA 149B) Sands	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M M matic Soils <sup>1</sup> Vluck (LRR K. L. MLRA Prairie Redox (LRF Locky Peat of Peat	Texture (e.g. clay, sand, loam silt loam silt loam
Top Depth 0 7 14	Bottom Depth 7 14 20 iil Field In 1- Histosol 2- Histic Ep 3 - Black His 4 - Hydrogeı	Typic Hapludalfs he depth needed to document the Horizon  1 2 3 dicators (check holpedon stic	Color 10YR 10YR 10YR 	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Poly S9 - Thin S11 - Higl	10YR	centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 149B) COC (LRR R, MLRA 149B) Sands Mineral (LRR K, L)	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M matic Soils <sup>1</sup> Wuck (LRR K, L, MLRA Prairie Redox (LRR Locky Peat of Peat	Texture (e.g. clay, sand, loam silt loam silt loam (49B) K. L. R)
Top Depth  0 7 14 A1  NRCS Hydric Soi A4 A3 A4 A5	Bottom Depth 7 14 20 iil Field In 1- Histosol 2 - Histic Ep 3 - Black Hist 4 - Hydroge 5 - Stratified 5 - Stratified	Typic Hapludalfs the depth needed to document the Horizon  1 2 3 dicators (check in Sulpedon Stice in Sulfide I Layers	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Poly S9 - Thin S11 - Higl F1 - Loam F2 - Loam	10YR	centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): v Surface (LRR R, MLRA 149B) Scalds Sands Sinderal (LRR K, L) Matrix	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M matic Soils   Wuck (LRR K. L. MLRA Prairie Redox (LRR LTGACE (LRR K. L. M) Leg Below Surface	Texture (e.g. clay, sand, loam silt loam silt loam (A9B) (LRR K. L. R)
Top Depth  0 7 14	Bottom Depth 7 14 20 iil Field In 1- Histosol 2 - Histic Ep 3 - Black Hid 4 - Hydroget 5 - Stratified 11 - Deplete	Typic Hapludalfs he depth needed to document the Horizon  1 2 3 dicators (check horized in Sulfide It Layers and Below Dark Surface Below Dark Surface	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyy S9 - Thin S11 - Higl F1 - Loam F3 - Deple	10YR seent X value Below Dark Surfan Chroma ny Mucky M y Gleyed deted Matrix	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): v Surface (LRR R, MLRA 149B) Sands dineral (LRR K, L) Matrix (	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M matic Soils   Vuck (LRR K, L, MLRA Prairie Redox (LRR prairie Red	Texture (e.g. clay, sand, loam silt loam silt loam (498) K.L.R) (LRR K.L.R) (LRR K.L.)
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs he depth needed to document the Horizon  1 2 3 dicators (check horizon) stic n Sulfide Layers de Below Dark Surface	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Poly S9 - Thin F1 - Loarr F2 - Loarr F3 - Deple F6 - Red0	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 1498) Sands Sands Matrix ( rface	Matrix, CS=Covered/C dox Features %   3  	Type C s for Proble A10 - 2 cm   A16 - Coast S3 - 5cm M S7 - Dark S S8 - Polyval S9 - Thin Da F12 - Iron-M	Location  M  matic Soils   Wuck (LRR K, L, MLRA Pock (Peat of Peat urface (LRR K, L, M) ue Below Surface kr Surface (LRR K, L, M) anganese Masse:	Texture (e.g. clay, sand, loam silt loam silt loam (LAPK) (LRR K. L. R) (LRR K. L. R) (LRR K. L. R)
Top Depth  0 7 14 NRCS Hydric So  A1 A2 A3 A4 A5 A1 S1	Bottom Depth 7 14 20 iil Field In 1- Histosol 2- Histic Ep 5- Stratified 11 - Depletet 11 - Depletet 11 - Sandy M 1- Sandy M	Typic Hapludalfs he depth needed to document the Horizon  1 2 3 dicators (check in bipedon stic in Sulfide I Layers de Below Dark Surface lark Surface lauck Mineral	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyn S9 - Thin S11 - Higl F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 1498) IOC (LRR R, MLRA 1498) Sands Mineral (LRR K, L) Matrix (rface Surface	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M matic Soils   Muck (LRR K, L, MLRA Prairie Redox (LRR K, L) ucky Peat of Peat urface (LRR K, L, M) ue Below Surface rrk Surface (LRR K, C) anganese Masses ont Floodplain Soi	Texture (e.g. clay, sand, loam silt loam silt loam (LAPK) (LRR K. L. R) (LRR K. L. R) (LRR K. L. R)
Top Depth  0 7 14 NRCS Hydric Soi A1 A2 A3 A4 A5 A1 A1 S1	Bottom Depth 7 14 20 iil Field In 1- Histosol 2 - Histic Ep 3 - Black Hist 4 - Hydroge 11 - Deplete 12 - Thick D 1 - Sandy M 4 - Sandy G	Typic Hapludalfs ne depth needed to document th  Horizon  1 2 3 dicators (check holpedon stic n Sulfide l Layers ad Below Dark Surface lark Surface luck Mineral leyed Matrix	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyn S9 - Thin S11 - Higl F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 1498) IOC (LRR R, MLRA 1498) Sands Mineral (LRR K, L) Matrix (rface Surface	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M matic Soils   Wuck (LRR K. L. MLRA Prairie Redox (LRF LCK) Peat of Peat Irface (LRR K. L. M) Le Below Surface Lerk Surface (LRR K. L. Anganese Masses ont Floodplain Soi arent Material	Texture (e.g. clay, sand, loam silt loam silt loam (498) IK.L.R) (LRR K.L.R) (LRR K.L.R) S (LRR K.L.R) IS (MLRA 1498)
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check happedon stic n Sulfide I Layers led Below Dark Surface lark Surface luck Mineral leyed Matrix edox	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyn S9 - Thin S11 - Higl F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 1498) IOC (LRR R, MLRA 1498) Sands Mineral (LRR K, L) Matrix (rface Surface	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M  M    matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRF Loky Peat of Peat urface (LRR K. L. M) ue Below Surface urk Surface (LRR K. L. M) anganese Masses ont Floodplain Soi arent Material Spodic (MLRA 144A.	Texture (e.g. clay, sand, loam silt loam silt loam silt loam (LRR K. L. R) (LRR K. L. R) (LRR K. L. R) (MIRA 149B) (J. S. (MIRA 149B)
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check holipedon stic n Sulfide Layers dark Surface luck Mineral leyed Matrix edox Matrix	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyn S9 - Thin S11 - Higl F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 1498) IOC (LRR R, MLRA 1498) Sands Mineral (LRR K, L) Matrix (rface Surface	Matrix, CS=Covered/C dox Features %   3  	Type	Location  M  matic Soils   Muck (LRR K. L. M.RA Prairie Redox (LRR K. L. M) ue Below Surface urface (LRR K. L. M) ue Below Surface urface (LRR K. L. M) Shallow Dark Surface (LRR K. L. M) Spodic (MLRA 144A. Shallow Dark Sur	Texture (e.g. clay, sand, loam silt loam silt loam silt loam (LRR K. L. R) (LRR K. L. R) (LRR K. L. R) (MIRA 149B) (J. S. (MIRA 149B)
Top Depth 0 7 14	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check happedon stic n Sulfide I Layers led Below Dark Surface lark Surface luck Mineral leyed Matrix edox	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyn S9 - Thin S11 - Higl F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 149B) Sands Mineral (LRR K, L) Matrix (rface Surface Surface ions	Matrix, CS=Covered/C dox Features % 3 Indicato	Type	Location  M  M  matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface (LRR K. L. M) Le Below Surface Lark Surface L	Texture (e.g. clay, sand, loam silt loam silt loam silt loam (LRR K. L. R) (LRR K. L. R) (LRR K. L. R) (MIRA 149B) (J. S. (MIRA 149B)
Top Depth  0 7 14 NRCS Hydric Soi A1 A2 A3 A4 A5 A1 A1 S1 S4 S5 S6 S6 S7	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check holipedon stic n Sulfide Layers dark Surface luck Mineral leyed Matrix edox Matrix	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Polyn S9 - Thin S11 - Higl F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple	10YR	rentration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ): w Surface (LRR R, MLRA 149B) Sands Mineral (LRR K, L) Matrix (rface Surface Surface ions	Matrix, CS=Covered/C dox Features % Indicato	Type	Location  M  M    matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRR Locky Peat of Peat urface (LRR K. L. M) Le Below Surface urface (LRR K. L. M) Le Below Surface ark Surface (LRR K. L. M) Le Below Surface are Boodio (LRR 144A Shallow Dark Sur	Texture (e.g. clay, sand, loam silt loam silt loam
Top Depth  0 7 14 NRCS Hydric So A1 A2 A3 A4 A5 A1 A1 S1 S2 S6 S6 S7	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check holipedon stic n Sulfide Layers dark Surface luck Mineral leyed Matrix edox Matrix	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2   	% 100 100 97 re not pre S8 - Poly S9 - Thin S11 - High F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple F8 - Redo	10YR	centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ); v Surface (LRR R, MLRA 149B) Coc (LRR R, MLRA 149B) Sands Sineral (LRR K, L) Matrix ( fface Surface Surface ions	Matrix, CS=Covered/C dox Features % Indicato	Type  C C s for Proble A10 - 2 cm   A16 - Coast S3 - 5cm M S7 - Dark S S8 - Polyval S9 - Thin Da F19 - Piedm F19 - Piedm F21 - Red P TA6 - Mesic TF12 - Very Other (Expla)	Location  M  M    matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRR Locky Peat of Peat urface (LRR K. L. M) Le Below Surface urface (LRR K. L. M) Le Below Surface ark Surface (LRR K. L. M) Le Below Surface are Boodio (LRR 144A Shallow Dark Sur	Texture (e.g. clay, sand, loam silt loam silt loam silt loam
Top Depth  0 7 14 NRCS Hydric Soi A1 A2 A3 A4 A5 A1 A1 S1 S4 S5 S6 S6 S7	Bottom Depth 7 14 20	Typic Hapludalfs ne depth needed to document the Horizon  1 2 3 dicators (check happedon stic n Sulfide l Layers dark Surface luck Mineral leyed Matrix edox Matrix face (LRR R, MLRA 1498)	Color 10YR 10YR 10YR	Matrix (Moist) 3/2 4/3 4/2 icators a	% 100 100 97 re not pre S8 - Poly S9 - Thin S11 - High F1 - Loam F2 - Loam F3 - Deple F6 - Redo F7 - Deple F8 - Redo	10YR	centration, D=Depletion, RM=Reduced N Rec Color (Moist) 4/4 ); v Surface (LRR R, MLRA 149B) Coc (LRR R, MLRA 149B) Sands Sineral (LRR K, L) Matrix ( fface Surface Surface ions	Matrix, CS=Covered/C dox Features % 3 Indicato Indicators of hydisture	Type  C C s for Proble A10 - 2 cm   A16 - Coast S3 - 5cm M S7 - Dark S S8 - Polyval S9 - Thin Da F19 - Piedm F19 - Piedm F21 - Red P TA6 - Mesic TF12 - Very Other (Expla)	Location  M  M    matic Soils   Muck (LRR K. L. MLRA Prairie Redox (LRR Locky Peat of Peat urface (LRR K. L. M) Le Below Surface urface (LRR K. L. M) Le Below Surface ark Surface (LRR K. L. M) Le Below Surface are Boodio (LRR 144A Shallow Dark Sur	Texture (e.g. clay, sand, loam silt loam silt loam



## WETLAND DETERMINATION DATA FORM

Northcentral-Northeast Region

Project/Site:	Siepmann Tallgrass Project				Wetland ID: Adjacent to W-1 Sample Point: P3
VECETATION				-	
VEGETATION Tree Stratum (P	(Species identified in all uppercase are non-na lot size: 10 meter radius)	ative spec	ies.)		
Hee orlandin (i		% Cover	Dominant	Ind.Status	Dominance Test Worksheet
1.	Juglans nigra	10	Y	FACU	Dominance 1650 Workshoot
2.					Number of Dominant Species that are OBL, FACW, or FAC: (A)
3.					
4.					Total Number of Dominant Species Across All Strata: 3 (B)
5.					
6.					Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)
7.					V/
8.			-		Prevalence Index Worksheet
9.					Total % Cover of: Multiply by:
10.					OBL spp. 0 x 1 = 0
	Total Cover =		1000		FACW spp. 30 x 2 = 60
	rotal cover	10			FAC spp. 2 x 3 = 6
Sanling/Shrub St	ratum (Plot size: 5 meter radius)				FACU spp. 102 x 4 = 408
1.	Traction (Proc size. 5 meter radius)				UPL spp. 5 x 5 = 25
2.				_	от <u>г</u> х о <u>г</u>
3.					Total 139 (A) 499 (B)
4.					10(a) 109 (A) 400 (D)
5.					Provolence Index = R/A = 2.500
6.					Prevalence Index = B/A = <u>3.590</u>
7.					
8.					Hudrophytic Vagatation Indicators
9.					Hydrophytic Vegetation Indicators:
10.	 20				Yes X No Rapid Test for Hydrophytic Vegetation
10.	Total Cover =	1000	100		Yes X No Dominance Test is > 50% Yes X No Prevalence Index is ≤ 3.0 *
	Total Cover -	U		14	
Llach Ctratum (DI	ot size: 2 meter radius)				Yes X No Morphological Adaptations (Explain) *
Herb Stratum (Pi	Ot size: 2 meter radius)  POA PRATENSIS	90	Υ	FACU	Yes X No Problem Hydrophytic Vegetation (Explain) *
2.	PHALARIS ARUNDINACEA	30	Y	FACU	* Indicators of hydric soil and wetland hydrology must be
3.		5	N	UPL	present, unless disturbed or problematic.
4.	Physalis heterophylla CIRSIUM ARVENSE	2			Definitions of Vanatation Circles
5.			N	FACU	Definitions of Vegetation Strata:
6	Vitis riparia	1		FAC	Tree - Woody plants 3 in. (7.6cm) or more in diameter
7.					at breast height (DBH), regardless of height.
8.					,, y
9.					Q. II. (Q) I. Mondy plants loss than 2 in DDU and exector
10.					Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.
					Wall S.ES N. Kull.
11.					Mi harbassaya (nan yasah ) planta rasardinas
12.					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.
13.					or ones, and viscos, plante loss than ones it. tall.
14. 15.					Was dis Viscos All susedy viscos grouter than 2 29 ft is height
15.	-				Woody Vines - All woody vines greater than 3.28 ft. in height.
	Total Cover =	128			
Woody Vine Stra	tum (Plot size: 10 meter radius)				
1.	Vitis riparia	1	N	FAC	
2.					
3.					Hydrophytic Vegetation Present Yes X No
4.					y y and project to go and the project to the projec
5.	••				
	Total Cover =	1			
Remarks:					
Additional Re	marke				
	n-wetland based on a lack of indicators for	or all thre	o naram	otore	
Determined no	I-wellding pased of a lack of indicators to	of all time	e paran	leters.	



# WETLAND DETERMINATION DATA FORM Northcentral-Northeast Region

Remarks:  OILS  fap Unit Name: axonomy (Subgrofile Descript Top Depth 0 5 11 17 NRCS Hydric S	group): tion (Describe to Depth 5 11 17 21 Soil Field II A1- Histosol A2 - Histic E A3 - Black H A4 - Hydroge A5 - Stratifie A12 - Thick I S1 - Sandy N S4 - Sandy N S6 - Stripped S6 - Stripped	Pella silt loa Typic Endo the depth needed to de  Horizo 1 2 3 4 ndicators (c pipedon istic en Sulfide d Layers ed Below Dark Dark Surface duck Mineral Sleyed Matrix kedox	maquolis In Col 10Y 10Y 10Y heck here if i	Matrix or (Moist) R 3/2 R 4/2 R 4/2 R 5/2 ndicators a	nce of indicators (* 96   100   95   85   80	10YR 10YR 10YR 10YR 10YR 10YR 10YR 10YR	Color (Moist)  4/6 4/6 6/8 ): w Surface (LRR R, MLRA 149B) ace (LRR R, MLRA 149B) Sands Mineral (LRR K, L) Matrix x urface Surface	Matrix, CS-Coveredid adox Feature: %  5 15 20   Indicato	S Type	Location PL=Pore Lining I  Location   M  M  M	Texture (e.g. clay, sand, loan silt loam silt		
Remarks:  OILS  fap Unit Name: axonomy (Subgrofile Descript Top Depth 0 5 11 17 NRCS Hydric S	group):  tion (Describe to Bottom Depth 5 11 17 21 Soil Field II A1- Histosol A2- Histic E A3- Black H A4- Hydroge A5- Stratifie A11- Deplet A12- Thick I	Pella silt loa Typic Endo the depth needed to de  Horizo  1 2 3 4 ndicators (c pipedon istic en Sulfide d Layers ed Below Dark Dark Surface	m aquolls  n Col 10Y 10Y 10Y heck here if i	Matrix or (Moist) R 3/2 R 4/2 R 4/2 R 5/2 ndicators a	100 95 85 80    38 - Poly 59 - Thin 511 - Hig F1 - Loar F2 - Loar F3 - Depl F6 - Red	10YR 10YR 10YR 10YR 10YR 10YR 10YR 10YR	Color (Moist)  4/6 4/6 6/8 ): w Surface (LRR R, MLRA 149B) Sands Mineral (LRR K, L) Matrix X urface	Matrix, CS-Coveredid adox Feature: %  5 15 20   Indicato	S	Location  M M M	Texture (e.g. clay, sand, loan silt loam silt loam silt loam silt loam silt clay loam (LRR K. L. R) (LRR K. L. R) S (LRR K. L. R)		
Remarks:  POILS  Rap Unit Name: axonomy (Subç rofile Descript Top Depth 0 5 11 17 NRCS Hydric S	group): tion (Describe to Bottom Depth 5 11 17 21 Soil Field II A1- Histosol A2- Histic E A3- Black H	Pella silt loa Typic Endo the depth needed to de  Horizo  2 3 4 ndicators (copipedon sistic	m aquolls  Col 10Y 10Y 10Y	r confirm the absect Matrix or (Moist) R 3/2 R 4/2 R 5/2	nce of indicators (	10YR 10YR 10YR 10YR 10YR 10YR 10YR 10YR	Color (Moist)  4/6 4/6 6/8 );  w Surface (LRR R, MLRA 149B) Sands	Matrix, CS-Coveredid adox Feature: %  5 15 20   Indicato	S	Location  M M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam silty clay loam		
Remarks:  POILS  Rap Unit Name: axonomy (Subç rofile Descript  Top Depth  0 5 11 17	group): tion (Describe to Bottom Depth 5 11 17 21	Pella silt loa Typic Endo the depth needed to de  Horizo  1 2 3 4	m aquolls  Col 10Y 10Y 10Y	r confirm the absect Matrix or (Moist) R 3/2 R 4/2 R 5/2	% 100 95 85 80	10YR 10YR 10YR	contration, D=Depletion, RM=Reduced Re Color (Moist) 4/6 4/6 6/8	Matrix, CS-Covered <sup>1</sup> dox Feature % 5 15 20	S	Location  M M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam silty clay loam		
OILS lap Unit Name: exaxonomy (Subgrofile Descript Top Depth 0 5 11 17	group): tion (Describe to Bottom Depth 5 11 17 21	Pella silt loa Typic Endo the depth needed to de  Horizo 1 2 3 4	m aquolls  Col 10Y 10Y 10Y	Matrix or (Moist) R 3/2 R 4/2 R 4/2 R 5/2	% 100 95 85 80	S) (Type C=Co	Color (Moist)  4/6 4/6 6/8	d Matrix, CS=Covered® edox Features % 5 15 20	S	Location M M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam silt y clay loam		
OILS lap Unit Name: exaxonomy (Subgrofile Descript Top Depth 0 5 11 17	group): tion (Describe to Bottom Depth 5 11 17 21	Pella silt loa Typic Endo the depth needed to de  Horizo 1 2 3 4	m aquolls  Col 10Y 10Y 10Y	Matrix or (Moist) R 3/2 R 4/2 R 4/2 R 5/2	% 100 95 85 80	S) (Type C=Co	Color (Moist)  4/6 4/6 6/8	d Matrix, CS=Covered® edox Features % 5 15 20	S	Location M M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam silt y clay loam		
Remarks:  OILS  lap Unit Name: exconomy (Subgrofile Descript  Top Depth  0 5 11 17	group): tion (Describe to Bottom Depth 5 11 17 21	Pella silt loa Typic Endo the depth needed to de  Horizot 1 2 3 4	m aquoils Col 10Y 10Y 10Y 10Y	Matrix or (Moist) R 3/2 R 4/2 R 4/2 R 5/2	% 100 95 85 80	S (Type C=Co) 10YR 10YR 10YR	contration, D=Depletion, RM=Reduced R6 Color (Moist) 4/6 4/6 6/8	d Matrix, CS=Covered/dedox Features % 5 15 20	S	Location M M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam silt loam silty clay loam		
OILS Iap Unit Name: Exconomy (Subgrofile Descript Top Depth 0 5 11	group): tion (Describe to Bottom Depth 5 11	Pella silt loa Typic Endo the depth needed to de  Horizo 1 2 3	m aquoils secument the indicator of 10Y 10Y 10Y	Matrix or (Moist) R 3/2 R 4/2 R 4/2	% 100 95 85	(Type C=Co	ncentration, D=Depletion, RM=Reduced R6 Color (Moist) 4/6 4/6	Matrix, CS=Covered/0 edox Feature % 5 15	Type C C	Location  M M	Texture (e.g. clay, sand, loa silt loam silt loam silt loam		
COILS  dap Unit Name: axonomy (Subgrofile Descript Top Depth 0	group): tion (Describe to Bottom Depth 5	Pella silt loa Typic Endo the depth needed to de Horizo	m aquolls comment the indicator of the comment the indicator of the comment that indicator of th	Matrix Or (Moist) R 3/2	nce of indicators  % 100	Si.) (Type: C=Co	ncentration, D=Depletion, RM=Reduced R6 Color (Moist)	d Matrix, CS=Covered/0 edox Feature: %	Type	Location	Texture (e.g. clay, sand, loa silt loam		
OILS Interpretation of the control o	group): tion (Describe to Bottom Depth	Pella silt loa Typic Endo the depth needed to de	m aquolls occument the indicator of	r confirm the abser Matrix Or (Moist)	nce of indicators	S.) (Type: C=Co	ncentration, D=Depletion, RM=Reduced R6 Color (Moist)	d Matrix, CS=Covered/0 edox Feature:	s Type	Location	Texture (e.g. clay, sand, loa		
OILS Interpretation of the control o	group): tion (Describe to Bottom	Pella silt loa Typic Endo the depth needed to de	m aquolls ocument the indicator of	confirm the abse	nce of indicators	S	ncentration, D=Depletion, RM=Reduced	Matrix, CS=Covered/	S		Texture		
Remarks: OILS Tap Unit Name: axonomy (Suborofile Descript	group): tion (Describe to	Pella silt loa	m aquolls	confirm the abse	nce of indicators	S	ncentration, D=Depletion, RM=Reduced	d Matrix, CS=Covered/0		Location: PL=Pore Lining,	M=Matrix)		
Remarks:  OILS  Map Unit Name: axonomy (Subg	group):	Pella silt loa	m aquolls			S		-					
Remarks:				tland hydro	ology is p		eries Drainage Class	poorly					
Remarks:	2 secondar	ry indicators	snow that we	tland hydro	ology is p	oresent.							
			a la accordia a force										
	:F33.733	eam gauge, r	nonitoring we	l, aerial ph	otos, prev		ections), if available:	N/A	EX NVA F				
Water Table Pre	esent?	Yes X	No Dep	th:	(in.) (in.)			Wetland Hy	ydrology P	resent? X	Yes No		
Field Observat Surface Water F		Yes X	No Dep	th:	(in.)								
	B3 - Drift Deposits C4 - Presen						ide Odor ospheres on Living Roots educed Iron eduction in Tilled Soils face			C2 - Dry-Season C8 - Crayfish Bur	Water Table rrows fisible on Aerial Imagery Stressed Plants c Position iitard aphic Relief		
Primary: A1 - Surface Water A2 - High Water Table A3 - Saturation					B13 - Aq	ter-Stained uatic Faun arl Deposits	а		Secondary	Secondary:  B6 - Surface Soil Cracks  B10 - Drainage Patterns  B16 - Moss Trim Lines			
Wetland Hydro		ators (Chec	k here if indic	ators are	not prese	ent :			Carandan				
IYDROLOGY													
Remarks:	WETS and	alysis indicate	es anteceden	t precipiati	on is the	wetter th	an normal range						
Netland Hydrol	ogy Presen	t?		X Yes	s No	)				Within A Wetla			
Hydrophytic Ved	AND DESCRIPTION OF THE PERSON	esent?		X Yes	s No			Hydric Soils	s Present?		X Yes N		
Are Vegetation UMMARY OF	MARKET BANKS AND A	or Hydrology	naturally	problema	tic?		X Yes	No		Range:	19E		
Are Vegetation	, Soil ,	or Hydrology	significa	ntly disturb	ed?	T	Are normal circumst	ances prese		Township:	7N		
	1-3 trologic con		atitude: N/A e site typical		ongitude. e of vear		lain in remarks)	Datum Yes	X No	Community ID: Section:	Hardwood Swamp 29		
Are climatic/hyd	Toeslope		atituda, NUA		cal Relief		e	D.1	. N//	Sample Point:	P4		
Slope (%):	Pella silt lo					NV	VI/WWI Classification	: S3/E2K		Wetland ID:	W1		
Soil Unit: _andform: Slope (%):		Realty Corpor	Diation	Invest	igator #2	:				County: State:	Waukesha Wisconsin		



## WETLAND DETERMINATION DATA FORM

Northcentral-Northeast Region

Project/Site:	Siepmann Tallgrass Project				. Wetland ID: W1 Sample Point: P4
VEGETATION					
VEGETATION	(Species identified in all uppercase are non-na lot size: 10 meter radius)	ative spec	ies.)		
Tree Stratum (F		% Cover	Dominant	Ind.Status	Dominance Test Worksheet
1.	Fraxinus pennsylvanica	15	Y	FACW	Dominance Test Worksheet
2.	RHAMNUS CATHARTICA	10	Y	FAC	Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)
3.	Juglans nigra	10	Y	FACU	(v)
4.					Total Number of Dominant Species Across All Strata: 6 (B)
5.					(b)
6.					Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)
7.					(*5)
8.					Prevalence Index Worksheet
9.					Total % Cover of: Multiply by:
10.					OBL spp. 3 x 1 = 3
	Total Cover =	35			FACW spp. 95 x 2 = 190
					FAC spp. 13 x 3 = 39
Sapling/Shrub Str	ratum (Plot size: 5 meter radius)				FACU spp. 21 x 4 = 84
1.	ROSA MULTIFLORA	5	Υ	FACU	UPL spp. 7 x 5 = 35
2.	RHAMNUS CATHARTICA	2	Y	FAC	
3.	-				Total 139 (A) 351 (B)
4.		22		-	(5)
5.					Prevalence Index = B/A = 2.525
6.					
7.	× <del></del>				
8.					Hydrophytic Vegetation Indicators:
9.				-	Yes X No Rapid Test for Hydrophytic Vegetation
10.					X Yes No Dominance Test is > 50%
	Total Cover =	7			X Yes No Prevalence Index is ≤ 3.0 *
					Yes X No Morphological Adaptations (Explain) *
Herb Stratum (Ple	ot size: 2 meter radius)				Yes X No Problem Hydrophytic Vegetation (Explain) *
1.	PHALARIS ARUNDINACEA	75	Υ	FACW	
2.	BROMUS INERMIS	7	N	UPL	* Indicators of hydric soil and wetland hydrology must be
3.	Impatiens capensis	5	N	FACW	present, unless disturbed or problematic.
4.	Solidago canadensis	3	N	FACU	Definitions of Vegetation Strata:
5.	Angelica atropurpurea	3	N	OBL	See Entered and the Study and the study and the second association and produce of the second association and the second association association and the second association and the second association and the second association and the second association association and the second association and the second association and the second association as the second as
6	CIRSIUM ARVENSE	2	N	FACU	Tree - Woody plants 3 in. (7.6cm) or more in diameter
7.	Amphicarpaea bracteata	1	N	FAC	at breast height (DBH), regardless of height.
8.	Circaea canadensis	1	N	FACU	
9.					Sapling/Shrub - Woody plants less than 3 in. DBH and greater
10.					than 3.28 ft. tall.
11.					
12.					Herb - All herbaceous (non-woody) plants, regardless
13.					of size, and woody plants less than 3.28 ft. tall.
14.					
15.					Woody Vines - All woody vines greater than 3.28 ft. in height.
	Total Cover =	97			
-	um (Plot size: 10 meter radius)				
1.					
2.					
3.					Hydrophytic Vegetation Present X Yes No
4.					
5.					
	Total Cover =	0			
Remarks:					
Additional Re	marke:				
	tland having met all three paramters			-	
Determined we	nand having met all three paramters				
i					
	The second secon				

# **Appendices**

Tallgrass Project Wetland Delineation Appendix C – Site Photographs August 4, 2017

# APPENDIX C - SITE PHOTOGRAPHS



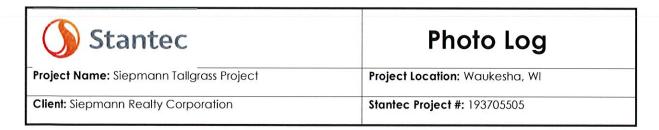


Photo No.	Date	
1	07/07/2017	
<b>Direction Ph</b> East	oto Taken:	
<b>Photo Descr</b> Sample poir	ription: nt P1	

Photo No.	Date	/ sale	V AND		
2	0707/2017			全被作为	用型 强
Direction Ph West	oto Taken:				Constitution of the Consti
<b>Photo Descr</b> Sample poir	<b>iption:</b> nt P2				

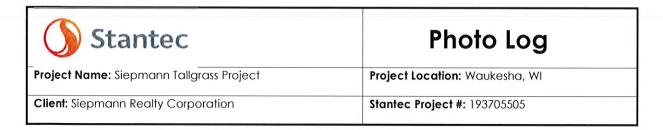
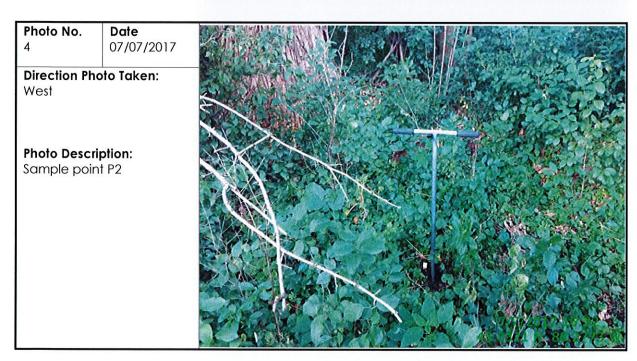


Photo No.	Date			15 C	A VIII	4-	X	( A
3	07/07/2017			44				
<b>Direction Ph</b>	oto Taken:							
East						7		
<b>Photo Descr</b> Sample poir	<b>ription:</b> nt P2		-3		110			V.
					溢为		7017 1 7017 1 11 88.27	32 V20



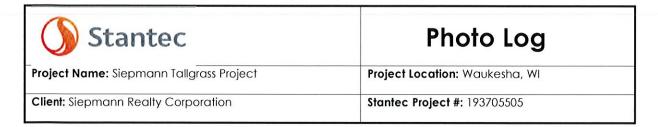


Photo No. Date 07/07/2017

Direction Photo Taken: East

Photo Description: Sample point P3

Photo No. 6 Date 07/07/2017

**Direction Photo Taken:** West

**Photo Description:** Sample point P3



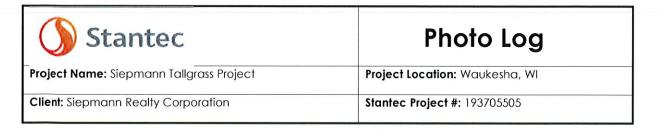


Photo No.	Date	the state of the s
7	07/07/2017	
<b>Direction Ph</b> North	noto Taken:	
Photo Desci Sample poi	<b>ription:</b> nt P4	

Photo No. 8

Direction Photo Taken:
South

Photo Description:
Sample point P4

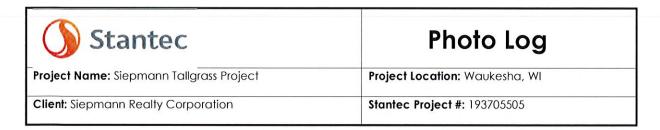


Photo No.	Date	50544	1 5XL / 18A			40 mm - 10 mm
9	07/07/2017		Million of the	i 1887 marian		
<b>Direction Ph</b> South	oto Taken:					
<b>Photo Descr</b> View of Peb Northview R	ble Creek from	1				4
				A Part of the Part		
			6.01		43.0321	012 1375 N 88.2760 W

Photo No. 10 Date 07/07/2017

Direction Photo Taken:
North

Photo Description:
View upstream along
Pebble Creek from near
the south end of the
Property.



# **Appendices**

Tallgrass Project Wetland Delineation Appendix D – WETS Analysis August 4, 2017

# APPENDIX D - WETS ANALYSIS



requestes years, 12	87 - 2016										
	Temp	Temperature (°F)			Precipitation (inches)						
Month	Avg daily	Avg daily	Avg daily mean	Avg	30% chance will have		Avg number of days with 0.10 inch	Average total			
	max	min			less than	more than	or more	snowfall			
Jan	28.3	12.6	20.4	1.49	0.96	1.79	5	11.9			
Feb	32.2	16.1	24.1	1.47	0.83	1.77	4	9.6			
Mar	43.7	25.2	34.5	1.76	1.07	2.13	4	5.0			
Apr	56.4	36.3	46.3	3.64	2.66	4.29	7	1.2			
May	68.3	46.8	57.6	4.02	2.83	4.77	8	0.0			
Jun	78.3	56.7	67.5	5.03	3.05	6.09	8	0.0			
Jul ,	82.5	61.7	72.1	3.79	2.54	4.53	6	0.0			
Aug	80.6	60.3	70.4	4.38	2.61	5.31	7	0.0			
Sep	73.4	51.4	62.4	3.02	1.85	3.66	6	0.0			
Oct	60.6	39.9	50.3	2.41	1.49	2.91	6	0.1			
Nov	45.9	29.6	37.7	2.06	1.28	2.50	5	1.8			
Dec	33.0	18.1	25.6	1.89	1.15	2.28	5	9.6			
Annual:					32.45	37.38					
Average	56.9	37.9	47.4	-	-	-	-	-			

## **WETS Analysis Worksheet**

Project Name: Tallgrass Multi-family Project

Project Number: 193705505 Period of interest: April to June 2017

WAUKESHA (WI) USC00478937 Station:

County: Waukesha

Long-term rainfall records (from WETS table)

		Site det	ermination		
] [	Site	Condition	Condition**	Month	
	Rainfall (in)	Dry/Norma!*/Wet	Value	Weight	Product
	5.10	Normal	2	3	6
] [	4.95	Wet	3	2	6
	5.15	Wet	3	1	3
Sum≃	15.20			Sum*** =	15

		3 years in 10		3 years in 10
	Month	less than	Normal	greater than
1st month prior;	June	3.05	5.03	6.09
2nd month prior:	May	2.83	4.02	4.77
3rd month prior:	April	2.66	3.64	4.29
		Sum =	12.69	

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

Determination: Wet Dry Normal

\*\*Condition value:

Dry = Normal = 2 Wet = 3

6 to 9 10 to 14

then period has been drier than normal then period has been normal

then period has been wetter than normal 15 to 18

Precipitation data source:

NOAA Regional Climate Centers - ACIS (http://efotg.sc.egov.usda.gov/efotg\_locator.aspx)

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.

Daily Data Between Two Dates		,	tween Two Dates	Daily Data Between	Two Dates
WAUKESHA (WI)		WAUKESHA	1 /	WAUKESHA (WI)	
USC00478937		USC0047893		USC00478937	
Date	Precipitation	Date Pr	recipitation	Date	Precipitation
	(in)		(in)		(in)
4/1/2017	0.00	5/1/2017	1.11	6/1/2017	0.00
4/2/2017	0.00	5/2/2017	0.40	6/2/2017	0.00
4/3/2017	0.17	5/3/2017	0.03	6/3/2017	0.00
4/4/2017	0.76	5/4/2017	0.00	6/4/2017	0.09
4/5/2017	0.19	5/5/2017	0.00	6/5/2017	0.00
4/6/2017	0.36	5/6/2017	0.00	6/6/2017	0.00
4/7/2017	0.00	5/7/2017	0.00	6/7/2017	0.00
4/8/2017	0.00	5/8/2017	0.00	6/8/2017	0.00
4/9/2017	0.00	5/9/2017	0.00	6/9/2017	0.00
4/10/2017	0.00	5/10/2017	0.00	6/10/2017	0.00
4/11/2017	0.98	5/11/2017	0.00	6/11/2017	0.00
4/12/2017	0.00	5/12/2017	0.00	6/12/2017	0.00
4/13/2017	0.31	5/13/2017	0.00	6/13/2017	0.55
4/14/2017	0.05	5/14/2017	0.00	6/14/2017	0.03
4/15/2017	0.05	5/15/2017	0.00	6/15/2017	0.00
4/16/2017	0.23	5/16/2017	0.49	6/16/2017	0.02
4/17/2017	0.00	5/17/2017	0.00	6/17/2017	0.49
4/18/2017	0.00	5/18/2017	0.65	6/18/2017	0.08
4/19/2017	0.00	5/19/2017	0.00	6/19/2017	0.02
4/20/2017	0.29	5/20/2017	0.13	6/20/2017	0.25
4/21/2017	0.00	5/21/2017	0.40	6/21/2017	0.10
4/22/2017	0.00	5/22/2017	0.00	6/22/2017	0.02
4/23/2017	0.00	5/23/2017	0.02	6/23/2017	1.25
4/24/2017	0.00	5/24/2017	0.53	6/24/2017	0.00
4/25/2017	0.00	5/25/2017	0.02	6/25/2017	0.05
4/26/2017	0.00	5/26/2017	Т	6/26/2017	0.06
4/27/2017	1.15	5/27/2017	0.09	6/27/2017	0.00
4/28/2017	0.00	5/28/2017	0.13	6/28/2017	0.00
4/29/2017	0.05	5/29/2017	0.85	6/29/2017	2.00
4/30/2017	0.56	5/30/2017	0.08	6/30/2017	0.09
Total	5.15	5/31/2017	0.02	Sum:	5.10
M ≃ Missing		Sum:	4.95	M = Missing	
T ≃ Trace		M = Missing		T = Trace	
Midwestern Region	al Climate Center	T = Trace		Midwestern Region	al Climate Cente

cli-MATE: MRCC Application Tools Environment Generated at: 7/7/2017 7:21:07 AM CDT

Midwestern Regional Climate Center cli-MATE: MRCC Application Tools Environment Generated at: 7/7/2017 7:21:07 AM CDT

cli-MATE: MRCC Application Tools Environment Generated at: 7/7/2017 7:21:07 AM CDT

	Temp	Temperature (°F)			Precipitation (inches)						
dai	Avg daily	Avg daily	Avg daily mean	Avg	30% chance will have		Avg number of days with 0.10 inch	Average total			
	max	max min			less than	more than	or more	snowfall			
Jan	28.3	12.6	20.4	1.49	0.96	1.79	5	11.9			
Feb	32.2	16.1	24.1	1.47	0.83	1.77	4	9.6			
Mar	43.7	25.2	34.5	1.76	1.07	2.13	4	5.0			
Apr	56.4	36.3	46.3	3.64	2.66	4.29	7	1.2			
May	68.3	46.8	57.6	4.02	2.83	4.77	8	0.0			
Jun	78.3	56.7	67.5	5.03	3.05	6.09	8	0.0			
Jul	82.5	61.7	72.1	3.79	2.54	4.53	6	0.0			
Aug	80.6	60.3	70.4	4.38	2.61	5.31	7	0.0			
Sep	73.4	51.4	62.4	3.02	1.85	3.66	6	0.0			
Oct	60.6	39.9	50.3	2.41	1.49	2.91	6	0.1			
Nov	45.9	29.6	37.7	2.06	1.28	2.50	5	1.8			
Dec	33.0	18.1	25.6	1.89	1.15	2.28	5	9.6			
Annual:					32.45	37.38					
Average	56.9	37.9	47.4	=		-	_				

# **Appendices**

Tallgrass Project Wetland Delineation Appendix E – Delineator Qualifications August 4, 2017

# APPENDIX E - DELINEATOR QUALIFICATIONS



Senior Scientist - Botanist



Mr. Parker is a botanist and certified Professional Wetland Scientist, with 30 years of professional and project management experience assisting public and private clientele in Wisconsin, Illinois, Indiana, Michigan, North Dakota, Pennsylvania, Texas, Maryland, Virginia, and North Carolina. His work has supported thousands of transportation, commercial, utility, residential, industrial & institutional projects. Mr. Parker's natural resource specialties include wetland science, botany, endangered resources, restoration & mitigation, environmental regulations & permitting. Mr. Parker has a widespread understanding of the scientific, technical & regulatory aspects of natural resources projects. His interests also include floristic quality assessment (FQA) and wetness categorization of wetland plant species. In 2011 he completed a national study (all 50 states) where he interviewed regional scientists for the purpose of identifying mis-categorized plant species. This work was in response to a CFR public comment solicitation by the U.S. Army Corps of Engineers.

His experience includes the following: Botanical / Biological Surveys & Natural Resource Inventories; Rare Species Surveys, Conservation Plans & Monitoring; Habitat Restoration, Wildlife Surveys, SCAT surveys, Land Reclamation, Planning & Design; Wetland Determination, Delineation & Functional Assessment; Wetland Restoration, Mitigation, Banking & Monitoring; Environmental Assessments & Impact Statements (EA / EIS); Local / State / Federal Permit Applications & Environmental Documentation; Expert Witness Testimony; Wetland investigations and permitting; and Regulatory permit compliance.

#### **EDUCATION**

40-Hour HAZWOPER Training per 29 CFR 1920.120(e), Compliance Solutions Occupational Trainers, Inc., Madison, Wisconsin, 2014

BS, Watershed Management, Soils Minor, University of Wisconsin - Stevens Point, Stevens Point, WI, 1983

US Army Terrain Analysis Course, Distinguished Graduate, Defense Mapping School, Fort Belvoir, VA, 1984

Introductory NHI Training (T&E Species Database), Wisconsin Department of Natural Resources, Madison, WI, 2011

Wetland Delineation Regional Supplement Field Practicum, Wetland Training Institute, Portage, WI, 2011

Basic Hydric Soils Identification Continuing Education Course, UW-La Crosse, La Crosse, Wisconsin, 2011

Federal Wetland/Waters Regulatory Policy Course, Wetland Training Institute, Cottage Grove, WI, 2010 Regional Supplement Field Practicum, Wetland Training Institute, Portage, Wisconsin, 2011

Midwest Supplement Training, SEWRPC, Pewaukee, WI, 2009

Midwest Supplement Field Training, LCSMC, Lake County, IL, 2009

Sedges ID & Ecology, UWM Cedarburg Bog Field Station, Saukville, WI, 2006

Critical Methods in Wetland Delineation, Madison, WI, 2006

WDNR NHI Database Training, Wisconsin DNR, Fitchburg, WI, 2005

Advanced Wetland Delineation, UW-LaCrosse, Bayfield County, WI, 2001

Composite Family ID, UWM Cedarburg Bog Field Station, Saukville, WI, 2000

Mosses ID & Ecology, UWM Cedarburg Bog Field Station, Saukville, WI, 1998

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

Grasses ID & Ecology, UWM Cedarburg Bog Field Station, Saukville, WI, 1998

Vegetation Description, UWM Cedarburg Bog Field Station, Saukville, WI, 1998

GPS/GIS End User Course, Corvallis Microtech, Milwaukee, WI, 1997

Basic Wetland Delineation Training, WI Department of Administration, Waukesha, Wisconsin, 1997

Field Oriented Wetland Delineation Course (1987 Corps Manual), Wetlands Training Institute, St. Paul, MN, 1994

Creating Wetlands for Habitat Enhancement & Mitigation, UW-Extension, Madison, WI, 1993

Understanding Wetlands and 404 Permitting, ASCE, Chicago, IL, 1992

Wetland Ecosystems (including delineation & assessment), USEPA Graduate School, Washington DC, 1988

### REGISTRATIONS

Professional Wetland Scientist #838, Society of Wetland Scientists Certification Program

Certified Wetland Scientist #C-058, Lake County, Illinois, Lake County Stormwater Management Commission

Certified Wetland Scientist #W-057, Kane County, Illinois, Kane County Stormwater Management

#### **MEMBERSHIPS**

Past Science Committee Member, Invasive Plants Association of Wisconsin

Board Member, Keep Greater Milwaukee Beautiful, Inc.

Representative, Chicago Wilderness

Past Board Member, Wisconsin Wetlands Association

#### PROJECT EXPERIENCE

#### **Botanical Surveys**

Kalamazoo River and Talmadge Creek 2013 (Baseline) and 2014 Botanical Surveys, Calhoun and Kalamazoo Counties, Michigan

Lead botanist for comprehensive floristic sampling along 40 miles of creek and river floodplain identifying and measuring cover, height and density of herbaceous, shrub, tree and woody vines at pre-determined randomly selected points in both impact and control areas. Invasive plant species surveys were also completed by mapping their locations and determining their percent cover. Rare plant species were also identified and documented.

### Tank 80 Mitigation Site Monitoring Final Year Botanical Survey, Lake County, Indiana

Lead botanist for floristic sampling along transects across the site where 50 herbaceous quadrats and a meander survey were completed as part of the final year of monitoring. Invasive plant species were also identified.

#### **Endangered Species Act Assessments**

ATC T&E Survey, Straits to Pine River, Michigan Conducted rare plant species surveys, invasive plant species surveys, and natural resources inventories along existing transmission line rights-of-way in 2010.

ATC T&E Survey, Mukwonago to Whitewater, Waukesha/Walworth Counties, WI (Subconsultant Project Manager and Lead Scientist)

Surveyed a 22-mile corridor where transmission lines were being upgraded for state and federally-listed special concern, threatened and endangered plant species. Provided completed rare plant reporting forms, photographs and site sketches for the report.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

#### **Endangered Species/Species at Risk Assessments**

Prairie White-Fringed Orchid Surveys, Illinois and Wisconsin

Conducted surveys for this federally listed plant species along transmission line rights-of-way and proposed gas / oil pipe routes for various clients in 2013.

#### Botanical Survey, Greene County, Pennsylvania

Mr. Parker served as lead scientist in a botanical survey for a proposed natural gas gathering pipeline in Greene County, PA. In order to evaluate potential impacts on two state-listed rare plant species, the team conducted a late season survey for passionflower (Passiflora lutea, PA Endangered) and leaf-cup (Smallanthus uvedalius, Proposed PA Rare). In addition to habitat mapping we mapped community types and compiled representative lists of plant species within the project corridor. The team provided the location of one large population of leaf-cup. The resulting reporting and coordination with the Pennsylvania Department of Conservation and Natural Resources (PADCNR) recommended avoidance strategies. This facilitated the client's ability to proceed with the project while providing additional documentation of rare plant populations to PADCNR.

### Various Vegetation Inventories, Indiana, Michigan, Illinois, Ohio, Pennsylvania, Texas, Wisconsin

Mr. Parker was responsible for several vegetation inventories in 2011, 2012,2013, and 2014, projects included: West Central Gas Lateral Vegetation Surveys, Eau Claire, Clark, Jackson & Monroe Counties, WI; Griffith Terminal Mitigation Site Plant Inventory, City of Griffith, Lake County, IN; Confidential Client Plant Survey, Town of Bear Bluff, Jackson County, WI; McMahon Woods and Fen Vegetation Survey, Cook County, IL; Deer Grove East Plant Inventory, Cook County, IL; Barrington Hills Transmission Line Survey, Illinois; Southern Access Vegetation Inventory and Monitoring, Sawyer and Washburn Counties, WI; Emerald Park Avian Survey, Waukesha County, WI; Eagle-Ford Shale T&E Species and Plant Surveys, LaSalle and McMullen Counties, TX; 6B Pipeline Rare & Invasive Plant Species Surveys, Kalamazoo and Calhoun Counties, MI (Lead Botanist) and, Porter County, IN; Busse Woods Plant Inventory, Cook County, IL (Lead Scientist); Greene Gathering Rare Plant Survey and DCNR Wild Plant Management Permit Application, Greene County, PA; Marcellus Pipeline Rare & Invasive Plant Species Survey, Clinton, Centre & Mifflin Counties, PA; Gogebic Taconite Mine Site, Ashland and Iron Counties, WI, Rover Pipeline Wetland and Rare Species Surveys, Washtenaw, Livingston, Shiawassee and Genesee Counties, MI.

#### **Environmental Assessments**

### Various Pipeline Environmental Screening, Wisconsin

Mr. Parker conducted pre-construction wetland, rare species, and waterway mapping and permitting in support for electric distribution and gas pipeline upgrade projects for We Energies. Coordinated with customer service technicians, electrical engineers, erosion control specialists and other environmental staff. Projects included: Lincoln-Arthur Gas Main Replacement; Adams 475 HP Gas Phase 1, Waushara County; Adams 475 Phase 2, Waushara-Adams Counties; Wolf Paving Gas Extension, Waukesha County; Hi Crush Pipeline, Tomah, WI

# Southern Access Pipeline (crude oil) Project Stage 1 (321 miles), Douglas to Rock County, Wisconsin Conducted post-construction erosion control, wetland, rare species and waterway monitoring during the multi-year post-construction monitoring period. Coordinated with other team members on the organization, maintenance, and summaries of

#### Electric Distribution Environmental Screening

Conducted pre-construction wetland, rare species and waterway mapping and permitting in support for electric distribution and gas pipeline upgrade projects for We Energies. Coordinated with customer service technicians, electrical engineers, erosion control specialists and other environmental staff. Projects included STH 26, Jefferson/Rock Counties, WI (2011-2012); Brookfield Square X12863, Brookfield, WI (Jan 2012); Moorland Emerald Drive, Brookfield, WI (Jan 2012); Saylesville X20961 Retire, Dodge County, WI (2011); Saylesville X20962, Dodge County, WI (2011); US Biogas, Sheboygan County, WI (Dec 2011); Saylesville Electric Distribution, Hartford, WI (Mar 2011); Barton Electric Distribution, West Bend, WI (Mar 2011); Sullivan SS Electric Distribution, Waubeka, WI (Jan 2011)

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

Guardian II Laterals - Fox Valley, Hartford and West Band\*, Outagamie, Calumet, Brown, Washington, and Dodge Counties, WI (Project Manager and Lead Scientist.)

Budgeted, scheduled, coordinated, and participated in numerous activities and scopes of work for the planning and permitting (WI Ch. 30, Section 404/401 and WI NR 103) phases of three gas laterals in 2003, 2006 and 2007; Coordinated with landowners; Determined, delineated, and mapped with a GPS, wetlands, woodlands and waterways; Collected required data and documented all types of natural resources through photography and data forms; Searched for rare species; Assisted in the preparation of data tables summarizing and quantifying impacts to wetlands, woodlands, waterways and agricultural lands; Coordinated with client of minor modifications to the pipeline routes to better protect various natural resources; Assisted client in regulatory agency coordination; Assisted with, prepared, and reviewed all reports.

Ixonia and Port Washington Gas Laterals\*, Jefferson, Waukesha, Ozaukee and Washington Counties, WI (Third Party Wetland Monitor (Inspector)/Project Manager and Lead Scientist) Reported directly to WDNR for permit compliance (Ixonia Lateral) during the construction of approximately 50 miles of natural gas pipelines. Determined, delineated, assessed function, reviewed and staked wetland and waterway wetland boundaries including the use of a GPS; Participated in meetings with client and regulatory agency staff to determine both general and site specific plan modifications to minimize environmental impacts; Installed signage identifying wetland boundaries and worked with the client and regulatory agency staff in determining work space limits to balance project needs with protecting natural systems; Reviewed and approved vegetation clearing limits and equipment access locations based on wetland and other plant community quality and function; Provided specific recommendations to comply with permit conditions regarding horizontal directional drilling and temporary and permanent erosion control issues proximate to wetlands and waterways; Reviewed proposed work space areas for potential damage to high quality natural areas such as relic prairie or woodland, or extant populations of uncommon or listed rare plant species; Responded to urgent construction issues such as a clean-up for a frac-out during an HDD operation; Reviewed proposed methods and locations for agricultural best management practices such as full topsoil removal and triple lift soil segregation; Inspected

ATC Paris to St. Martins (KK3025) 138KV Line Rebuild\*, Kenosha, Racine and Milwaukee Counties, WI (Project Manager and Lead Scientist)

erosion control facilities for compliance with WDNR's technical standards; Reviewed invasive species control plans; Consulted on the most feasible and efficient BMP for erosion

control.

Budgeted, scheduled, coordinated and participated in numerous project scope activities for an 18-mile corridor such as wetland delineation, waterway identification and data collection, rare species surveys, equipment access road location identification and invasive species populations identification. During the investigation, a total of 59 wetland areas, 10 ditches, 6 ponds, and 3 streams were located within the corridor route. Used GPS equipment for mapping natural resources. Coordinated with landowners. Assisted in the preparation, and reviewed the report that documented the work during the year prior to the 2005 construction.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

### Expert Witness (factual and/or expert for depositions and/or court)

**Expert Testimony** 

WE Energies Elm Road Generating Station, Oak Creek, WI Laho Property, Kenosha County, WI Cecchini Property, Racine County, WI US Department of Justice, A&A Farms, Dane County, WI James Cape & Sons Sand & Gravel Pit, Washington County,

#### Soil Quality Assessment

Schneider Cheese Factory Soils Investigation, Waldo, WI (Project Scientist)

Evaluated soils on land adjacent to the cheese factory.
Sampled soil from nine test pits for sieve and hydrometer analysis for the identification of the most feasible location for a proposed ridge and furrow waste water treatment system.
Confirmed location of adjacent wetlands to avoid impacts.
Coordinated with the WDNR and wrote the technical memorandum associated with the laboratory analyses of the soils.

#### Wetlands

Various Wetland Delineations 2014, Various Locations, Wisconsin, Illinois, and Michigan

Performed various wetland delineations across Wisconsin in 2014 including the following projects: Emerald Park Western ExpansionWetland Delineation, City of Muskego, Waukesha County, WI (Oct.); Arcadia Mining Site-Trempealeau County, WI (April); ATC STEM Site, Muskego, WI (October); Avon-Garage Road Mining Site-Black River Falls, WI (August); Basting Site -Town of Lisbon, WI (Oct.); Capital City Bike Path, Dane County, WI (Oct.); Barland Site, City of Cudahy. WI (Sept.); River Glen Site -Town of Lisbon, WI (May, 2014); DeBack Parcel -Muskego, WI (Oct.); Deer Creek Run-Town of Sun Prairie, WI (Oct.); Windsor Crossing -Town of Windsor, Dane County, WI (Sept.); Pleasant View Site -Town of Middleton, Dane County, WI (April); Starfire Site -Franklin, WI (April); G2 Mitigation Site -Town of Omro, Winnebago County, WI (May); Geneva National Site, Walworth County, WI (Nov.); Goerke's Corners Self Storage Site-Town of Brookfield, Waukesha County, WI (April); Handel Site -Town of Holman, LaCrosse County, WI (April); KOA Site -DeForest, WI (Oct.); Kohler Ridge Site -New Berlin, WI (Oct.); Camp 8 Site -Village of Lannon, Waukesha County, WI (Sept.); Mallard Creek Subdivision-Oak Creek, WI (May); Muskego Corporate Park Site - Muskego, WI (Sept.); Nortrax Site -Merrill, WI (Oct.); Pewaukee Corporate Park-City of Pewaukee (Oct.); Gregar Parcel-City of Pewaukee, (Oct.); Toberman Parcel-Town of Prairie du Chien, Crawford County, WI (Oct.); UPS CACH Staging Expansion-Town of La Grange, Cook County, IL; West Prairie Village-Town of Sun Prairie, Dane County, WI; Wheeler Road-City of Madison,

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

Various Wetland Delineations 2013, Various Locations, Wisconsin, Illinois, Ohio, and Michigan

Performed various wetland delineations across Wisconsin in 2013 including the following projects: West Central Lateral -Eau Claire, Clark, Jackson & Monroe Counties, WI (April-May 2013); Murphy Farm Wetland & Primary Environmental Corridor, Pewaukee, WI (October 2013); Walker Cranberry 80-acre Parcel - Cranmoor, WI (Sept - Oct 2013); Citizens Bank Property - Oconomowoc,, WI (May 2013); Broken Hill Subdivision, Pewaukee, WI (May, 2013; Agri-Partners Coop Rail siding track, Calumet County, WI (June 2013); Basse Farm Wetland Delineation, City of Muskego, WI (June 2013); Fritz Parcel Wetland Delineation - New Berlin, WI (June 2013); Saltzman Parcel Wetland Investigation - New Berlin, WI (May 2013); Waukesha Gun Club Wetland Delineation-City of Pewaukee, WI (July 2013); Bark Lake Wetland Delineation - Town of Richfield, WI (Aug 2013); Fox River Christian Church Wetland Delineation - Town of Waukesha, WI (Aug 2013); Cedar Grove Warehouse Wetland Delineation - Oostburg, WI (Aug 2013); Waunakee Wetland Delineation -Dane County, WI (Sept 2013); Town of Fulton Wetland Delineation - Rock County, WI (Sept 2013); Berne to Natrium Pipeline, Monroe County, OH (Oct 2013); CNX Noble Pipeline - Noble County, OH (Oct 2013); 4950 Voges Rd Wetland Delineation - Madison, WI (Sept 2013); Pleasant View Subdivision Wetland Delineation - Middleton, WI (Oct 2013); Cherokee Country Club Wetland Delineation - Madison, WI (Oct 2013); Deer Grove Forest Preserve, (November 2013)

Various Wetland Delineations in 2010, Wisconsin

Performed various wetland delineations across Wisconsin in 2010 including the following projects: Substation Site, Cambridge, WI (November 2010); Lake Edge Rd Parcel, McFarland, WI (November 2010); DeBack Parcel, Muskego, WI (October 2010); I-94 at Fox River, Waukesha, WI (October 2010); USH 45, Racine County, WI (October, 2010); ECB Site I, Franklin, WI (October 2010); STH 11 Improvements, Burlington, WI (October, 2010); Glacier Hills Wind Farm, Friesland, WI (Sept-Oct 2010); ISB Site, New Berlin, WI (September 2010); Gilmore Parcel, New Berlin, WI (September 2010); Palmyra SW Park Site, Palmyra, WI (August 2010); Gateway Substation, Beloit, WI (August 2010); Casey Gas Main, Friesland, WI (August 2010); Oakhill Rd Electric Distribution, Deltona, WI (August 2010); Jefferson School District, Jefferson, WI (July 2010); Bothe Property Site, Kenosha, WI (July 2010); WDOT High Speed Rail, Dane, Jefferson and Waukesha Counties, WI (June-September 2010); USH 151 Sun Prairie, (June 2010); Lacy Road Interchange, Fitchburg, WI (May 2010); Sivyer Rd Parcel, St. Francis, WI (April 2010); Seljan Industries, Lake Mills, WI (April 2010); Retail Site, Whitewater, WI (April 2010); Summit Horse Farm Site, Summit, WI (March 2010); STH 11 Site, Walworth County, WI (March 2010); Scot Industries, East Troy, WI (March 2010)

# Various Wetland Delineations 2011, Various Locations, Wisconsin, Illinois, Indiana, and Pennsylvania

Performed various wetland delineation projects throughout Wisconsin in 2011 including the following projects: Plum Creek Site Soil & Water Table Investigation, Oneida County, WI (Dec 2011); 6B Pipeline Porter County, IN (Nov 2011); STH 67 Sharon, Walworth County, WI (Nov 2011); STH 67 Geneva, Walworth County, WI (Nov 2011); STH 175 Germantown/Richfield, WI (Nov 2011); USH 12 Interchanges, Walworth County, WI (Oct 2011); I-43 Interchanges, Ozaukee County, WI (Oct 2011); STH 145 Germantown, WI (Oct 2011); STH 164 Town of Vernon, WI (Oct 2011); STH 20 Village of Waterford, WI (Oct 2011); Serosun Farms Verification, Kane County, IL (Oct 2011); Marcellus-Dominion Pipeline Clinton, Centre and Mifflin Counties, PA (Sept 2011); Big Eau Pleine Site, Marathon County, WI (Aug 2011)

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

Atlas Resins Site, Taylor, WI (Aug 2011); Reynolds Avenue Site, Westport, WI (Aug 2011); Westbridge Site, Waunakee, WI (Aug 2011); ECB Site II, City of Franklin, WI (Aug 2011); Springdale Rd Parcel, New Berlin, WI (Aug 2011); Belleville Industrial Park, Dane County, WI (Aug 2011); Didion Ethanol Plant, Cambria, WI (July 2011); Towns Property, Mukwonago, WI (July 2011); Bagstad Property, Marquette County, WI (June 2011; Life Church Site, Germantown, WI (June 2011); Sauk Prairie Memorial Hospital, Prairie du Sac, WI (June 2011)

### Various Wetland Delineations 2012, Various Locations, Wisconsin, Illinois, Indiana, and Texas

Performed various wetland delineations across Wisconsin in 2012 including the following projects: West Central Lateral (190 miles), Eau Claire, Clark, Jackson & Monroe Counties, WI (Sept-Nov 2012); Schwaab Property Wetland & Primary Environmental Corridor, Nashotah, WI (Nov 2012); Trans-Load Rail Loop, Arcadia, WI (Oct 2012); Fiberdome Property Lake Mills, WI (Sept 2012); Morrison Cr Cranberry, Town of Knapp, WI (Aug 2012; London Mitigation Site, Jefferson County, WI (July 2012); Lathers Property Wetland & Primary Environmental Corridor, Waukesha County, WI (June 2012); Southern Access Pipeline, Sawyer and Washburn Counties, WI (June 2012); Reddick Station, Livingston County, IL (May 2012); Confidential Client Site, Jackson County, WI (April 2012); MATC West Parcel, Madison, WI (April 2012); Alpine Business Park, Oregon, WI (April 2012); I-80 Interchange, LaPorte County, IN (March 2012); Eagle-Ford Shale Wetland & Waterway Investigations, LaSalle and McMullen Counties, TX (Jan-Feb 2012)

#### Various Preliminary Wetland Identifications 2010-2012. Wisconsin

Performed various preliminary wetland identifications and delineations throughout Wisconsin which included these projects: I-43 Glendale to Grafton (34 miles) - Milwaukee and Ozaukee Counties, WI (May-Aug 2012); STH 60 Jackson to Grafton (9 miles) - Washington and Ozaukee Counties, WI (June-Nov 2012); UW All-Season Softball Site, Madison, WI (Dec 2011); Fiber-Optic Route (40 miles), Wausau, WI (Apr 2011); 27th Street Ponds, Franklin-Oak Creek, WI (July 2010); Burlington Bypass (15 miles), Burlington, WI (Aug 2010); STH 167, Germantown-Mequon, WI (Jul-Aug 2010); USH 45 (10 miles), Bristol, WI (November 2010) STH 20 Roundabout, Dover, WI (November 2010).

### USH 41 Wetlands Investigation\*, Township of Eldorado, WI (Project Manager and Lead Scientist)

Conducted an investigation to identify all wetlands and determine their boundaries along a 4.5-mile segment of highway. Located a rare tree species and delineated the location of the population. Prepared a report for use in a Section 404 Permit application and the environment document.

### STH 175 Wetlands Investigation\*, Theresa, WI (Project Manager and Lead Scientist)

Conducted wetland delineation and assessment services for a 1.5-mile segment of rural highway where vertical and horizontal re-alignments were proposed. Prepared a report which was used to document wetland impacts in a Section 404 Permit application with the U.S. Army Corps of Engineers and Wisconsin Department of Natural Resources.

### STH 67 Wetland Investigation\*, Fond du Lac County, WI (Project Manager and Lead Scientist)

Conducted wetland delineation and assessment for WDOT Southeast Region associated with a 4.2-mile segment of highway proposed to be reconstructed. Coordinated the survey of the wetland boundary flags and prepared the report.

### STH 23 Wetlands Investigation\*, Fond du Lac County, WI (Project Manager and Lead Scientist)

Conducted wetland delineation and assessment for WDOT Southeast Region. Identified, delineated, and assessed all wetlands within two highway corridors totaling 7.1 miles in length. Coordinated the survey of the wetland boundary flags and prepared the report.

### STH 149 Wetlands Investigation\*, Fond du Lac County, WI (Project Manager and Lead Scientist)

Provided initial consultation to the client and recommended a scope of services. Conducted the field work for the wetland delineation and assessment, wildlife habitat analysis, stream navigability check, and environmental assessment of open land. Coordinated all graphic preparation and drafted the report.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

### Rawson Avenue Wetlands Investigation\*, Franklin, WI (Project Professional and Lead Scientist)

Delineated and assessed four wetland plant communities in a 3.4-mile segment of a road which was proposed to be expanded from two to four lanes. Prepared a report.

Conducted a study to identify the most feasible location for a compensatory wetland mitigation site for impacts proposed to wetlands and satisfy the requirements of a Section 404 Permit from the U.S. Army Corps of Engineers and project concurrence from the Wisconsin Department of Natural

### West Puerner Street Wetland Investigation\*, Jefferson, WI (Project Professional and Lead Scientist)

Conducted wetlands services on a 25-acre corridor crossing the Rock River on the north side of the City of Jefferson. One wetland contiguous with the Rock River was delineated. A report was prepared and the wetland's values were assessed to determine impacts of a proposed bridge, approaches, and roadway. Coordinated with U.S. Army Corps of Engineers and the Wisconsin Department of Natural Resources to obtain their concurrence on the preferred alternative and all necessary permits. Studied the feasibility to conduct compensatory wetland mitigation, both on-site and near-site.

### Lake Forest Health and Fitness Institute Wetlands Study\*, Lake Forest, IL (Project Professional and Lead Scientist)

Identified and delineated all wetlands on 60 acres of property on and adjacent to a proposed development site. Wrote the initial investigation report and advised the client on wetlands regulations. Assessed the wetlands' functions and values. Prepared the preliminary and final mitigation plans, as well as the Mitigation Implementation Plan. Prepared the joint federal and state permit application. Coordinated with agency personnel, engineers, and the client in a successful effort to obtain a U.S. Army Corps of Engineers permit (with state certification).

### Wetland Investigation\*, Oak Creek, WI (Project Manager and Lead Scientist)

Conducted wetland delineation services on a 22-acre site proposed for development as a residential property. Identified one 2.5-acre wetland on the site. Prepared the report.

### Wetland Enhancement Pond\*, Burlington, WI (Project Professional and Lead Scientist)

Flagged wetland boundaries within the potential storm water management area and assessed the functional values of the wetland using the WDNR's Rapid Assessment Methodology for Evaluating Wetland Functional Values (RAM). The RAM was the basis for the final recommendations to create a 4-foot-deep two-stage pond with gradual side slopes that both enhances wildlife habitat and the quality of water entering the Fox River.

### 29-Acre Retail Building Site Wetlands Investigation\*, Franklin, WI (Project Manager and Lead Scientist)

Conducted wetland delineation for a commercial development. Coordinated with agencies to review the validity of previously identified wetlands that have become uplands. Obtained concurrence on delineated wetland boundaries from the regulatory agencies. Prepared a report documenting the investigation that included a review of regulatory constraints.

### 55-Acre Retail Building Site Wetlands Investigation\*, Menomonee Falls, WI (Project Manager and Lead Scientist)

Conducted wetland delineation on a site proposed to be used for a commercial development. Prepared a report documenting the investigation that included a review of regulatory constraints. Coordinated with jurisdictional agency personnel and obtained their concurrence on wetland boundary locations.

# Cedar Lake Road Utility Extensions Wetland Investigation\*, Roud Lake, IL (Project Professional and Lead Scientist)

Identified and delineated three jurisdictional wetland areas in the vicinity of proposed sewer and water utility extensions. Provided agency coordination for approvals of the project adjacent to an "Advance Identification" (ADID) wetland associated with Squaw Creek, and receipt of a nationwide permit No. 12 for proposed work in an isolated wetland adjacent to Nippersink and Cedar Lake Roads.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

### West Puetz Road Wetlands Investigation\*, Franklin, WI (Project Professional and Lead Scientist)

Assessed the functional values of five wetland plant communities and prepared a report for use in obtaining agency concurrence and permits. Conducted a feasibility study to determine the best location for compensatory mitigation for wetland impacts in the project area. Prepared a plan to complete a wetland creation/restoration project onsite and assisted in agency coordination to obtain a FONSI for a Type II environmental document and obtain a Section 404 Permit. Discovered the state champion black cherry (Prunus serotina) tree in the project corridor and documented with WDNR.

### Proposed Quarry Stream and Wetland Hydrology Study\*, Saukville, WI (Project Manager and Lead Wetland Scientist)

Conducted a two year study to collect baseline data from a navigable stream and adjacent wetlands on a 185-acre site. Data included measurements of stream discharges and shallow ground water levels in the wetlands, and a fisheries habitat analysis. The purpose of the study was to identify potential impacts of the proposed quarry on wetland functions and values with an emphasis in fisheries habitat enhancements.

### Proposed Quarry Wetland Hydrology Study\*, Lannon, WI (Project Professional and Lead Wetland Scientist)

Conducted two investigations of wetlands adjacent to the Fox River to determine water table depths, ground water flow directions, and sediment conductivity adjacent to proposed quarry locations. The projects involved monitoring well location, installation, monitoring, and agency/landowner coordination. The studies involved hydrogeologic modeling and wetland assessment to determine effects of an adjacent quarry on wetland hydrology.

### Oconomowoc Bypass Wetland Mitigation Design\*, Jefferson County, WI (Lead Scientist)

Prepared concepts, preliminary and final plans & specifications for the restoration and enhancement of forested wetlands and wetland buffer on a 117-Acre site located partly in the floodplain of the Rock River; Determined, delineated and assessed wetlands on the existing site and prepared a report; Coordinated with a contractor to cut and herbicide invasive species such as reed canary grass and common buckthorn prior to site construction.

### Glacier Ridge Wetland Mitigation Bank Design\*, Dodge County, WI (Project Manager and Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous tasks to design the first private wetland mitigation bank in Wisconsin under NR 350; Prepared concepts, preliminary plans and final plans and specifications for the restoration and enhancement of wetland and upland prairie/woodland buffer plant communities on four sites totaling 245 acres: Reviewed the delineation of all existing wetlands; Coordinated and met with the Mitigation Bank Review Team (MBRT) comprised of staff from the Wisconsin Department of Natural Resources, the US Fish & Wildlife Service, the US Army Corps of Engineers, the US Environmental Protection Agency, and the US Dept of Agriculture Natural Resource Conservation Service; Assisted in the preparation of a compensation site plan including a management and monitoring plan for 10 years post construction.

### North End Quarry Environmental Investigation\*, Lisbon, WI (Project Professional and Wetland Scientist)

Provided initial consultation to the client and recommended a scope of services. Conducted the field work for the wetland delineation and assessment, wildlife habitat analysis, stream navigability check, and environmental assessment of open land. Coordinated all graphic preparation and drafted the report.

### Franklin Quarry Wetland Investigation\*, Franklin, WI (Project Manager and Wetland Scientist)

Conducted wetland delineation, assessment, and mitigation services on a 40-acre quarry expansion site. Developed a site history to document land uses and assisted in the preparation of the report to be included in the Section 404 permit application with the U.S. Army Corps of Engineers. Provided jurisdictional agency coordination.

### Bartelt Parcel Wetlands Investigation\*, Lisbon, WI (Project Manager and Wetland Scientist)

Conducted wetlands delineation and assessment services on an 80-acre site proposed for sand and gravel extraction. Prepared a Chapter 30/NR 340 permit application for future quarrying adjacent to a pond and wetland and a Section 404 permit for an acceleration lane adjacent to wetlands. Coordinated with jurisdictional agencies.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

### Bristol Interceptor Environmental Assessment\*, Bristol, WI (Project Professional and Wetland Scientist)

Performed a flora and fauna study of a utility corridor 75 to 100 feet wide and two miles long. Identified, delineated and assessed 5 wetlands that coincided with the corridor. Wrote the environmental assessment and wetland investigation reports. Prepared permit application and coordinated with the jurisdictional agencies.

# Village of Jackson Utility Extensions, Wetland Investigation\*, Jackson, WI (Project Manager and Lead Scientist)

Identified, delineated, and classified wetland areas along 5.5 miles of proposed sewer and water utility extensions. Provided an endangered, threatened, and special concern species survey along the proposed corridor. Coordinated with agencies for wetland boundary concurrence. Providing Chapter 30 and Section 404 permitting assistance.

### Town of Mt. Pleasant, Pike River Improvements\*, Racine County, WI (Project Manager and Lead Wetland Scientist)

Identified, delineated, and assessed 37 wetlands in a 920-acre study area to identify potential wetland impacts from a stream channel improvement and realignment project.

Presented and assisted at facilitated meetings with agencies, engineers, and the client. Prepare conceptual wetland restoration plans.

### Big Rib River Crossing at CTH O Wetlands Investigation\*, Marathon, WI (Project Manager and Lead Wetland Scientist)

Identified, delineated, and assessed wetlands and other valuable habitats within a 70-acre study area. The results of the study may be used to evaluate environmental impacts of a highway project. Recommended a corridor for a new bridge and approaches and potential mitigation sites. Coordinated with jurisdictional agencies. Prepared all documentation and drafted the report.

### STH 31 Reconstruction Wetland Investigation\*, Caledonia and Mount Pleasant, WI (Project Professional and Lead Scientist)

A wetland investigation was conducted to identify the location and extent of jurisdictional wetlands within a 110-acre study area. Ten wetland plant communities were identified, flagged in the field, and surveyed. A total of 0.956 acres of wetlands were determined to be within the fill limits of the proposed highway reconstruction. Wetland functional values were assessed for the wetlands that were to be incorporated, and a mitigation siting study was conducted. The results of the investigations were presented in reports to WDOT Southeast Region as a component of the project's environmental documentation. Prepared the Section 404 permit application and coordinated with jurisdictional agency personnel.

### STH 33 Reconstruction Wetland Investigation\*, West Bend, WI (Project Professional and Lead Scientist)

A wetland investigation was conducted to identify the location and extent of jurisdictional wetland within an 8.5-acre study area, assess functional values, and describe effects of a highway reconstruction project on wetlands. Two wetland plant communities were identified, flagged in the field, surveyed, and described. It was determined that a 0.84-acre of wetland would be impacted by the reconstruction. Jurisdictional agencies were contacted and a scope of work to identify a potential mitigation site was generated. The work was documented in a report and submitted to WDOT Southeast Region. Completed a wetland mitigation site search and recommended a site for selection and prepared a plan for wetlands restoration.

### USH 151 Reconstruction and Bypass Wetlands Investigation\*, Fond du Lac County, WI (Project Professional and Lead Scientist)

Conducted wetland delineation and assessment services for Wisconsin Department of Transportation Southeast Region associated with a highway reconstruction project. Identified, delineated, and assessed 103 wetlands within selected highway corridors totaling approximately 33 miles in length. Information from the investigations were used by the client to determine impacts to wetlands and to secure permits and approvals from jurisdictional agencies.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

### Mukwonago Bypass Wetlands Assessment\*, Waukesha County, WI (Project Manager and Lead Scientist)

Conducted an assessment of wetland functional values for three wetlands in a 400-acre study area traversed by the Mukwonago River. The wetland assessment was used to evaluate impacts of a proposed bypass for STH 83 around the east side of Mukwonago. Fourteen endangered, threatened, or special concern plant and animal species were known from the Mukwonago River corridor, and were considered in the assessments where high to exceptional significance ratings prevailed.

### CTH Q Wetlands Investigation\*, Shawano County, WI (Project Professional and Lead Scientist)

Delineated and assessed eleven wetlands along a 3.5-mile segment of rural highway and a 0.7-mile realignment corridor. Prepared a report and coordinated with agency personnel. Prepared and submitted a Section 404 Permit application and secured all necessary wetlands related permits and approvals from regulatory agencies. Prepared the compensatory wetland mitigation plan.

# USH 10 Wetland and Waterway Mapping (I-39 to Marshfield)\*, Portage and Wood Counties, WI (Project Manager, Principal-in-Charge, Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous tasks to map wetlands and waterways along two contiguous freeway corridor segments totaling approximately 35 miles in length during the growing seasons of 2005 and 2007; Supervised and participated in the final determination, delineation, classification and GPS survey of 174 wetlands; Reviewed and helped write the report.

### Deer Grove Forest Preserve Wetland Delineation and Restoration\*, Cook County, IL (Project Manager and Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous tasks to map and classify wetlands and waterways on a 628-acre site located on lands owned by the Forest Preserve District of Cook County. Supervised and participated in final wetland determinations and delineations of 40 wetlands comprising 188 acres; Used GPS to locate wetland boundaries and coordinated with the client, forest preserve district staff and US Army Corps of Engineers regulatory staff in the concurrence of the wetland delineation work; Assisted in the preparation and reviewed the report; Assisted in the preparation of a wetland and upland prairie/woodland restoration concept for the purpose of helping to meet the mitigation requirements of the O'Hare International Airport expansion.

### Germantown Sand & Gravel Pit Wetland Restoration\*, Washington County, WI (Project Manager and Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous tasks for analyzing alternatives to discharging water from a non-metallic mining operation, and analyzing the effects of ceasing water discharges through an existing waterway into downstream wetlands on an adjacent property; Completed wetland functional assessment and water budget analysis to determine the effects of the discharge on the sustainability and quality of the wetlands; Prepared applications and plans to obtain Wisconsin Pollution Discharge Elimination System (WPDES) and Chapter 30 permits to discharge into a state navigable waterway; Provided expert testimony for same; Assisted in the design of a sedimentation pond to remove 80% of the suspended solids at a discharge flow of over 1,000,000 gallons per day from the 130-Acre sand & gravel pit; Coordinated with the adjacent landowner, client, agency staff to prepare and implement a plant to remove sediment deposited on an adjacent property.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

I-94 Corridor Wetland and Primary Environmental Corridor Mapping and Endangered Species Study\*, Milwaukee, Rachine, and Kenosha Counties, WI (Project Manager and Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous tasks to map wetlands, primary environmental corridor and waterways, and search for rare species in a freeway corridor approximately 34 miles long. Supervised and participated in the preliminary determination, delineation, GPS mapping, and classification of 171 wetlands and 19 separate plant communities within primary environmental corridor; Supervised and participated in the final determination, delineation, classification and surveying of 85 wetlands within seven interchange areas that were designated for significant improvements; Reviewed and helped write the report; Supervised and conducted a rare species survey during the 2006 growing season to search for plant species that were listed as special concern, threatened or endangered by the State of Wisconsin; Prepared the report; Mapped locations of rare species using a GPS, and coordinated with the client and regulatory agency staff; Prepared a plan to mitigate roadway improvement impacts to seaside crowfoot (Ranunculus cymbalaria) through transplantation to an on-site location and obtained concurrence from the WDNR.

### Elm Road Generating Station\*, Oak Creek & Caledonia, WI (Project Manager & Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous environmental projects involving the planning and construction of a power plant. Beginning in 2002 determined, delineated and classified over 70 different wetlands on properties totaling approximately 1,000 acres including over three miles of railroad. Located wetland boundaries, sample points and other natural features through the use of GPS equipment with real-time one-meter accuracy; Assessed the functions of 127 wetlands for Chapter 30, Section 404/401 and NR 103 permitting purposes; Searched for suitable sites (both on-site and near-site) for compensatory wetland mitigation to off-set over 20 acres of wetland impacts; Studied potential sites for feasibility of wetland restoration, enhancement and creation; Prepared conceptual and final compensation site plans and designed four selected sites that included restoration and/or enhancements to wet meadow, shallow marsh, hardwood swamp, mesic woodland, savanna, tallgrass prairie and streams; Submitted the mitigation plans to the client and agencies and obtained all necessary permits and approvals; Prepared bid documents and specifications for the construction of the mitigation sites; Provided direct consultation with the site contractor during construction of the mitigation sites which concluded in 2007.

### McMahon Woods and Fen Plant Community Mapping\*, Cook County, IL (Principal-in-Charge and Lead Scientist)

Budgeted, scheduled, coordinated and participated in numerous tasks to map and classify plant communities on a 470-acre site where rare habitat for a federally-listed Hines emerald dragonfly and uncommon flora exist. Supervised and participated in the identification of 75 plant communities in accordance with the Chicago Wilderness Terrestrial Community Classification System outlined in their Biodiversity Recovery Plan; Used GPS to locate plant community boundaries and coordinated with the client, forest preserve district staff and US Army Corps of Engineers regulatory staff; Assisted in the preparation and reviewed the report; Assisted in the preparation of a wetland restoration concept for the purpose of helping to meet the mitigation requirements of the O'Hare International Airport expansion.

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

# Tri-State Tollway, Deerfield Plaza Wetland and Endangered Species Investigation\*, Lake and Cook Counties, IL (Lead Scientist)

Conducted wetland delineation and assessment services for segments of the Tollway, totaling 5 miles. Wetland impacts were determined for reconstruction of the toll plaza and widening of the highway facilities adjacent to the plaza. Conducted an investigation to determine the extent of occurrence of Seaside Crowfoot, an endangered plant species in Illinois. Prepared plans to mitigate impacts of the highway and toll plaza reconstruction on both wetlands and the endangered species. Coordinated with agency personnel, prepared construction documents and specifications and wrote reports. Prepared Section 404 permit applications and obtained the permits with 401 Certification from the Illinois Department of Natural Resources. Conducted an investigation of trees and shrubs that would be impacted by the expansion of the toll plaza.

### Guardian II Laterals\*, Fox Valley, Hartford and West Bend, WI

Project Manager and Lead Scientist. Budgeted, scheduled, coordinated and participated in numerous activities and scopes of work for the planning and permitting (Chapter 30, Section 404/401 and NR 103) phases of three gas laterals in 2003, 2006 and 2007; Coordinated with landowners; Determined, delineated and mapped with a GPS, wetlands, woodlands and waterways; Collected required data and documented all types of natural resources through photography and data forms; Searched for rare species; Assisted in the preparation of data tables summarizing and quantifying impacts to wetlands, woodlands, waterways and agricultural lands; Coordinated with client on minor modifications to the pipeline routes to better protect various natural resources; Assisted client in regulatory agency coordination; Assisted prepare, and reviewed all reports.

#### Wildlife Surveys and Studies

March, and April, 2015).

Confidential Client, Williston, North Dakota
Conducted Shoreline Contamination Assessment Technique
(SCAT) surveys and assessed wildlife presence along a creek
corridor in Williams County, ND. Assessed habitat and
assisted in the selection of wildlife trap locations. Recorded
and reported on all wildlife sightings on a daily basis for a
total of 31 days in two rotations. Served as the lead wildlife
biologist while deploying amphibian and turtle traps to
monitor populations during the initial early spring
monitoring event; supervised chorus surveys. (February,

<sup>\*</sup> denotes projects completed with other firms

Senior Scientist - Botanist

#### **PUBLICATIONS**

Potentially Mis-Categorized Wetland Plant Species NC-NE & Midwest Land Resource Regions of the U.S.. Wisconsin Wetlands Association Annual Conference, 2012.

Presentation: Importance of Strategic Planning for Long Range Success in Natural Area Restoration and Management (Parker, Parish, Feggestad, Sellar, Wilhelm). LTA Midwest Land Conservation Conference, 2009.

Saving the Hines Emerald Dragonfly (Parker, Parish). LTA Midwest Land Conservation Conference, 2009.

Presentation: Arriving at a Workable Definition of Coastal Wetlands (Parker, Parish, Schumacher). WWA, 2006.

Presentation: General Wetland Functions. American Public Works Association, 2000.

Presentation. Wetland Permitting Primer. WDNR Permitting Workshop, 1996.

Senior Environmental Scientist



Ms. McCoy assists clients with early identification of environmental issues; development of alternatives to minimize environmental impact; coordination with regulatory agency personnel; preparation and submittal of permit applications; and development of environmental mitigation measures. Ms. McCoy has been a consultant for the past 20 years and worked for the US Army Corps of Engineers, US. Navy, US Forest Service and Wisconsin Department of Natural Resources for the five years prior to that.

Her experience includes: wetland investigations and permitting; wetland compensatory mitigation planning; biological surveys, including threatened and endangered species surveys; Endangered Species Act consultation and biological assessments; ecological risk assessment; baseline ecological assessments; and National Environmental Policy Act documentation (EA and EIS).

Ms. McCoy has assisted clients with compliance and permitting under the Clean Water Act; Rivers and Harbors Act; Endangered Species Act; National and Wisconsin Environmental Policy Acts; state environmental regulations for wetlands, water quality, and navigable waterways; and local regulations for zoning, shorelands, and wetlands.

### **EDUCATION**

BS, Elementary Education, Vanderbilt University, Nashville, Tennessee, 1985

BS, Biological Aspects of Conservation, University of Wisconsin, Milwaukee, Wisconsin, 1989

MS, Water Resources Management, University of Wisconsin, Madison, Wisconsin, 1991

Advanced Delineation Training, Wisconsin Department of Natural Resources, Madison, WI, 2008

Creating Wetlands for Habitat Enhancement and Mitigation, University of Wisconsin-Madison, Madison, WI, 2006

Wetland Delineation Training, PRC Environmental Management, Atlanta, GA, 1994

Habitat Evaluation Procedure (HEP), U.S. Fish and Wildlife Service, Phoenix, AZ, 1993

Wetland Delineation Course, U.S. Army Corps of Engineers, Baltimore, MD, 1993

Regulatory II, U.S. Army Corps of Engineers, Baltimore, MD, 1993

Regulatory I, U.S. Corps of Engineers, Summit, NJ, 1992

Soils Training, Soil Conservation Service, Utica, NY, 1992

Erosion and Sediment Control Workshop, Soil Conservation Service, Westchester County, NY, 1991

### **MEMBERSHIPS**

Point of Contact, Society of American Military Engineers, Chicago Post

Point of Contact, Society of American Military Engineers, Lake Michigan Post

Member, Wisconsin Wetlands Association

Member, Society of Wetland Scientists

#### PROJECT EXPERIENCE

**Assessment, Permitting and Compliance**Utility Scale Wind Development Projects, Various Locations

Provided environmental coordination for the projects including wetland and waterway delineation, state and federal permitting, wetland mitigation planning, and threatened and endangered species coordination.

<sup>\*</sup> denotes projects completed with other firms

Senior Environmental Scientist

### American Transmission Company, Paris to Burlington Line 8962 Rerate, Kenosha and Racine Counties, Wisconsin

Provided environmental coordination for the project, a partial rebuild of existing transmission line. Determined wetland impacts, coordinated endangered species review and subsequent surveys and monitoring, and subcontracted archaeological screening and field survey. Prepared and procured erosion control permit and evaluated compliance with State and Federal Wetland permits. Provided environmental monitoring during construction and inspection subsequent to restoration.

### American Transmission Company, Pleasant Prairie to Zion Energy Center, Kenosha and Lake County, Wisconsin and Illinois

Provided environmental support for a new 8 mile transmission line from WI to IL, requiring environmental permitting in both states. Prepared and submitted permit applications to USACE Chicago and St. Paul Districts for wetland impacts, as well as Lake County Stormwater Management Commission Erosion Control Permit. Provided environmental training for construction crews and conducted weekly environmental monitoring during the course of the project construction.

### We Energies, Various Transmission Line Replacements and Upgrades, Multiple Sites, Wisconsin

Assisted in managing the Master Services Contract with We Energies to provide environmental review for a variety of projects to include wetland assessments, threatened and endangered species coordination, and permitting.

### American Transmission Company, Pole Replacement Projects, Multiple Sites, Wisconsin

Managed environmental aspects of numerous pole replacement projects to include wetland assessments, threatened and endangered species coordination, permitting, and construction monitoring.

### American Transmission Company, Shorewood Underground Transmission Line, Shorewood, Wisconsin

Provided environmental coordination for the project, including wetland delineation, threatened and endangered species assessment, federal, state, and local permitting, environmental training, and construction monitoring.

#### Moffatt Field Naval Air Station\*, California

Provided wetland delineation, permitting and endangered resources review assistance associated with landfill construction.

### Milwaukee Metropolitan Sewerage District Ryan Road Pump Station\*, Milwaukee, Wisconsin

Coordinated the environmental aspects of the Ryan Road Pump Station construction project including wetland delineation and permitting.

### Wisconsin Department of Transportation, State Highway 36 Expansion Study\*, Waukesha, Wisconsin Managed the State Highway 36 expansion study, completing wetland delineations, functional values assessments, Section 404 Clean Water Act permitting, and wetland mitigation design from Burlington to Franklin, WI.

### Jefferson Proving Ground\*, Madison, Indiana National Environmental Policy Act (NEPA) documentation to provide a categorical exclusion for a technology demonstration planned at the base, wetland delineation, threatened and endangered species survey, and permitting.

#### **Ecological Risk Assessment**

Georgia Pacific\*, Beckley, West Virginia Conducted sediment and water sampling along landfill drainages; completed an ecological risk assessment to determine need for cleanup action.

### Ecological Risk Assessment along the Kalamazoo River\*, Allegan, Michigan

Wrote work plan for remedial investigation and feasibility study including sampling activities to support an ecological risk assessment.

### Delatte Metals\*, Ponchatoula, Louisiana

Conducted vegetation, fish, mammal, and invertebrate sampling; and threatened and endangered species surveys as part of the U.S. EPA ecological risk assessment.

<sup>\*</sup> denotes projects completed with other firms

Senior Environmental Scientist

#### **Ecosystem Restoration**

Ulao Ponds Mitigation Project, Grafton, Wisconsin Managed mitigation project to restore wetland impacted by mining activities, in association with the development of a golf course and housing development. Conducted wetland delineations, permitting, mitigation plan and implementation, and monitoring and maintenance for seven years.

### Heritage Crossing Mitigation Project, Saukville, Wisconsin

Managed mitigation project to compensate for wetland impacts associated with a commercial development. Services included wetland delineation, permitting coordination, mitigation plan and implementation, and monitoring and maintenance for 10 years.

### Grasslyn Nature Preserve Stewardship Committee, Meguon, Wisconsin

Conducted planning and restoration of native prairie, trail maintenance, and coordinating volunteers for work days.

#### **Water Quality Assessment**

U.S. EPA Emergency Response Action\*, Gadsden, Alabama

Conducted fish, invertebrate, sediment, and water sampling along a river and lake downstream from a steel mill.

#### Wetlands

Wetland Project Management, U.S. Army Corps of Engineers, New York District\*, Multiple Sites, New York and New Jersey

Completed wetland jurisdictional determinations, wetland delineations, environmental assessments, and permit applications for sites in New York and New Jersey.

Dodgeland K-12 Development, Juneau, Wisconsin Completed wetland delineation, state and federal permitting, stormwater planning, and natural resource restoration for the school's "outdoor laboratory."

Great Lakes Naval Training Center Golf Course\*, Waukegan, Illinois

Provided wetland delineation and permitting assistance.

### Completion of wetland and water resource services

Provided wetland delineations, permitting, mitigation design and monitoring for numerous private residential and commercial clients throughout Wisconsin, Illinois, Indiana, and Louisiana.

### Wetland Delineation Environmental Training Center\*

Instructor in wetland delineation training course in Wisconsin, Louisiana, and Georgia. The course combined classroom and field training exercises.

#### Wildlife Biology

Wisconsin Department of Natural Resources\*, Milwaukee, Wisconsin

Conducted fisheries surveys along Lake Michigan and assessed relative abundance, movement, year-class-strength, spawning success, age, growth, harvest, and mortality. Electro-fished trout and salmon on tributary streams and collected salmonids brood stock and eggs for fish hatchery.

### Baseline Ecological Assessment\*, South Bend, Indiana

Identified onsite habitats and sensitive areas, wildlife and aquatic populations. Constructed a conceptual site model identifying the effects of site contamination on habitats and ecological receptors.

#### Bethlehem Steel\*, Porter, Indiana

Conducted ecological sampling and habitat assessment through vegetation identification and wildlife observations.

<sup>\*</sup> denotes projects completed with other firms

Senior Environmental Scientist

### **PUBLICATIONS**

Wetlands in the Yahara-Monona Watershed: Functional Classification and Management Alternatives. *Masters Degree*, 1990.