# WETLAND REPORT FOR THE EAST GROWTH AREA WATER AND SANITARY EXTENSION PROJECT, NORTH LIBERTY, JOHNSON COUNTY, IOWA

GES Project 13-461

August 28, 2014





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## WETLAND INVESTIGATION FOR THE EAST GROWTH AREA WATER AND SANITARY EXTENSION PROJECT, NORTH LIBERTY, JOHNSON COUNTY, IOWA

# GES PROJECT NO. 13-461

AUGUST 28, 2014

# **EXECUTIVE SUMMARY**

Griggs Environmental Strategies, Inc. (GES) undertook an investigation of the boundaries of jurisdictional wetlands and other waters within the project study area pursuant to Section 404 of the *Clean Water Act*. Approximately 6.4 acres of potential jurisdictional wetlands were delineated within or proximal to the project study corridor. Additionally, approximately 6,150 feet of stream corridor within and outside the study corridor was documented. Specific recommendations to avoid and minimize impacts to potentially jurisdictional waters of the U.S. are offered to facilitate project planning and management.

## **1.0 INTRODUCTION**

GES has completed a wetland investigation for the above-referenced project. The principal objective of this investigation was to provide an evaluation of potential jurisdictional waters subject to protection of the *Clean Water Act*, Section 404 (33 U.S.C.§1344). These investigations and this subsequent report were completed by Kevin M. Griggs, Environmental Consultant, and Bill Martin, Environmental Planner.

## **1.1 Purpose of the Project**

The purpose of the East Growth Area Water and Sanitary Extensions Project in North Liberty is to extend water main and sanitary sewer to service future development areas in the eastern part of town.

The sanitary sewer portion of the project will extend 7,200 feet of large diameter (30 inch) trunk sewer, 2,800 feet of smaller diameter (8 to 18 inch) trunk sewer and dual 8-inch forcemains from the existing wastewater treatment plant (1390 South Front Street), along Muddy Creek and its northerly tributary, to North Liberty Road and north along North Liberty Road. A proposed pumping station will be placed at the northern end of this project approximately 0.5 miles north of the intersection of Dubuque Street and North Liberty Road. It will be placed on the east side of the roadway. Once fully built out, the sewer will service 1,425 acres, including three subbasins (two of which are serviced by pumping stations); future residential land; future industrial/commercial land; and the new North Liberty High School at the northeast corner of Dubuque Street and North Liberty High School at the northeast corner of Dubuque Street and North Liberty High School at the northeast corner of Dubuque Street and North Liberty High School at the northeast corner of Dubuque Street and North Liberty High School at the northeast corner of Dubuque Street and North Liberty Road, which is currently under construction.

The water main portion of the project extends 12-inch water main from the edge of residential development on Dubuque Street, southeasterly along Dubuque Street to the future high school site. A 12-inch water main also extends from the intersection of Dubuque Street and North Liberty Road to the proposed pumping station (see above) and also along the existing roadway easement referred to as "Naples Avenue" (west of Grace Community Church) and westerly along the future Forevergreen Road right-of-way to the existing wastewater treatment plant where there is a water main connection. This water main portion of the project also includes an emergency connection to Coralville's potable water supply south of the future high school site.

All water mains and sanitary sewers will be placed within city right-of-way or within permanent easement, with temporary construction easements being utilized as needed to construct the project.

The City of North Liberty is proposing the work and has hired FOX Engineering Associates, Inc. (FOX Engineering) to serve as the consulting and design engineer for the project. FOX Engineering will incorporate the results of this study and recommendations into the final project design. Funding for the project is through local funds.

Discharges of dredged or fill material, excavation and mechanized land clearing in waters of the U.S. requires authorization from the U.S. Army Corps of Engineers (Corps) under Section 404 of the *Clean Water Act*. The actual limits of jurisdictional waters for permitting purposes must be verified by the staff of the Corps' Rock Island District Regulatory Branch. The wetland delineations presented in this report may be used for planning and informational purposes. Final authorization for activities in waters of the U.S. must be authorized by the Corps' District Engineer.

Wetland delineations have been conducted in accordance with the Corps of Engineers' *Wetlands Delineation Manual* (Environmental Laboratory, 1987; referred to as '87 Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (U.S. Army Corps of Engineers, 2010; referred to as the Regional Supplement) for non-agricultural wetlands and for agricultural wetlands, the *National Food Security Act Manual*, 5th Addition (United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS), 2010; referred to as NFSAM). All non-agricultural areas were walked and photographed (Appendix A). Delineation data points were recorded in areas containing wetland indicators – specifically hydrology and vegetation.

# **1.2 Project Description**

The proposed utility improvements are located southwest, north and along North Liberty Road NE on the eastern edge of North Liberty, Iowa (Figure 1). The project is located in portions Sections 17, 18, 19, and 20, Township 80N, Range 8W (Penn Township), and it is depicted on the Ely (1994) and Iowa City West (1994) 7.5' series topographic maps (Figure 2). The Universal Transverse Mercator (UTM) coordinate for the center of the project study area is X = 618446, Y = 4621652 (UTM Zone 15, NAD83).

The project will include temporary ground disturbance by excavation; directional drilling; pipe and man-hole access construction; pump and/or lift station construction; final grading; stream bank protection; final seeding; and erosion control. No off-site borrows or disposal areas were identified for investigation. Construction of the project is expected to begin following the planning, design, approval, and funding of the project.

# 2.0 JURISDICTIONAL WATERS

## 2.1 Landscape Setting

The project area is located in Illinois and Iowa Deep Loess and Drift – Major Land Resource Area in eastern Iowa and within the Iowa River HUC 8 Watershed. It is located at the urban/agricultural interface on the eastern edge of North Liberty (see photographs in Appendix A). Land-use patterns are changing rapidly from commodity crop and livestock production to isolated and dense residential development. Currently, land uses include crop and forage production, livestock pasturage, wooded shelter belts along streams, private residences, private conservation areas, and a water treatment facility.

The project area is located on a broad, rolling, northwest/south-east oriented interfluve summit between Muddy Creek and the Iowa River (Coralville Reservoir). The topography is rolling to slightly rugged (Figure 3). The edge of the interfluve below the project area is incised with deeply ephemeral and intermittent streams creating steep to slightly rugged topography. These streams – as well as Muddy Creek – drain immediately into the Iowa River (Coralville Reservoir). The General Land Office survey suggests the area was comprised of a mosaic of bottomland forest, savanna, mesic prairie, and emergent wetland communities at the time of initial European settlement of the area in the late 1830s and early 1840s. Today, the project area is a mosaic of crop production fields, pasture, wooded stream corridors, upland forests, and private residences with well-maintained lawns. Elevations average approximately 780 feet above mean sea level.

# 2.2 Pre-field Work

Prior to a field investigation, existing data sources were reviewed to assess the project area and identify potential wetlands. The data reviewed included:

- Preliminary project location information from FOX Engineering
- United States Geological Survey 1:24,000 Scale Topographic Maps (Figure 2)
- Soil Survey of Johnson County, Iowa (Figure 3)
- U.S. Fish & Wildlife Service National Wetlands Inventory (NWI) (Figure 3)
- Hydric Soils of Iowa List
- Hydric Soils of the United States List
- Climatological Data from USDA NRCS (Appendix B)
- Precipitation Data from WeatherUnderground.com (Appendix B)

Soils mapped within the project area are deep, poorly to moderately drained upland glacial till soils in upland positions and entisols along Muddy Creek and ephemeral drainages. Of the 20 soils or soil complexes mapped within the project area, Nodaway silt loam, Arenzville silt loam, Colo-Ely complex, Spillville loam, Maxfield silty clay loam, Franklin silt loam, and Klinger silty clay loam are defined as fully hydric soils for Johnson County (Figure 3).

A forested wetland and a palustrine emergent wetland are mapped along the north side of Muddy Creek at the project's southern end (Figure 3).

All potential wetland and other jurisdictional waters areas within the property boundaries were identified for field survey using this information.

# 2.3 Field Conditions

Field survey of the project area was completed on June 11 and 12, 2014, by Kevin Griggs and Bill Martin. In the 30-day period from May 11 to June 10, 2014, the North Liberty area received 4.23 inches of precipitation, which is typical compared to the 30-year average of 3.90 inches for May and 4.54 inches for June. The primary source of local hydrology appears to be direct precipitation, overbank flooding along Muddy Creek and other smaller streams, and surface run-off. Recent and historical precipitation data are located in Appendix B.

# 2.4 Wetland Delineations

Non-agricultural ground within the project area was investigated using the Routine On-Site Determination Method defined in the '87 Manual and 2010 Midwest Regional Supplement. Sample site locations are shown on Figures 4 through 6. Fifteen delineation data sheets were completed for this study and are included in Appendix C.

# 2.5 Wetland Determination

The agricultural land (which comprises approximately 60 to 70 percent of the project study corridor and includes ground used for row crops, pasture, and forage) was investigated for potential wetland impacts using NFSAM methodology, including the 2010 Iowa Wetland Mapping Conventions. None of the production agricultural ground was defined as wetlands under regulations guiding compliance with the *Food Security Act*.

A wetland determination form is included in Appendix C in the back of the report.

# 2.6 Investigation Findings and Results

Two forested wetlands (Wetlands NL\_1 and NL\_2) along and north of Muddy Creek and a palustrine emergent wetland above an unnamed, perennial tributary of Muddy Creek (Wetland NL\_3) were delineated as a result of this study. All three appear to be jurisdictional waters of the U.S. given their connectivity with the Iowa River (Coralville Reservoir).

Wetland NL\_1 corresponds to one of the wetlands along Muddy Creek on the southern end of the project area. In general, the wetland is comprised of a uneven-aged stand of mature trees (silver maple, cottonwood) in the canopy, overstory, and understory layers; invasive brush in the shrub layer; and a robust ground layer of various grasses, sedges, and forbs. Hydrology is indicated by numerous drift deposits and standing water in meander scars incised into the stream terrace tread. Associated soils are mapped as Spillville loam (hydric). The northern edge is defined by a noticeable terrace scarp lacking hydrological indicators. Given its adjacency and

immediate connectivity to Mud Creek, this wetland is likely jurisdictional. It is provisionally defined as being 2.66 acres in size, though it is likely larger. The proposed sewer line is located above the wetland along the terrace scarp, but a short length of the potable water line may cross through this area as currently conceived.

Like Wetland NL\_1, Wetland NL\_2 corresponds to one of the wetlands along Muddy Creek on the southern end of the project area. This wetland is also comprised of a uneven-aged stand of mature trees (silver maple, cottonwood) in the canopy, overstory, and understory layers; invasive brush in the shrub layer; and a robust ground layer of various grasses, sedges, and forbs. Hydrology is indicated by numerous drift deposits and standing water in meander scars incised into the stream terrace tread. Associated soils are mapped as Spillville loam (hydric). The northern edge is defined by a noticeable terrace scarp lacking hydrological indicators. This wetland is defined as a 2.92 acre area, but it is much more extensive than reported here. The proposed corridor is located above the wetland along the terrace scarp. Given its adjacency and immediate connectivity to Mud Creek, this wetland is likely jurisdictional.

Wetland NL\_3 is a poor-quality palustrine emergent/scrub shrub wetland supporting a low diversity of hydrophytic vegetation dominated by reed canary grass. Hydrology consists of standing water. Associated soils are mapped as Spillville loam. This wetland extends from the edge of the creek to the steeper portion of the side slope covered with glacial till soils and non-hydrophytic vegetation. The study corridor passes through this area, which is an estimated 0.18 acres, though it is likely larger than reported here. Given its adjacency and immediate connectivity to the unnamed perennial stream, this wetland is likely jurisdictional.

In addition to the delineated wetlands, four stream segments were noted within the project study corridor.

The southern-most stream (west of Naples Avenue NE) crossed by the study corridor is depicted on the 7.5' topographic map as a swale with no definable channel. Currently, it is a 2- to 4-wide, 1-foot deep, gravel-covered channel that is actively downcutting. This stream flows into the large, unnamed stream between Naples Avenue NE and North Liberty Road NE a short distance east of the study corridor.

The stream between Naples Avenue NE and North Liberty Road NE is depicted on the 7.5' topographic map as a perennial stream that flows into Muddy Creek southeast of the study area. It has 10 to 12 foot high cut banks that are nearly vertical to sloping. Sloping cutbanks are vegetated with hydrophytic plants (most notably reed canary grass), and the stream bed contains numerous bare to vegetated mud flats and sand bars. The stream bank is approximately 40 to 50 feet wide at the top and tapers to roughly 15 to 20 feet wide at the bottom. The flowing stream channel was 8 to 12 feet wide and 1 to 3 feet deep. A series of pool-riffle-glide complexes occur within the project study corridor, and the substrate consists of silt, sand, gravel, and rock. Elevated stream terraces and side slopes are covered with a mature upland forest community lacking hydrological or hydrophytic vegetation indicators. Based on preliminary conceptual plans, this channel would be crossed four times by the sewer line before it transitioned into the public right-of-way along North Liberty Road NE.

The third stream appears as a perennial stream on the 7.5' series topographic map. It is within an actively used pasture on both side of North Liberty Road NE. It drains into the Iowa River (Coralville Reservoir) approximately 0.5 mile east of the study corridor. The stream bank is approximately 20 to 25 feet wide at the top and tapers to roughly 10 to 15 feet wide at the bottom. The flowing stream channel was 6 to 8 feet wide and 1 to 2 feet deep. A portion of a pool-riffle-glide complex occurs within the project study corridor, and the substrate consists of silt, sand, gravel, and rock. Elevated stream terraces and side slopes are actively used by cattle and were not defined as wetlands. Based on preliminary conceptual plans, this channel would be crossed by the double-force sewer main within the public right-of-way along North Liberty Road NE.

The fourth stream is the northern branch of the previously described stream. It is also depicted as a perennial stream on the 7.5' series topographic map. West of North Liberty Road NE, it is a grass waterway draining the agricultural field in which it is located. It lacks a definable channel and stream banks. East of North Liberty Road NE, it 20 to 25 feet wide at the top and tapers to roughly 10 to 15 feet wide at the bottom. The flowing stream channel was 6 to 8 feet wide and 1 to 2 feet deep. A portion of a several pool-riffle-glide complexes occur within the project study corridor. The substrate consists of silt, sand, gravel, and rock. Elevated stream terraces and side slopes are actively used by cattle and were not defined as wetlands. Based on preliminary conceptual plans, this channel would be crossed by the double-force sewer main within the public right-of-way along North Liberty Road NE and Oak Lane NE.

Except for the southern-most stream, the three streams east of Naples Avenue NE have yearround flow and definable stream channel and cut banks, they are all likely waters of the U.S. and regulated under Section 404 of the *Clean Water Act*.

# 4.0 CONCLUSIONS

The following study was undertaken to assist FOX Engineering with the planning and permitting of this sewer and potable water line expansion project on the east side of North Liberty. Three potentially jurisdictional wetlands totaling approximately 5.76 acres and three stream segments were investigated during this study. Because project plans are in the early conceptual stage and have not been finalized, it is difficult to determine the types and amounts of impacts to regulated wetlands.

# 5.0 RECOMMENDATIONS

GES understands that the objective of the proposed project is to improve the City of North Liberty's sewer and potable water infrastructure to meet growing and anticipated needs as the city expands to the east. GES recommends submitting this report to the Corps with a Pre-Construction Notification prior to the start of final design to request their concurrence on Section 404 Authorization.

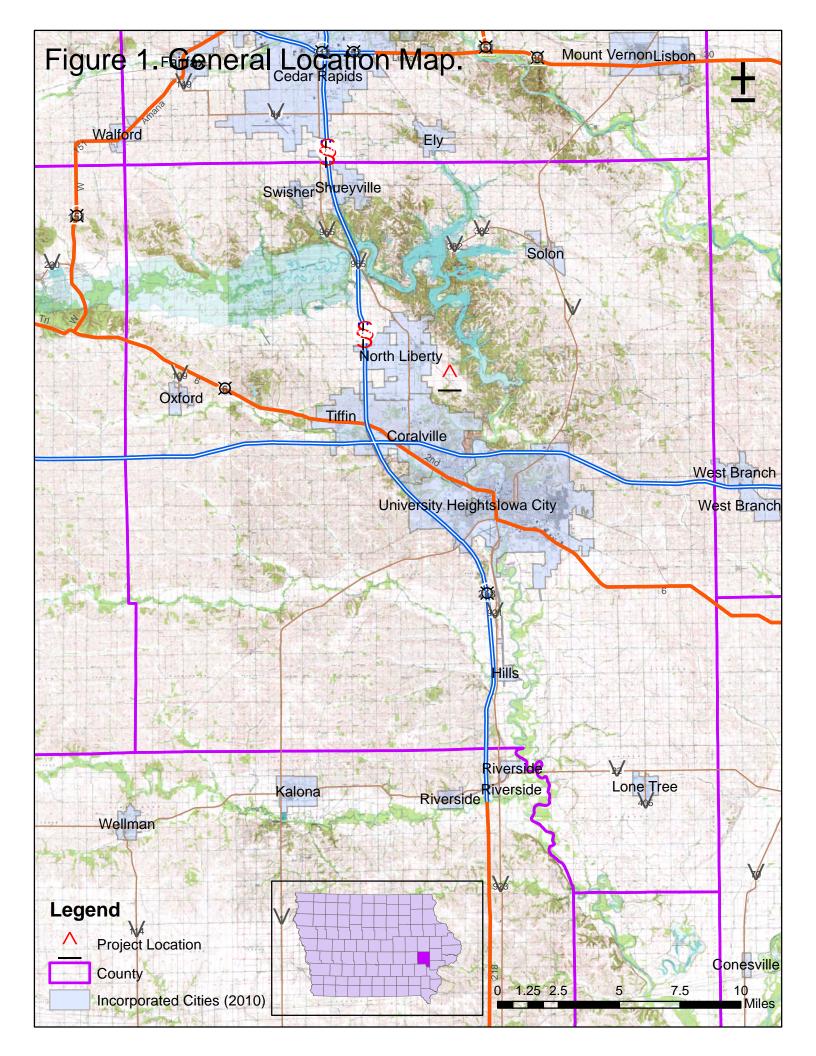
Specific recommendations to avoid or minimize wetland impacts include:

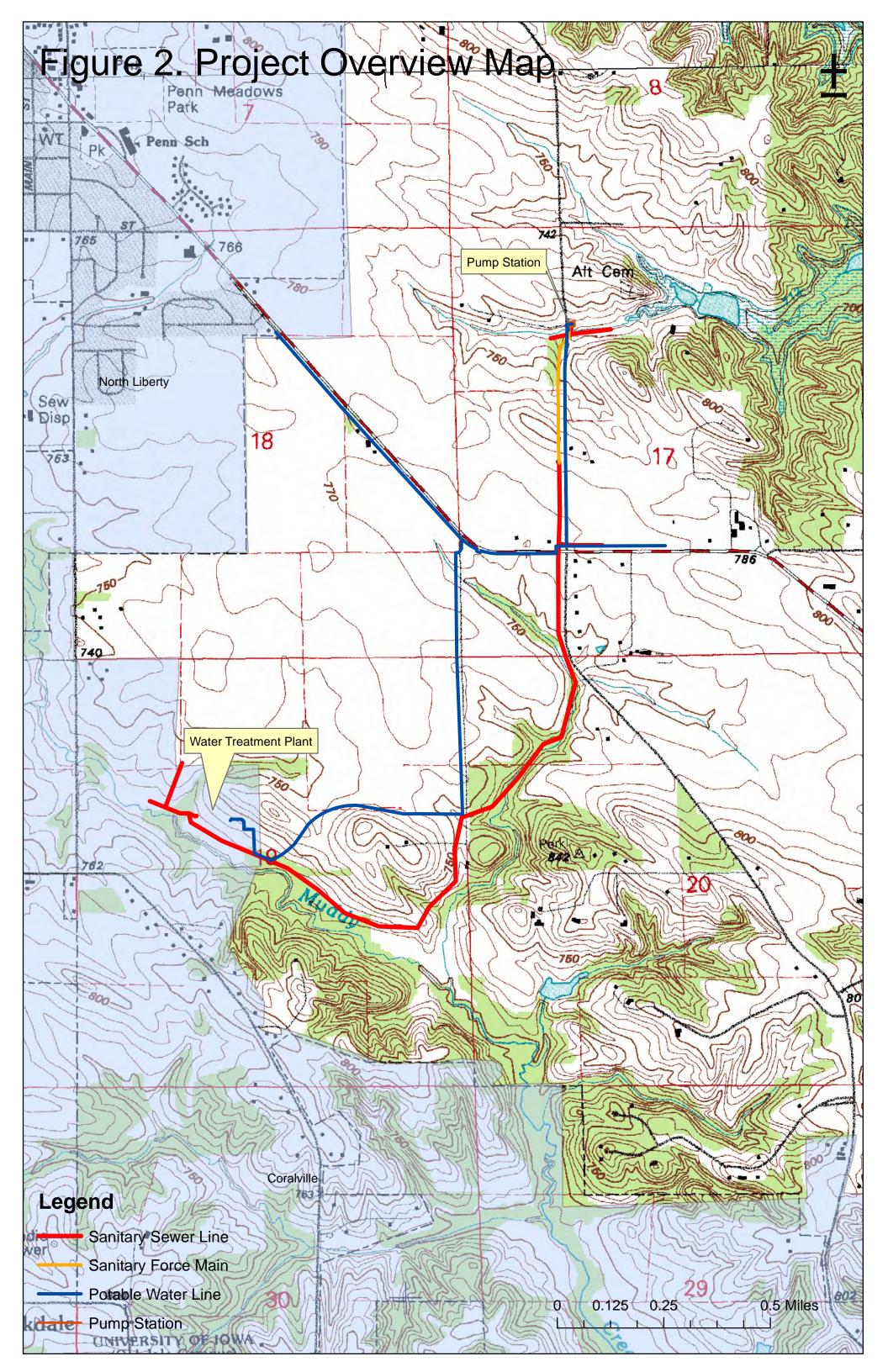
- The sewer line and potable water line north of Muddy Creek and south of the water treatment plant should be designed to avoid Wetlands NL\_1 and NL\_2.
- If possible and if needed, the sewer line should be placed in a bore underneath Wetland NL\_3 to avoid impacting this wetland or the project should be configured to reduce to the greatest extent possible impacts to this wetland.

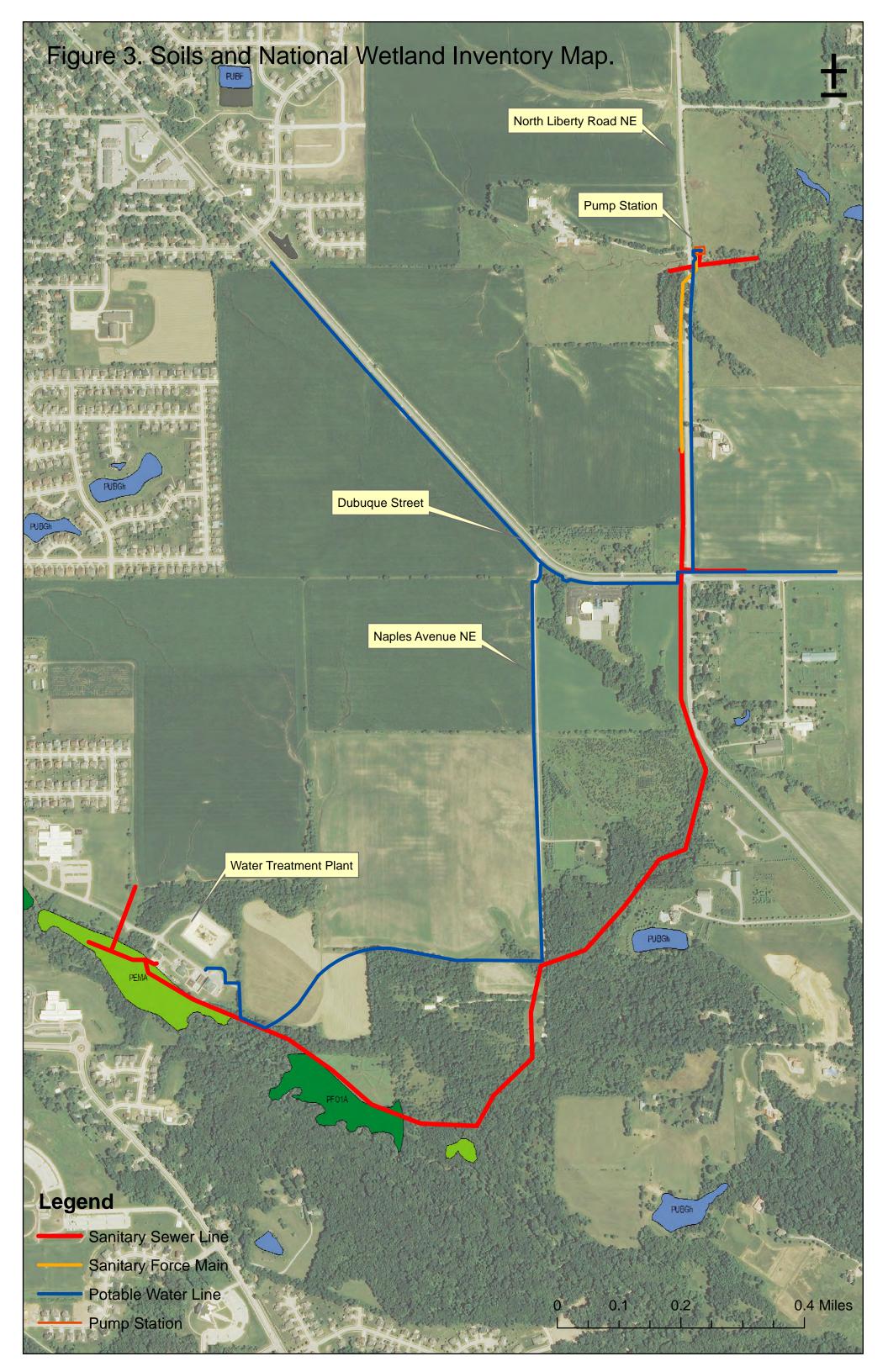
## 6.0 LITERATURE CITED

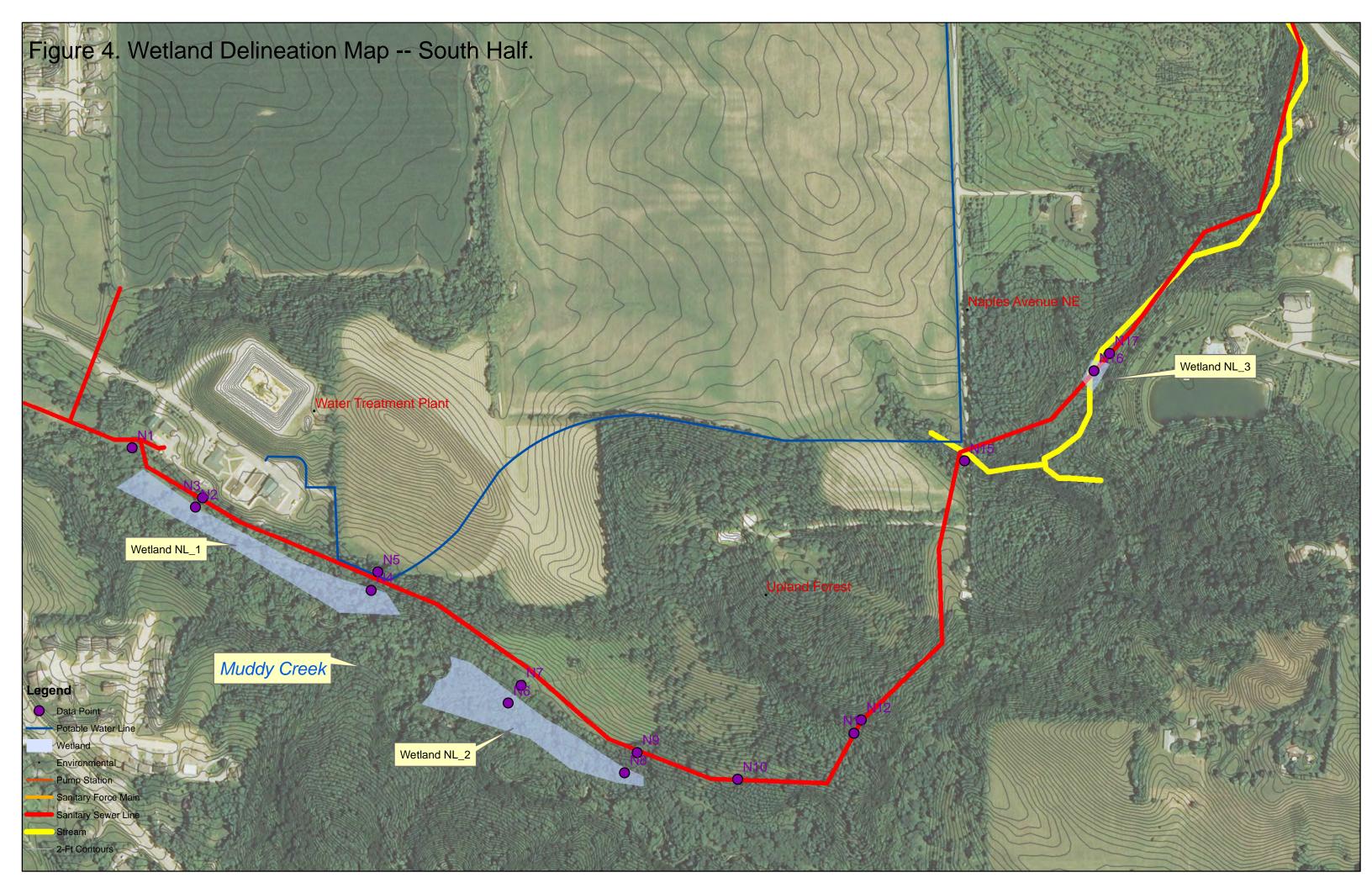
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- Weather Underground. Climate Data for North Liberty, Iowa. Accessed June 15, 2014. http://weatherunderground.com

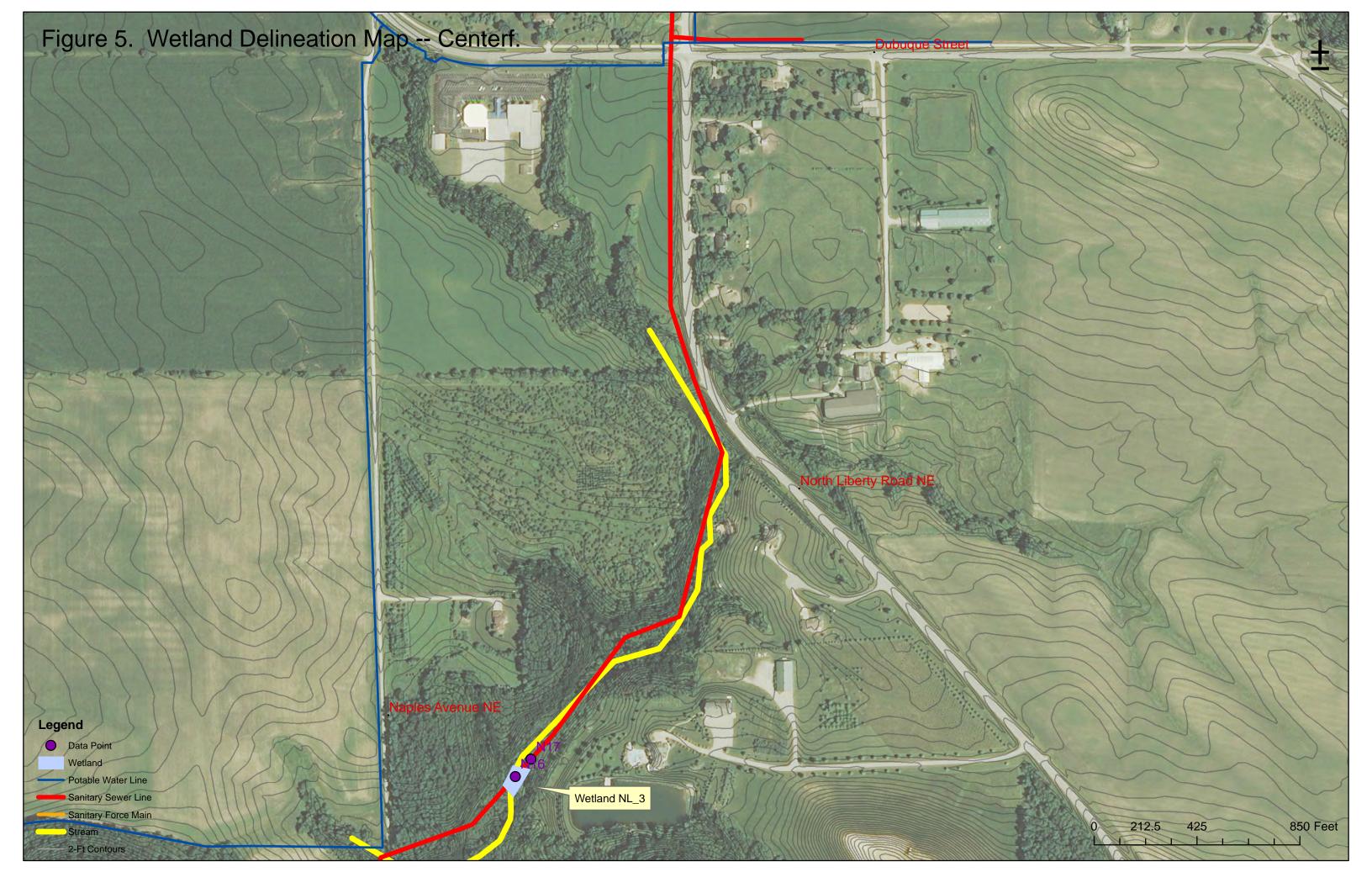
FIGURES

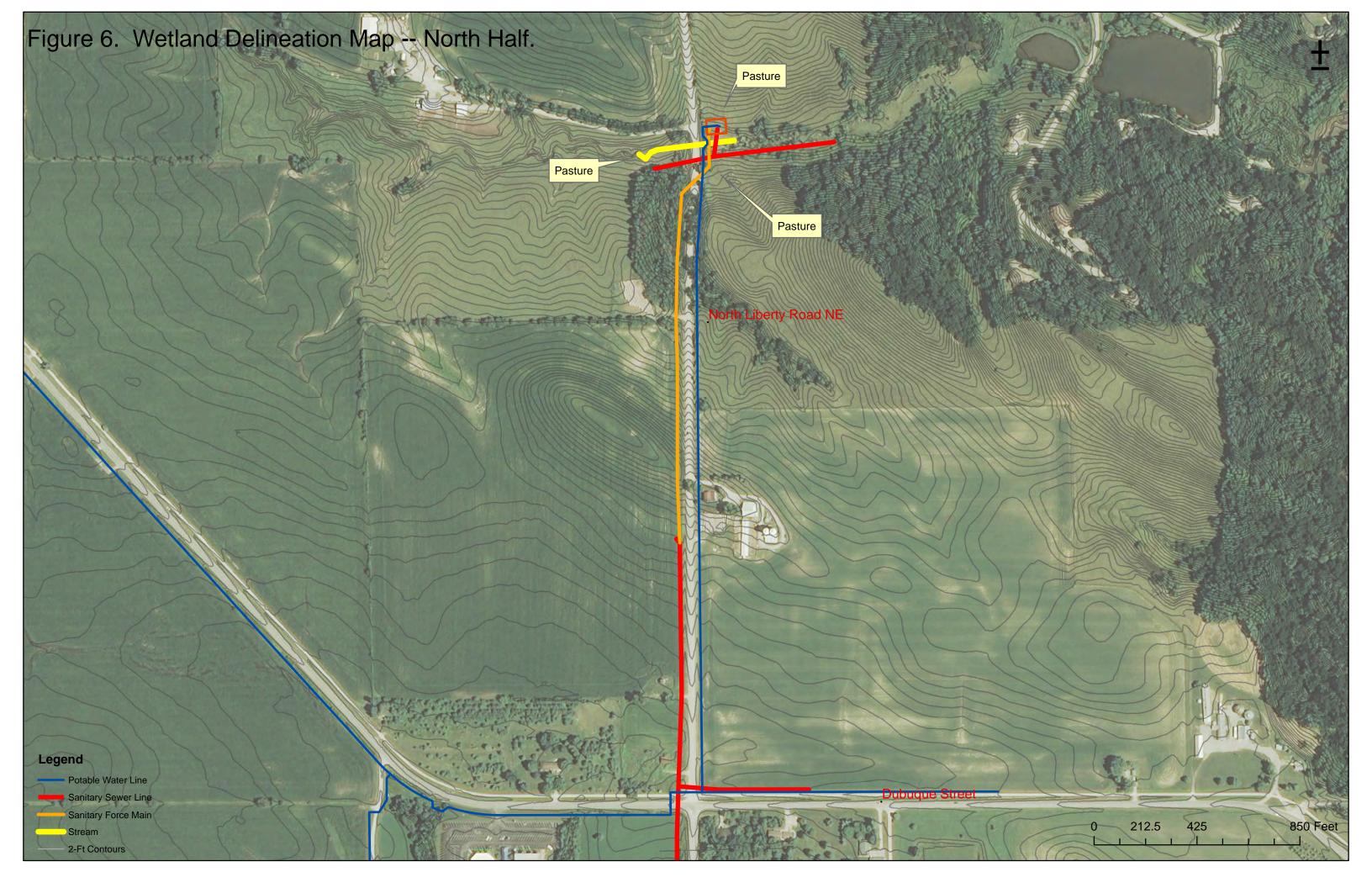












APPENDICES

APPENDIX A: GROUND LEVEL PHOTOGRAPHS



PHOTO 1 – VIEW OF SAMPLE SITE N1 FACING NORTHEAST.



PHOTO 2 - VIEW OF SAMPLE SITE N2 FACING SOUTH.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

## **GRIGGS ENVIRONMENTAL STRATEGIES**

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PHOTO 3 - VIEW OF SAMPLE SITE N3 FACING EAST.



PHOTO 4 - VIEW OF SAMPLE SITE N4 FACING SOUTH.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 5 - VIEW OF SAMPLE SITE N5 FACING NORTH.



PHOTO 6 - VIEW OF SAMPLE SITE N6 FACING SOUTH.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 7 - VIEW OF SAMPLE SITE N7 FACING EAST.



PHOTO 8 - VIEW OF SAMPLE SITE N8 FACING WEST.

#### SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 9 - VIEW OF SAMPLE SITE N9 FACING SOUTH.



PHOTO 10 - VIEW OF SAMPLE SITE N10 FACING EAST.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 11 - VIEW OF SAMPLE SITE N11 FACING NORTH.



PHOTO 12 - VIEW OF SAMPLE SITE N12 FACING NORTH.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 13 - VIEW OF SAMPLE SITE N13 FACING WEST.



PHOTO 14 - VIEW OF SAMPLE SITE N14 FACING WEST.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 15 - VIEW OF SAMPLE SITE N15 FACING WEST.



PHOTO 16 - VIEW OF SAMPLE SITE N16 FACING SOUTH.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 17 - VIEW OF SAMPLE SITE N17 FACING WEST.



PHOTO 18 - VIEW OF SAMPLE SITE N20 (BACKGROUND) FACING NORTHWEST.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 19 - VIEW OF SAMPLE SITE N21 FACING WEST.



PHOTO 20 - VIEW OF SAMPLE SITE N22 FACING NORTHWEST.

## SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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PHOTO 21 - VIEW OF SAMPLE SITE N23 FACING SOUTH.

#### SITE PHOTOGRAPHS CITY OF NORTH LIBERTY, IOWA SE GROWTH AREA WATER AND SANITARY IMPROVEMENTS GES PROJECT NO: 13-461 PICTURE DATE: JUNE 11, 2014

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APPENDIX B: CLIMATOLOGICAL DATA

Appendix B: Climate Data for North Liberty, Iowa.

Date	Temperature	Precipitation (in)	Events
	avg	sum	
May-June 2014			
11	65	0.14	Rain, Thunderstorm
12	68	1.55	Fog, Rain, Thunderstorm
13	49	0	
14	49	0	
15	49		Rain
16	46		Rain
17	49	0.11	
18	54	0	
19	64	0.01	
20	72		Thunderstorm
21	73		Rain , Thunderstorm
22	63	0	
23	65	0	
24	65	0	
25	67	0.01	Rain
26	71	0.05	Rain
27	74	Т	Rain , Thunderstorm
28	74	Т	Thunderstorm
29	72	0	
30	76	0	
31	77	Т	Rain
1	79	0.09	Rain, Thunderstorm
2	75	0.35	Rain
3	71		Rain, Thunderstorm
4	66		Rain, Thunderstorm
5	67	0	
6	70	0	
7	70		Rain
8	65	0	
9	67	Т	
10	63	0.17	Rain
Т	otal	4.23	

APPENDIX C: DELINIEATION AND DETERMINATION DATA SHEETS

WETLAND DETE				Idwest Region	6.11.14
Project/Site SE Growth Area Water & Sanitary Applicant/Owner: City of North Liberty		State:			N17
Investigator(s): Kevin M. Griggs and Bill Martin			on, Townshi		W/8W
Landform (hillslope, terrace, etc.): Slo				ve, convex, none):	Convex
	ipe	_			83 Zone 15
Slope (%):         5 9         Lat:         618271           Soil Map Unit Name Chelesa-Lamont-Fayette comple	~	Long:		Classification:	No
Are climatic/hydrologic conditions of the site typical for		f the year?		If no, explain in remarks)	
	logy		disturbed?	·	
Are vegetation, soil, or hydro Are vegetation, soil, or hydro		naturally pr			stances" present? Yes
SUMMARY OF FINDINGS		naturally p	oblemation	(If needed, explain any answ	
Hydrophytic vegetation present? N		- <u></u>		(	,
Hydric soil present? N	-	is the s	ampled are	a within a wetland?	N
Indicators of wetland hydrology present? N	- 1		tional wetla		
	- 1				
Remarks: (Explain alternative procedures here or in a	a separate re	eport.)			
VEGETATION Use scientific names of plan					
	Absolute	Dominan	Indicator	Dominance Test Workshe	
Tree Stratum (Plot size:) 1 Betula nigra	% Cover 60	t Species Y	Staus FACW	Number of Dominant Species that are OBL, FACW, or FAC	
2 Juglans nigra	40		FACU	Total Number of Dominant	
3				Species Across all Strata	
4				Percent of Dominant Species	
5				that are OBL, FACW, or FAC	50.00% (A/B)
	100	= Total Cove	r		
Sapling/Shrub stratum (Plot size:	)		FAOL	Prevalence Index Worksh	eet
1 Rosa multiflora	90	<u> </u>	FACU	Total % Cover of: OBL species 0 x 1	= 0
2				FACW species 80 x 2	
4				FAC species 0 x 3	
5				FACU species 140 x 4	
	90	= Total Cove	r	UPL species 0 x 5	= 0
Herb stratum (Plot size:	)			Column totals 220 (A)	720 (B)
1 Phalaris arundinacea	10	Y	FACW	Prevalence Index = B/A =	3.27
2 Urtica dioica	10	Y	FACW		
3 Bromus inermis	10	Y	FACU	Hydrophytic Vegetation Ir	
4				Rapid test for hydrophy Dominance test is >509	
5 6				Prevalence index is ≤3.	
7				Morphogical adaptation	
8				supporting data in Rem	
9				separate sheet)	
10				Problematic hydrophyti	c vegetation*
	30	= Total Cove	r	(explain)	
Woody vine stratum (Plot size:	)			*Indicators of hydric soil and we	
1				present, unless disturbe Hydrophytic	a or problematic
2	0	= Total Cove		vegetation	
	U		••	present? N	_
Remarks: (Include photo numbers here or on a separation of the second se	rate sheet)			1	
Photo 15	. ,				

1.1

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N17

rofile Des						ie maioat			
Depth	•			Redox Fea			<b>—</b> .		Durantia
(Inches)	Color (moist)	%	Color (mois	st) %	Type*	Loc**	Texture		Remarks
0-6	10YR 2/2	90		1			silty clay loam		
6-20+	10YR 5/4	90			1.1		silty clay loam		
					le a				
									ng phénd bha
									and the second second second
ype: C =	Concentration, D	= Depleti	on, RM = Red	luced Mati	ix, MS = I	Masked S	and Grains.	**Location:	PL = Pore Lining, M = Ma
Hydric So	oil Indicators:						Indicators	for Problen	natic Hydric Soils:
His	tisol (A1)			Sandy Gle	yed Matri	ix (S4)	Coast F	Prairie Redo	x (A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)			Sandy Red	dox (S5)		Dark Su	urface (S7)	(LRR K, L)
Bla	ck Histic (A3)			Stripped N	latrix (S6)	)	Iron-Ma	anganese M	asses (F12) (LRR K, L, R
	drogen Sulfide (A4	4)		Loamy Mu			Very Sh	nallow Dark	Surface (TF12)
	atified Layers (A5			Loamy Gle	-		Other (e	explain in re	emarks)
	m Muck (A10)	,		Depleted I	-				
De	pleted Below Dark	Surface	(A11) —	Redox Da	k Surface	∋ (F6)			
	ick Dark Surface (			Depleted [	Dark Surfa	ace (F7)	*Indicato	rs of hvdror	phytic vegetation and welta
	ndy Mucky Minera		_	Redox De					present, unless disturbed
	m Mucky Peat or	• •	) —			. ,			roblematic
etrictivo	Layer (if observ	ed).							
strictive	Layer (II observ	eu):							
							Liudaio og	il propont?	
/pe:					_	-	Hydric so	oil present?	<u> </u>
/pe: epth (inch					_		Hydric so	oil present?	P
/pe: epth (inch emarks:	es):						Hydric so	bil present?	• <u>N</u>
vpe: epth (inch emarks: YDROL	es):						Hydric so	oil present?	• <u>N</u>
ype: epth (inch emarks: YDROL Yetland Hy	es): OGY ydrology Indicato	Drs:							
ype: epth (inch emarks: YDROL /etland Hy rimary Ind	es): OGY ydrology Indicato icators (minimum	ors: of one is						ondary Indic	ators (minimum of two req
ype: epth (inch emarks: YDROL Vetland Hy rimary Ind	es): OGY ydrology Indicato	ors: of one is		Aquat	c Fauna (			ondary Indic Surface Sc	ators (minimum of two req pil Cracks (B6)
pe: epth (inch emarks: YDROL etland Hy imary Ind Surface High W	es): OGY ydrology Indicato icators (minimum Water (A1) ater Table (A2)	ors: of one is		Aquati True A	c Fauna ( quatic Pla	ants (B14)	Seco	ondary Indic Surface So Drainage F	ators (minimum of two req bil Cracks (B6) Patterns (B10)
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				obreon Sampling Da	te: 6.11.14
Project/Site SE Growth Area Water & Sanitary		State:	iowa	ohnson Sampling Da Sampling Poi	
Applicant/Owner: City of North Liberty					19/80W/8W
Investigator(s): Kevin M. Griggs and Bill Martin				o, Range:	
	ed stream terrace			e, convex, none):	
	7021	Long:	**		NAD 83 Zone 15
Soil Map Unit Name Spillvilee Ioam				Classification:	No
Are climatic/hydrologic conditions of the site typi				f no, explain in remarks	
	hydrology			Are "normal of	circumstances"
	hydrology	naturally pr	oblematic?	(If a side of some late of	present? Yes
SUMMARY OF FINDINGS				(if needed, explain ar	ny answers in remarks.)
Hydrophytic vegetation present?	<u>Y</u>	to the s			N
Hydric soil present?	<u>N</u>			a within a wetland?	<u> </u>
Indicators of wetland hydrology present?	<u>N</u>	r yes, op	tional wetlar		
Remarks: (Explain alternative procedures here of	or in a separate re	eport.)			
	Adjacent to	water treatr	nent nlant		
	Aujacent to	water treat	nem plant		
VEGETATION Use scientific names of	plants.				
	Absolute	Dominan	Indicator	Dominance Test Wo	orksheet
Tree Stratum (Plot size:	) % Cover	t Species	Staus	Number of Dominant S	
1 Acer negundo	40	Y	FAC	that are OBL, FACW, o	
2 Acer saccharinum	40	Y	FACW	Total Number of Do	
3				Species Across all	
5				Percent of Dominant S that are OBL, FACW, 0	or FAC: 100.00% (A/B)
	80	= Total Cove	r		
Sapling/Shrub stratum (Plot size:	)	•		Prevalence Index W	/orksheet
1				Total % Cover of:	
2				· · · —	x 1 =
3		·		· · · · · · · · · · · · · · · · · · ·	$0 \times 2 = 220$
4		·		FAC species 60 FACU species 20	
5		= Total Cove		UPL species 0	
Herb stratum (Plot size:	)	- 10tai 00ve		Column totals 19	
1 Phalaris arundinacea	, 	Y	FACW	Prevalence Index = E	_````
2 Solidago canadensis		N	FACU		
3 Apocynum cannabinum	20	N	FAC	Hydrophytic Vegeta	tion Indicators:
4				Rapid test for hy	drophytic vegetation
5				X Dominance test	
6				X Prevalence inde	x is ≤3.0*
7					ptations* (provide
8				supporting data separate sheet)	in Remarks or on a
10					rophytic vegetation*
		= Total Cove	r	(explain)	Topitytic vegetation
Woody vine stratum (Plot size:	)			·	and wetland hydrology must be
1					disturbed or problematic
2				Hydrophytic	
	0	= Total Cove	r	vegetation	Y
				present?	
Remarks: (Include photo numbers here or on a	separate sheet)				
Photo 1					
а С					

a 20 9 a

1.0.00

Sampling Point

Circles         Color (moist)         %         Type*         Loc**         Texture         Remarks           0-20         10 YR 2/1         100 <td< th=""><th>Depth</th><th>Matrix</th><th></th><th></th><th>Redox</th><th>Featu</th><th>ures</th><th></th><th></th><th></th><th></th></td<>	Depth	Matrix			Redox	Featu	ures				
ype: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains.       **Location: PL = Pore Lining, M = Mat Market Soil Indicators:         Histic Epipedion (A2)       Sandy Gleyed Matrix (S4)       Indicators for Problematic Hydric Soils:         Histic Epipedion (A2)       Sandy Redax (S5)       Dark Surface (S7) (LRR K, L, R)         Black Histic (A3)       Stripped Matrix (S6)       Toro-Manganese Meases (F12) (LRR K, L, R)         Hydrogen Suffide (A4)       Loamy Gleyed Matrix (F2)       Other (explain in remarks)         2 cr Muck (A10)       Depleted Matrix (F3)       Other (explain in remarks)         3 cr Muck (A10)       Depleted Matrix (F3)       Other (explain in remarks)         2 cr Muck (A10)       Depleted Dark Surface (F7)       *Indicators of hydrophytic vegetation and wella         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and wella         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators (minimum of two registed consets surface (F7)         strafted Hydrology Indicators:       mary Indicators (minimum of one is required: check all that apply)       Secondary Indicators (minimum of two registed consets surface (F1)         Surface Water (A1)       Aquatic Plana (B13)       True Aquatic Plana (B13)       Surface (C1)         YDROLOGY       Cost If appendiate of Site cost (C1)       Dro-Season Water Table (C2)       Surf	(Inches)	Color (moist)	%	Color (mo	ist)	%	Type*	Loc**	Textu	ire	Remarks
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shallow Dark Surface (F12) (LRR K, L, R)         Phydrogen Sulfide (A4)       Loamy Gleyed Matrix (S6)       Info.Manganese Masses (F12) (LRR K, L, R)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       *Indicators of hydrophytic vegetation and weltating hydrology must be present, unless disturbed c         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators (minimum of two requests)         strictive Layer (If observed):       *       *         problematic       Hydric soil present?       N         th (Inches):       *       Mydrology Matrix (B14)       Striace Water (A1)         Sturface Water (A1)       Aquatic Fauna (B13)       Sturface Soil Cracks (B6)       Surface Soil Cracks (B6)         Sturface Water (A1)       Aquatic Fauna (B13)       Sturface Soil Cracks (B6)       Surface Soil Cracks (B6)         Sturface Water (A1)       Aquatic Fauna (B13)       Sturface Soil Cracks (B6)       Surface Soil Cracks (B6)         Sturface K12)       Sturface K12)	0-20	10 YR 2/1	100		-						
lydric Soil Indicators:       Indicators for Problematic Hydric Soils:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfde (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfde (A4)       Loamy Gleyed Matrix (S6)       Inon-Manganese Masses (F12) (LRR K, L, R)         Depleted Below Dark Surface (A10)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       "Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       "Indicators of hydrophytic vegetation and welta         ht (inches):       mary Indicators:       mary Indicators:         mary Indicators (minimum of one is required: check all that apply)       Secondary Indicators (minimum of two required: hydrogen Sulfde Odor (C1)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Flauna (B13)       Surface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)											
ydric Soll Indicators:       Indicators for Problematic Hydric Solls:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       *Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and welta         ht (inches):											
ydric Soll Indicators:       Indicators for Problematic Hydric Solls:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       *Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and welta         ht (inches):		-									
ydric Soll Indicators:       Indicators for Problematic Hydric Solls:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       *Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and welta         ht (inches):											
ydric Soll Indicators:       Indicators for Problematic Hydric Solls:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       *Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and welta         ht (inches):											
lydric Soil Indicators:       Indicators for Problematic Hydric Soils:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfde (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfde (A4)       Loamy Gleyed Matrix (S6)       Inon-Manganese Masses (F12) (LRR K, L, R)         Depleted Below Dark Surface (A10)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       "Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       "Indicators of hydrophytic vegetation and welta         ht (inches):       mary Indicators:       mary Indicators:         mary Indicators (minimum of one is required: check all that apply)       Secondary Indicators (minimum of two required: hydrogen Sulfde Odor (C1)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Flauna (B13)       Surface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)					-		_				
Hydric Soll Indicators:       Indicators for Problematic Hydric Solls:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfde (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfde (A4)       Loamy Gleyed Matrix (S6)       Inon-Manganese Masses (F12) (LRR K, L, R)         Depleted Below Dark Surface (A10)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       "Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       "Indicators of hydrophytic vegetation and welta         ht (inches):       mark (B1)       Aquatic Fauna (B13)       Striface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)       Surface Soil Cracks (B6)         Surface Water (A1)       Hydrogen Sulface Anzer (C1)       Depleted Rhize Solfseres on Living Roots       Coraythe Immun of two request (C1)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)       Surface Soil Cracks (B6)         Surface B(2)       (C3)       True Aquatic Flants (B14)       Drainage Patterns (B10)       Surface Soil Cracks (B6)         Sediment Deposits (B2)       (C3)       Craythe Immun o	0.000										
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shallow Dark Surface (F12) (LRR K, L, R)         Phydrogen Sulfide (A4)       Loamy Gleyed Matrix (S6)       Info.Manganese Masses (F12) (LRR K, L, R)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)       *Indicators of hydrophytic vegetation and weltating hydrology must be present, unless disturbed c         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       *Indicators (minimum of two requests)         strictive Layer (If observed):       *       *         problematic       Hydric soil present?       N         th (Inches):       *       Mydrology Matrix (B14)       Striace Water (A1)         Sturface Water (A1)       Aquatic Fauna (B13)       Sturface Soil Cracks (B6)       Surface Soil Cracks (B6)         Sturface Water (A1)       Aquatic Fauna (B13)       Sturface Soil Cracks (B6)       Surface Soil Cracks (B6)         Sturface Water (A1)       Aquatic Fauna (B13)       Sturface Soil Cracks (B6)       Surface Soil Cracks (B6)         Sturface K12)       Sturface K12)											
Hydric Soll Indicators:       Indicators for Problematic Hydric Solls:         Histic Epipedon (A2)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S4)         Hydrogen Sulfde (A4)       Loamy Mucky Mineral (F1)       Very Shalow Dark Surface (F12) (LRR K, L, R)         Hydrogen Sulfde (A4)       Loamy Gleyed Matrix (S6)       Inon-Manganese Masses (F12) (LRR K, L, R)         Depleted Below Dark Surface (A10)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Depleted Matrix (F3)       "Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Depressions (F8)       "Indicators of hydrophytic vegetation and welta         ht (inches):       mark (B1)       Aquatic Fauna (B13)       Striface Soil Cracks (B6)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)       Surface Soil Cracks (B6)         Surface Water (A1)       Hydrogen Sulface Anzer (C1)       Depleted Rhize Solfseres on Living Roots       Coraythe Immun of two request (C1)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)       Surface Soil Cracks (B6)         Surface B(2)       (C3)       True Aquatic Flants (B14)       Drainage Patterns (B10)       Surface Soil Cracks (B6)         Sediment Deposits (B2)       (C3)       Craythe Immun o	(ne: C = (	Concentration D :	- Depleti	on RM = Re	duced M	latriv	L	l lasked S	and Grains	**1.002	tion: PL = Pore Lining M = Matr
Histisol (A1)       Sandy Gleyed Matrix (S4)       Coast Parine Redox (A16) (LRR K, L, R)         Histic Epipedon (A2)       Sandy Redox (S5)       Dark Surface (S7) (LRR K, L, R)         Black Histic (A3)       Stripped Matrix (S6)       Ton-Manganese Masses (F12) (LRR K, L, R)         Black Histic (A3)       Stripped Matrix (S5)       Ton-Manganese Masses (F12) (LRR K, L, R)         Stratified Layers (A5)       Loamy Mucky Mineral (F1)       Very Shallow Dark Surface (TF12)         2 om Muck (A10)       Depleted Matrix (F3)       Other (explain in remarks)         2 om Mucky Mineral (S1)       Redox Dark Surface (F7)       *Indicators of hydrophytic vegetation and welta         sandy Mucky Mineral (S1)       Redox Depressions (F8)       'Indicators of hydrophytic vegetation and welta         strictive Layer (if observed):       *       *       *         e:			- Depieti		duceu iv	aun	, 1410 – 14	naskeu S			
Histic Epipedon (A2)       Sandy Redox (S5)       Dark Surface (S7) (LRR K, L, B)         Black Histic (A3)       Stripped Matrix (S6)       Iron-Manganese Masses (F12) (LRR K, L, R)         Hydrogen Sulfide (A4)       Loamy Wucky Mineral (F1)       Very Shallow Dark Surface (TF12)         Stratified Layers (A5)       Loamy Wucky Mineral (F1)       Other (explain in remarks)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)       Indicators of hydrophytic vegetation and welta         Sandy Mucky Mineral (S1)       Redox Dark Surface (F7)       *Indicators of hydrophytic vegetation and welta         Stripte Layers (If Observed):       se:       *Indicators (minimum of nee is required: check all that apply)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         Hydrology Indicators:       marv Indicators (minimum of one is required: check all that apply)       Secondary Indicators (minimum of two required: check all that apply)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B0)       Surface Soil Cracks (B10)         Hydrology Indicators:       Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B10)       Surface Soil Cracks (B10)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B10)       Surface Soil Cracks (B10)       Surface Soil Cracks (B10)       Surface Soil Cracks (B10)       Sur	•				Sandy (		ad Matrix	(84)			
Black Histic (A3)       Stripped Matrix (S6)       Iron-Magnese Masses (F12) (LRR K, L, R)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Very Shallow Dark Surface (TF12)         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Other (explain in remarks)         Depleted Below Dark Surface (A11)       Depleted Matrix (F2)       Other (explain in remarks)         Sandy Mucky Mineral (S1)       Depleted Matrix (F3)       "Indicators of hydrophytic vegetation and weltal hydrology must be present, unless disturbed of problematic         strictive Layer (If observed):					-	-		(04)			
Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)											
Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Other (explain in remarks)         Depleted Matrix (F3)       Depleted Matrix (F3)       Other (explain in remarks)         Depleted Below Dark Surface (A12)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and weltating the present, unless disturbed of problematic         Strictive Layer (if observed):       Bedox Depressions (F8)       *Indicators of hydrophytic vegetation and weltating the present?         strictive Layer (if observed):       Bedox Depressions (F8)       Hydric soll present?       N         strictive Layer (if observed):       Bedox Depressions (F8)       Hydric soll present?       N         marks:       Bedox Depressions (F8)       Secondary Indicators (minimum of two requipments)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soll Cracks (B6)         Yingh Vater Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Staturation (A3)       Hydrogen Sufface Odor (C1)       Dry. Season Water Table (C2)         Origit Presence of Reduced Iron (C4)       Saturation Visible on Acrial Imagery (B7)       Saturation Visible on Acrial Imagery (B7)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (C9)       FAC-Neutral Test (D5)         Iron Deposits (B3)       Presence of Reduced Iron (C4)       FAC-Neutral Test (D5)         Iron Deposits		• •	0								
2 cm Muck (A10)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Thick Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F8)         strictive Layer (If observed):       problematic         be:       Hydric soil present?         pth (inches):       marks:         2 cm Muck (A10)       Aquatic Fauna (B13)         Surface Water (A1)       Aquatic Fauna (B13)         Surface Vater Table (A2)       True Aquatic Planta (B14)         Secondary Indicators (minimum of two required: check all that apply)       Secondary Indicators (minimum of two required: check all that apply)         Secondary Indicators (G1)       Crainage Patterns (B10)       Drainage Patterns (B10)         Sturation (A3)       Hydrogen son Living Roots       Crains Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C3)         Ton Deposits (B3)       Presence of Reduced Iron (C4)       Recent Iron Reduction in Tilled Soils         Geomorphic Position (D2)       Thin Muck Surface (C7)       Saturation Visible on Aerial Imagery (R							-	• •			
Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Thick Dark Surface (A12)       Depleted Dark Surface (F7)       *Indicators of hydrophytic vegetation and weltan hydrology must be present, unless disturbed of problematic         Sandy Mucky Mierarl (S1)       Redox Depressions (F8)       *Indicators of hydrophytic vegetation and weltan hydrology must be present, unless disturbed of problematic         strictive Layer (If observed):								• •		r (explain	in remarks)
Thick Dark Surface (A12)       Depleted Dark Surface (F7)       *Indicators of hydrophytic vegetation and weltat hydrology must be present, unless disturbed of problematic         S or Mucky Peat or Peat (S3)       Problematic       hydrology must be present, unless disturbed of problematic         Strictive Layer (If observed):			Curford				• • •				
Sandy Mucky Mineral (S1)       Redox Depressions (F8)       hydrology must be present, unless disturbed o problematic         strictive Layer (If observed):       Hydric soil present, unless disturbed o problematic         pe:       Hydric soil present?       N         marks:       Hydric soil present?       N         /DROLOGY       Hydrology Indicators:       N         marks:       marks:       Secondary Indicators (minimum of one is required, check all that apply)       Secondary Indicators (minimum of two required, check all that apply)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Saturation (A3)       Hydrogen sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation (C4)       Sturted or Stressed Plants (D1)         Agal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Inondation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Saturation (S8)       Gauge or Well Data (D9)       Water-Stained Leaves (B9)       Other (Explain in Remarks)         Id Observatorons:				(A11)				• •			
		,	,								
Strictive Layer (if observed):         pe:         pth (inches):         marks:             /DROLOGY            witand Hydrology Indicators:        marks:           /DROLOGY        witand Hydrology Indicators:        mary Indicators (minimum of one is required; check all that apply)       Surface Water (A1)       Surface Water (A1)       Hydrogen Sulfide Odor (C1)       Priseance Sulfide Odor (C1)       Saturation (A3)       Hydrogen Sulfide Odor (C1)       Oxidized Rhizospheres on Living Roots       Sediment Deposits (B2)       C(3)       Drift Deposits (B3)       Presence of Reduced Iron (C4)       Algal Mat or Crust (B4)       Iron Deposits (B5)       Iron Deposits (B5)       Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Sparsely Vegetated Concave Surface (B8)       Gauge or Wiell Data (D9)       Water-Stained Leaves (B9)       Other (Explain in Remarks)       Id Observations:       rface water present?     Yes       No     X       Depth (inches):       Litate present?     Yes       No     X       Depth (inches):					Redox I	Jepr	essions	(F8)	hydro	logy must	•
be:       Hydric soil present?       N         pth (inches):	5 cr	n Mucky Peat or	Peat (S3	)							problematic
pth (inches):	strictive	Layer (if observe	ed):								
marks:         /DROLOGY         stland Hydrology Indicators:         mary Indicators (minimum of one is required; check all that apply)       Secondary Indicators (minimum of two required; check all that apply)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Seeson Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Orift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Suntation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland hydrology present?         Id Observations:       No       X       Depth (inches):       Indicators of wetland hydrology present?         set rate present?       Yes       No       X											
YDROLOGY         stland Hydrology Indicators:         mary Indicators (minimum of one is required: check all that apply)       Secondary Indicators (minimum of two required)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Caryfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)         Water rater present?       Yes       No         Ald Observations:       Indicators of wetland hydrology present?         frace water present?       Yes       No         No       X       Depth (inches):       Indicators of wetland hydrology present?         furator	pe.								Hydric	soil pres	ent? N
ettand Hydrology Indicators:       Secondary Indicators (minimum of one is required; check all that apply)       Secondary Indicators (minimum of two required; check all that apply)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation (C4)       Sturted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland hydrology present?       No         Ald Observations:       Yes       No       X       Depth (inches):       Indicators of wetland hydrology present?       N         excribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Secondary Indicators, inspections), if available:	epth (inche	es):					-		Hydric :	soil pres	ent? <u>N</u>
Surface Vater (A1)       Secondary Indicators (minimum of two requests)         High Water Table (A2)       True Aquatic Fauna (B13)       Surface Soil Cracks (B6)         Saturation (A3)       Hydrogen Sulfide Odor (C1)       Drainage Patterns (B10)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation (C4)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Innudation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)         Water Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland turation present?       Yes         Sective recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Sections), if available:       No	pth (inche marks:								Hydric	soi! pres	ent? <u>N</u>
Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Sparsely Vegetated Concave Surface (B8)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland turation present?         Yes       No       X       Depth (inches):       Indicators of wetland hydrology present?       N         Cludes capillary fringe)       Scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Stressel Plants       Stressel Plants	pth (inche marks: /DROL(	DGY							Hydric :	soi! pres	ent? <u>N</u>
High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Sparsely Vegetated Concave Surface (B8)         Gauge or Well Data (D9)       Other (Explain in Remarks)       Other (Explain in Remarks)         eld Observations:       No       X       Depth (inches):         turation present?       Yes       No       X       Depth (inches):         cludes capillary fringe)       Yes       No       X       Depth (inches):       Indicators of wetland hydrology present?       N         scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Statiable:	pth (inche marks: <b>/DROL(</b> etland Hy	DGY drology Indicate									
Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)         Water table present?       Yes       No         At tration present?       Yes       No         No       X       Depth (inches):       Indicators of wetland hydrology present?         turation present?       Yes       No       X       Depth (inches):         cludes capillary fringe)       Scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       No	pth (inche marks: YDROL( etland Hy mary Indi	DGY drology Indicato cators (minimum	of one is							condary I	ndicators (minimum of two requ
Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Sparsely Vegetated Concave Surface (B8)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland         etar table present?       Yes       No       X         turation present?       Yes       No       X       Depth (inches):         cludes capillary fringe)       Scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: /DROL( etland Hy mary Indi _Surface	DGY drology Indicato cators (minimum Water (A1)	of one is		Aqu	atic	Fauna (B			condary 1 Surfac	ndicators (minimum of two requi se Soil Cracks (B6)
Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Other (Explain in Remarks)         Vid Observations:       Tris       No       X       Depth (inches):         frace water present?       Yes       No       X       Depth (inches):       Indicators of wetland hydrology present?       N         cludes capillary fringe)       Scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Indicatore       N	pth (inche marks: /DROL( tland Hy mary Indi Surface High Wa	DGY drology Indicato cators (minimum Water (A1) ater Table (A2)	of one is		Aqı — Tru	iatic e Aqi	Fauna (B uatic Plai	nts (B14)	<u>Se</u>	<u>condary l</u> Surfac Draina	ndicators (minimum of two requ se Soil Cracks (B6) uge Patterns (B10)
Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       FAC-Neutral Test (D5)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland         Id Observations:       No       X       Depth (inches):       Indicators of wetland         turation present?       Yes       No       X       Depth (inches):       Indicators of wetland         cludes capillary fringe)       Scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       No	pth (inche marks: (DROL( tiland Hy mary Indi Surface High Wa Saturatio	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3)	of one is		Aqu Tru Hyd	iatic e Aqi Iroge	Fauna (B uatic Plai en Sulfide	nts (B14) Odor (C1	<u>Se</u> )) –	condary 1 Surfac Draina Dry-Se	ndicators (minimum of two requ se Soil Cracks (B6) Ige Patterns (B10) eason Water Table (C2)
Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Other (Explain in Remarks)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       Indicators of wetland         Id Observations:       No       X       Depth (inches):       Indicators of wetland         rface water present?       Yes       No       X       Depth (inches):       Indicators of wetland         turation present?       Yes       No       X       Depth (inches):       No       No         cludes capillary fringe)       scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       If available:	pth (inche marks: (DROL( etland Hy mary Indi Surface High Wa Saturatio Water M	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1)	of one is		Aqu Tru Hyc Oxi	iatic e Aqi Iroge dized	Fauna (B uatic Plai en Sulfide	nts (B14) Odor (C1	<u>Se</u> )) –	condary 1 Surfac Draina Dry-Se Crayfis	ndicators (minimum of two requires Soil Cracks (B6) Ige Patterns (B10) eason Water Table (C2) sh Burrows (C8)
Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Gauge or Well Data (D9)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Other (Explain in Remarks)         Water-Stained Leaves (B9)       Other (Explain in Remarks)         Id Observations:       other (Explain in Remarks)         rface water present?       Yes       No         X       Depth (inches):       Indicators of wetland         turation present?       Yes       No         X       Depth (inches):       Indicators of wetland         cludes capillary fringe)       scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: /DROL( etland Hy mary Indi Surface High Wa Saturatio Water M Sedimer	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2)	of one is		Aqu Tru Hyc Oxi (C3	uatic e Aqu Iroge dized )	Fauna (B uatic Plar en Sulfide d Rhizosp	nts (B14) Odor (C1 oheres on	Se 	condary 1 Surfac Draina Dry-Se Crayfis Satura	ndicators (minimum of two requise Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ttion Visible on Aerial Imagery (C8)
Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)         Water-Stained Leaves (B9)       Other (Explain in Remarks)         eld Observations:       other (Explain in Remarks)         rface water present?       Yes         No       X       Depth (inches):         turation present?       Yes         No       X       Depth (inches):         cludes capillary fringe)       No         scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: <b>(DROL(</b> <b>etland Hy</b> <u>Surface</u> High Wa Saturatio Water M Sedimer Drift Dep	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)	of one is		Aqu Tru Hyc Oxi (C3 Pre	atic e Aqu lroge dized ) senc	Fauna (B uatic Plai en Sulfide d Rhizosp e of Redu	nts (B14) Odor (C1 oheres on uced Iron	Se 	condary 1 Surfac Draina Dry-Se Crayfis Satura Stunte	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) tition Visible on Aerial Imagery (C9 ed or Stressed Plants (D1)
Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)         Water-Stained Leaves (B9)       Other (Explain in Remarks)         Id Observations:       Indicators of wetland         rface water present?       Yes         No       X       Depth (inches):         ater table present?       Yes         No       X       Depth (inches):         turation present?       Yes         No       X       Depth (inches):         cludes capillary fringe)       No         scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: <b>(DROL(</b> <b>etland Hy</b> <b>mary Indi</b> Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	of one is		Aqu Tru Hyc Oxi (C3 Pre Rec	atic e Aqu lroge dized ) senc cent l	Fauna (B uatic Plai en Sulfide d Rhizosp e of Redu	nts (B14) Odor (C1 oheres on uced Iron	Se 	condary I Surfac Draina Dry-Se Crayfis Satura Sturte Geom	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2)
Water-Stained Leaves (B9)       Other (Explain in Remarks)         Observations:              frace water present? Yes No X Depth (inches):	pth (inche marks: <b>(DROL(</b> <b>etland Hy</b> <b>mary Indi</b> Surface High Wa Saturation Water M Sedimer Drift Dep Algal Ma Iron Dep	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	<u>of one is</u>		Aqu Tru Hyc Oxi (C3 Pre Rec (C6	atic e Aqu lroge dized ) senc cent !	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu Iron Redu	nts (B14) Odor (C1 oheres on uced Iron uction in T	Se 	condary I Surfac Draina Dry-Se Crayfis Satura Sturte Geom	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2)
eld Observations:         rface water present?       Yes         No       X       Depth (inches):         ater table present?       Yes         No       X       Depth (inches):         turation present?       Yes         No       X       Depth (inches):         cludes capillary fringe)       No         scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: <b>(DROL(</b> <b>etland Hy</b> <b>mary Indi</b> Surface High Wa Saturation Water M Sedimer Drift Dep Algal Ma Iron Dep Inundation	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria	<u>of one is</u> Il Imager	y (B7)	Aqu Tru Hyc Oxi (C3 Pre Rec (C6 Thi	uatic e Aqu lroge dized ) senc cent ! ) n Mu	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu Iron Redu ck Surfac	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7)	Se 	condary I Surfac Draina Dry-Se Crayfis Satura Sturte Geom	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2)
rface water present?       Yes       No       X       Depth (inches):       Indicators of wetland         ater table present?       Yes       No       X       Depth (inches):       Indicators of wetland         turation present?       Yes       No       X       Depth (inches):       Indicators of wetland         cludes capillary fringe)       Yes       No       X       Depth (inches):       Indicators of wetland         scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Indicators of wetland       No	pth (inche marks: <b>(DROL(</b> <b>etland Hy</b> <b>mary Indi</b> Surface High Wa Saturatio Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca	of one is I Imager ive Surfa	y (B7)	Aqu Tru Hyc Oxi (C3 Pre Rec (C6 Thi Gau	uatic e Aqu lroge dized ) senc cent ! ) n Mu uge o	Fauna (B uatic Plan en Sulfide d Rhizosp ee of Redu fron Redu ck Surfac or Well Da	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9)	Se Living Roots (C4) illed Soils	condary I Surfac Draina Dry-Se Crayfis Satura Sturte Geom	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2)
ater table present?       Yes       No       X       Depth (inches):       Indicators of wetland hydrology present?       No         turation present?       Yes       No       X       Depth (inches):       hydrology present?       N         cludes capillary fringe)       scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Indicators of wetland hydrology present?       N	pth (inche marks: <b>YDROL(</b> etland Hy mary Indi Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-S	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca tained Leaves (B9)	of one is I Imager ive Surfa	y (B7)	Aqu Tru Hyc Oxi (C3 Pre Rec (C6 Thi Gau	uatic e Aqu lroge dized ) senc cent ! ) n Mu uge o	Fauna (B uatic Plan en Sulfide d Rhizosp ee of Redu fron Redu ck Surfac or Well Da	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9)	Se Living Roots (C4) illed Soils	condary I Surfac Draina Dry-Se Crayfis Satura Sturte Geom	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2)
turation present?       Yes       No       X       Depth (inches):       hydrology present?       N         cludes capillary fringe)	pth (inche marks: <b>YDROL(</b> etland Hy mary Indi Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-S eld Obser	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 vations:	of one is I Imager ive Surfa )	y (B7) ce (B8)	Aqu Tru Oxi (C3 Pre Rec (C6 Thi Gai Oth	uatic e Aqu lroge dized ) senc ) sent ! ) n Mu uge o er (E	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu ron Redu ck Surfac cr Well Da Explain in	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks	Se Living Roots (C4) illed Soils	condary I Surfac Draina Dry-Se Crayfis Satura Sturte Geom	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2)
cludes capillary fringe) scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: <b>YDROL(</b> etland Hy mary Indi Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-S eld Obser rface wat	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 vations: er present?	I Imager, ve Surfa ) Yes	y (B7) ce (B8)	Aqu Tru Oxi (C3 Pre Rec (C6 Thi Gai Oth	atic e Aqu lroge dized ) senc ) sent ! ) n Mu uge o er (E	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu ron Redu ck Surfac or Well Da Explain in	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches):	Se Living Roots (C4) illed Soils	condary 1 Surfac Draina Dry-Se Crayfit Satura Stunte Geom FAC-N	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) tion Visible on Aerial Imagery (C8 ed or Stressed Plants (D1) orphic Position (D2) Jeutral Test (D5)
scribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	pth (inche marks: <b>YDROL(</b> <b>etland Hy</b> mary Indi Surface High Wa Saturatio Water M Saturatio Water M Iron Dep Inundation Sparsely Water-S <b>etd Obsen</b> rface wata ater table	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 vations: er present? present?	Il Imager ive Surfa ) Yes Yes	y (B7) ce (B8)	Aqu Tru Oxi (C3 Pre Rec (C6 Thi Gai Oth	atic e Aqu lroge dized ) senc cent ! ) n Mu uge o cer (E X	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu ron Redu ck Surfac cr Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	Se Living Roots (C4) illed Soils	condary I Surfac Draina Dry-Se Crayfit Satura Stunte Geom FAC-N	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) tion Visible on Aerial Imagery (C8) d or Stressed Plants (D1) orphic Position (D2) Jeutral Test (D5)
	Pth (inche marks: YDROL( etiand Hy mary Indi Surface High Wa Saturatio Water M Saturation Drift Dep Algal Ma Iron Dep Inundation Sparsely Water-S Eld Obser rface wata ater table turation p	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 vations: er present? present?	Il Imager ive Surfa ) Yes Yes	y (B7) ce (B8)	Aqu Tru Oxi (C3 Pre Rec (C6 Thi Gai Oth	atic e Aqu lroge dized ) senc cent ! ) n Mu uge o cer (E X	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu ron Redu ck Surfac cr Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	Se Living Roots (C4) illed Soils	condary I Surfac Draina Dry-Se Crayfit Satura Stunte Geom FAC-N	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) tion Visible on Aerial Imagery (C8) d or Stressed Plants (D1) orphic Position (D2) Jeutral Test (D5)
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	Pth (inche marks: PTROL( Ptland Hy mary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-S Ptd Obser trace wat ater table turation p cludes ca scribe rec	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 vations: er present? present? present? pillary fringe)	I Imager ve Surfa ) Yes Yes Yes	y (B7) ce (B8)	Aqu Tru Oxi (C3 Pre Rec C6 Thi Gai Oth No No	atic e Aqu droge dized ) ssenc cent 1 ) n Mu uge o er (E X X X	Fauna (B uatic Plan en Sulfide d Rhizosp e of Redu fron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	Se Living Roots (C4) illed Soils	condary I Surfac Draina Dry-Se Crayfis Satura Stunte Geom FAC-N	ndicators (minimum of two requires Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) attion Visible on Aerial Imagery (C9 ad or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)

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	WETLA	ND DETERMINA	TION D	ATA FO	RM - Midw	est Re	egion		
Project/Site SE Gro	owth Area Water & San	itary C	ity/County	: North	Liberty/John	nson S	Sampling Da	ate:	6.11.14
Applicant/Owner:	City of North Liberty		S	tate:	lowa	s	ampling Po	int:	N2
Investigator(s): Ke	vin M. Griggs and Bill N	Martin		Section,	Township, R	lange:		19/80W/8	N
Landform (hillslope	, terrace, etc.):	Stream terrace		_ocal relie	f (concave, c	convex,	none):	Cond	ave
Slope (%): 0 - 2	Lat:	617101	Long	g:	4620103	[	Datum:	NAD 83	Zone 15
Soil Map Unit Name	e Spillville loam		_		<b>NWI Clas</b>	ssificatio	on:	Yes	
Are climatic/hydrold	ogic conditions of the s	ite typical for this tim	e of the y	ear?	(lf no	o, explai	n in remarks	s)	
Are vegetation	, soil	, or hydrology	signi	ficantly di	sturbed?	A	Are "normal	circumstanc	es"
Are vegetation	, soil	, or hydrology	natu	ally probl	ematic?			prese	ent? Yes
SUMMARY OF	FINDINGS		_		(11	f neede	d, explain a	ny answers	in remarks.)
Hydrophytic ve	getation present?	Y							
Hydric soil pres	sent?	Y	is	the sam	pled area wi	ithin a v	wetland?	N	
Indicators of we	etland hydrology prese	nt?	fy	es, optior	al wetland si	ite ID:	NL	_1	
Remarks: (Explain	alternative procedures	here or in a separate	e report.)					11	

VEGETATION -- Use scientific names of plants.

	Absolute	Dominan	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size: )	% Cover	t Species	Staus	Number of Dominant Species
1 Salix nigra	70	Y	OBL	that are OBL, FACW, or FAC: 4 (A)
2 Acer saccharinum	30	Y	FACW	Total Number of Dominant Species Across all Strata: 4 (B)
۵ ۵		·		
				Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)
5	100	= Total Cover		(AVB)
Sapling/Shrub strature (Dist size:	\	- Total Cover		Prevalence Index Worksheet
Sapling/Shrub stratum (Plot size:	)			Total % Cover of:
2				OBL species $80 \times 1 = 80$
3				FACW species $120 \times 2 = 240$
3				FAC species $120$ x 2 = $240$ FAC species $0$ x 3 = $0$
4 5				FACU species $0 \times 4 = 0$
	0	= Total Cover		UPL species $0 \times 4^{-1} = 0$
Herb stratum (Plot size:	\			Column totals 200 (A) 320 (B)
	/ ===		FLOW	
1 Phalaris arundinacea	70	Y	FACW	Prevalence Index = B/A = 1.60
2 Carex vulpinoidea	20	Y	FACW	
3 Carex comosa	10	N	OBL	Hydrophytic Vegetation Indicators:
				Rapid test for hydrophytic vegetation
5				X Dominance test is >50%
<u>6</u>				X Prevalence index is ≤3.0*
/				Morphogical adaptations* (provide
8				supporting data in Remarks or on a
·				separate sheet)
10	100	- Total Cause		Problematic hydrophytic vegetation*
Missilving stratum (Distaire)	<u>,                                     </u>	= Total Cover		(explain)
Woody vine stratum (Plot size:1	)			*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
2				Hydrophytic
	0	= Total Cover		vegetation
				present? Y
Remarks: (Include photo numbers here or on a separ	ate sheet)	-		
Photo 2				

							or or confirm the absenc	
Depth	Matrix			dox Feat				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR 2/1	70	7.5 YR 4/3	2+	С	M	loam	
12-20	10YR 2/1 - 3//1	70	7.5 YR 4/3	2+	С	M	loam to silty clay loam	
					1			
1000								
ype: C =	Concentration, D =	Depleti	on, RM = Reduce	ed Matrix	x, MS = N	lasked S	and Grains. **Locatio	n: PL = Pore Lining, M = Matri
	oil Indicators:							ematic Hydric Soils:
-	stisol (A1)		Sar	ndy Glev	ed Matrix	(S4)		dox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Rede		. ( ,	Dark Surface (S7	
	ick Histic (A3)			-	atrix (S6)			Masses (F12) (LRR K, L, R)
	drogen Sulfide (A4	)		•••	ky Minera	al (F1)		rk Surface (TF12)
	atified Layers (A5)			-	yed Matrix		Other (explain in	
	m Muck (A10)				atrix (F3)			remanoy
	pleted Below Dark	Surface			(Surface			
	ick Dark Surface (A				ark Surfa	• •	*Indiactors of hudr	ophytic vegetation and weltan
	ndy Mucky Mineral	•	'		ressions	• •	•	
	m Mucky Peat or F	• •		lox Debi	ressions	(F0)	nyarology must b	e present, unless disturbed or problematic
		·	)					problematic
	Layer (if observe							
		· · · · ·				=		
/pe:							Hydric soil presen	t? <u>Y</u>
epth (inch	es):				_		Hydric soil presen	t? <u>Y</u>
epth (inch emarks: YDROL retland Hy rimary Ind Surface	OGY ydrology Indicato licators (minimum o water (A1)	rs: pf one is		Aquatic	: Fauna (B		<u>Secondary Ind</u> X_Surface	icators (minimum of two requi Soil Cracks (B6)
epth (inch emarks: YDROL etland Hy rimary Ind Surface High W	OGY ydrology Indicato licators (minimum o Water (A1) ater Table (A2)	rs: pf one is		Aquatic True Ac	: Fauna (B quatic Plai	nts (B14)	<u>Secondary Ind</u> X Surface Drainage	icators (minimum of two requi Soil Cracks (B6) Patterns (B10)
Pepth (inch Pemarks: PUROL Petland Hy Surface High W Saturat	OGY ydrology Indicato icators (minimum o Water (A1) ater Table (A2) ion (A3)	rs: pf one is		Aquatic True Ac Hydroge	: Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C	Secondary Ind X Surface Drainage	icators (minimum of two requi Soil Cracks (B6) ∋ Patterns (B10) son Water Table (C2)
Pepth (inch emarks: YDROL Vetland Hy rimary Ind Surface High W Saturat Water M	OGY ydrology Indicato licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1)	rs: pf one is		Aquatic True Ac Hydroge Oxidize	: Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C	Secondary Ind X Surface Drainage I) Dry-Seas Living Roots Crayfish	icators (minimum of two requi Soil Cracks (B6) ∋ Patterns (B10) son Water Table (C2) Burrows (C8)
Pepth (inch emarks: YDROL Vetland Hy rimary Ind Surface High W Saturat Water M Sedime	OGY ydrology Indicato licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2)	rs: pf one is		Aquatic True Ac Hydroge Oxidize (C3)	Fauna (B quatic Plar en Sulfide d Rhizosp	nts (B14) Odor (C oheres on	Secondary Ind X Surface Drainage I) Dry-Seas Living Roots Crayfish Saturatic	icators (minimum of two requi Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High W Saturat Water M Sedime C Drift De	OGY ydrology Indicato licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) iposits (B3)	rs: pf one is		Aquatic True Ac Hydroge Oxidize (C3) Present	Fauna (B quatic Plai en Sulfide d Rhizosp ce of Redi	nts (B14) Odor (C oheres on uced Iron	Secondary Ind X Surface Drainage I) Dry-Seat Living Roots Crayfish Saturatic (C4) Stunted	icators (minimum of two requi Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1)
epth (inch emarks: YDROL /etland Hy rimary Ind Surface High W Saturat Water M Sedime C Drift De Algal M	OGY ydrology Indicato licators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) ont Deposits (B2) iposits (B3) at or Crust (B4)	rs: pf one is		Aquatic True Ac Hydrogo Oxidize (C3) Presend Recent	Fauna (B quatic Plai en Sulfide d Rhizosp ce of Redi	nts (B14) Odor (C oheres on uced Iron	Secondary Ind X Surface Drainage I) Dry-Seat Living Roots Crayfish Saturatic (C4) Stunted illed Soils Geomore	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) ohic Position (D2)
epth (inch emarks: YDROL /etland Hy rimary Ind Surface High W Saturat Water N Sedime C Drift De Algal M Iron De	OGY ydrology Indicato licators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) ont Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	rs: of one is		Aquatic True Ac Hydroge Oxidize (C3) Presend Recent (C6)	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	nts (B14) Odor (C oheres on uced Iron uction in T	Secondary Ind X Surface Drainage I) Dry-Seat Living Roots Crayfish Saturatic (C4) Stunted illed Soils Geomore	icators (minimum of two requi Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1)
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rimary Ind Surface High W Saturat Water M Sedime Algal M Iron De Inundat Sparse Water-S <b>ield Obse</b> urface wa	OGY ydrology Indicato icators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) iposits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria by Vegetated Conca Stained Leaves (B9) rvations: ter present?	rs: of one is I Imager ve Surfa	y (B7) ce (B8)	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mu Gauge	Fauna (B quatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	nts (B14) Odor (C oheres on uced Iron uction in 7 ce (C7) ata (D9) Remarks inches):	Secondary Ind X Surface Drainage Dry-Seas Living Roots Crayfish Saturatic (C4) Stunted illed Soils Geomory FAC-Net	icators (minimum of two requin Soil Cracks (B6) a Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
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epth (inch emarks: IYDROL /etland Hy rimary Ind Surface High W Saturat Water M Sedime X Drift De Algal M Iron De Inundat Sparse Water-S ield Obse urface wa vater table aturation p ncludes c	OGY ydrology Indicato licators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) on t Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9) rvations: ter present? e present? present? present? apillary fringe)	rs: of one is of one is ve Surfa Yes Yes Yes	y (B7) ce (B8)	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mt Gauge Other (I	Fauna (B quatic Play en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C oheres on uced Iron uction in 1 ce (C7) ata (D9) Remarks inches): inches):	Secondary Ind X Surface Drainage I) Dry-Seat Living Roots Crayfish Saturatic (C4) Stunted illed Soils Geomory FAC-Net	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) or Visible on Aerial Imagery (C9 or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
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	riggs Enviror		-				
WETLAND DET					-		
	City/0	County: No	rth Liberty/Jo			-	6.11.14
Applicant/Owner: City of North Liberty		State:	lowa		Sampling Poi		N3
Investigator(s): Kevin M. Griggs and Bill Martin	1 - 1	Sectio	on, Township	, Range:		22/84N/24	iw
Landform (hillslope, terrace, etc.): Elevated	stream terrace	Local r	elief (concave	e, convex,	none):	Co	nvex
Slope (%): 0 - 3 Lat: 61710	8	Long:	4620116	;	Datum:	NAD 83 -	– Zone 15
Soil Map Unit Name Spillville Ioam			NWI C	Classificati	ion:	Yes	<u>}</u>
Are climatic/hydrologic conditions of the site typical	l for this time o	f the year?	(If	f no, expla	in in remarks	3)	
Are vegetation, soil, or hyd	irology	significantly	disturbed?		Are "normal	circumstan	ices"
Are vegetation , soil , or hyd	drology	naturally pr	oblematic?			pres	ent? Yes
SUMMARY OF FINDINGS			h	(If neede	ed, explain a	ny answers	s in remarks.)
Hydrophytic vegetation present?	Y						
Hydric soil present?	N	is the s	ampled area	within a	wetland?	N	eard in the
Indicators of wetland hydrology present?	N	f yes, op	tional wetlan	d site ID:		1.021 123	and the state of the
Remarks: (Explain alternative procedures here or i	n a separate re	port.)					
a distanti a secondaria di							
	Adjacent to v	water treatr	nent plant			1	
VEGETATION Use scientific names of pl	ants.						
	Absolute	Dominan	Indicator	Domina	ance Test W	orksheet	· · · · · · · · · · · · · · · · · · ·
Tree Stratum (Plot size:)		t Species	Staus		of Dominant		
1 Acer negundo	100	Y	FAC		OBL, FACW,		3(A)
2					Number of De cies Across al		3 (B)
3						_	(D)
5					of Dominant OBL. FACW.		00.00% (A/B)
°	100	= Total Cove	r			_	````
Sapling/Shrub stratur (Plot size:	)			Prevale	ence Index V	/orksheet	
1				Total %	Cover of:		
2				OBL sp		) x1=	0
3					species 10		200
4				· ·		$10 \times 3 =$	300
5						) ×4=	0
	0	= Total Cove	r	UPL sp		x 5 =	0 500 (B)
Herb stratum (Plot size:	)		i anna A	Column		00 (A)	500 (B)
1 Phalaris arundinacea		<u> </u>	FACW	Prevale	nce Index =	B/A =	2.50
2 Urtica dioica	25	<u> </u>	FACW	Hudron	hytic Veget		atore
3					bid test for hy		
4					minance test		regetation
6					valence inde		
7					rphogical ada		nrovide
8					porting data		
9					arate sheet)		
10	100	= Total Cove			blematic hyd plain)	rophytic ve	getation*
Woody vine stratum (Plot size:	_)	101010000		*Indicat	ors of hydric so		hydrology must be
1					present, unless	disturbed or	problematic
2		- Tatal Car			drophytic getation		
	0	= Total Cove	ſ		sent?	Y	

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

	ŝ.	19	
NO			

	cription: (Descri								
Depth (Inchos)	Matrix Color (moint)	%		Redox Fe		1.00**	Text	turo	Bomorko
(Inches)	Color (moist)		Color (mois	1) %	Туре*	Loc**	Text	ure	Remarks
0-20	10YR 2/1	90		_			loam		
							U		
				in h					and the second second the
	10		S						second second second
					-				
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	10 1 100 10 1 100	( - · ·							
									a month a second to parts the
ype: C = (	Concentration, D =	Depletio	on, RM = Red	uced Mat	rix, MS = I	Masked S	and Grains.	**Locatio	on: PL = Pore Lining, M = Matri
Hydric So	oil Indicators:		in settion of	1.0.14			Indicato	rs for Prob	lematic Hydric Soils:
— His	tisol (A1)			Sandy Glo	eyed Matri	x (S4)	Coa	st Prairie Re	edox (A16) ( <b>LRR K, L, R</b> )
His	tic Epipedon (A2)			Sandy Re	dox (S5)				7) ( <b>LRR K, L)</b>
Bla	ck Histic (A3)		;	Stripped I	Matrix (S6)	)		-Manganese	Masses (F12) (LRR K, L, R)
— Нус	drogen Sulfide (A4	)		oamy M	ucky Miner	ral (F1)	Very	/ Shallow Da	ark Surface (TF12)
Stra	atified Layers (A5)		-0- 01th	.oamy Gl	eyed Matri	ix (F2)	Othe	er (explain ir	remarks)
2 ci	m Muck (A10)			Depleted	Matrix (F3	)	- F C		
Dep	pleted Below Dark	Surface	(A11)	Redox Da	rk Surface	e (F6)			
Thi	ck Dark Surface (/	A12)		Depleted	Dark Surfa	ace (F7)	*Indic	ators of hvd	rophytic vegetation and weltan
Sar	ndy Mucky Minera	(S1)			pressions				pe present, unless disturbed or
	m Mucky Peat or I						,	0,	problematic
etrictivo	Layer (if observe								
5311161146									
	Layer (II Observe	ea):					Ludria		at2 N
/pe:		a):		_			Hydric	soil prese	nt? <u>N</u>
pe: epth (inch		·a):					Hydric	soil presei	nt? <u>N</u>
pe: epth (inch		a):					Hydric	soil presei	nt? <u>N</u>
pe: epth (incho emarks:	es):	:d):					Hydric	soil presei	nt? <u>N</u>
pe: epth (inchi emarks: YDROL	es):						Hydric	soil prese	nt?N
rpe: epth (incho emarks: YDROL( etland Hy	es): DGY rdrology Indicato	rs:	required; che	ck all tha					
rpe: epth (incho emarks: YDROL( etland Hy imary Indi	es): DGY rdrology Indicato icators (minimum of	rs: of one is	required; che			B13)		econdary Inc	dicators (minimum of two requi
pe: epth (incho emarks: YDROLO etland Hy imary Indi Surface	es): DGY vdrology Indicato icators (minimum of Water (A1)	rs: of one is	required; che	Aquat	ic Fauna (I			econdary Ind	dicators (minimum of two requi Soil Cracks (B6)
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ype: epth (inch emarks: YDROLO /etland Hy rimary Indi Surface High Wa Saturati Water M Sedimen Drift Den Algal Ma Iron Den Inundati Sparsel Water-S ield Obser urface wat /ater table aturation p	DGY vdrology Indicato icators (minimum of Water (A1) ater Table (A2) on (A3) flarks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca itained Leaves (B9) rvations: er present? present?	rs: of one is I Imagery ve Surfac	- 	Aquai True A Hydro Oxidia (C3) Prese (C6) Thin f Gaug Other	ic Fauna (E Aquatic Pla gen Sulfide red Rhizos nce of Red nt Iron Red Muck Surfa e or Well D (Explain in Depth (	ants (B14) e Odor (C <sup>-</sup> pheres on duced Iron luction in T doce (C7) Data (D9) n Remarks (inches): (inches):	Si Living Roots (C4) illed Soils	econdary Ind Surface Drainag Dry-Sea Crayfish Saturati Stunted Geomor FAC-Ne	dicators (minimum of two requi Soil Cracks (B6) e Patterns (B10) ison Water Table (C2) a Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) rphic Position (D2) eutral Test (D5) dicators of wetland
ype: epth (inch emarks: YDROLO etland Hy rimary Indi Surface High Wa Saturati Water M Sedimer Drift De Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat Vater table aturation p ncludes ca	DGY drology Indicato cators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca itained Leaves (B9) rvations: er present? present?	rs: of one is of one is I Imagery ve Surface Yes Yes Yes	- (B7) 	Aquat True / Hydro Oxidia (C3) Prese Rece (C6) Thin I Gaug Other	ic Fauna (I Aquatic Pla gen Sulfide red Rhizos nce of Red fuck Surfa e or Well D (Explain in Depth ( Depth (	ants (B14) e Odor (C <sup>2</sup> pheres on duced Iron luction in T duce (C7) Data (D9) n Remarks (inches): (inches):	) Living Roots (C4) illed Soils	econdary Ind Surface Drainag Dry-Sea Crayfish Saturati Stunted Geomon FAC-Ne	dicators (minimum of two requi Soil Cracks (B6) e Patterns (B10) ison Water Table (C2) a Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) rphic Position (D2) eutral Test (D5) dicators of wetland
Ppe: epth (incho emarks: PDROLO etland Hy imary Indi Surface High Wa Saturati Water N Sedime Drift De Algal Ma Iron Dep Inundati Sparsely Water-S eld Obset ater table aturation p nocludes ca escribe re	DGY drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca itained Leaves (B9) rvations: er present? present? present? present? ipillary fringe)	rs: of one is of one is I Imagery ve Surface Yes Yes Yes	- (B7) 	Aquat True / Hydro Oxidia (C3) Prese Rece (C6) Thin I Gaug Other	ic Fauna (I Aquatic Pla gen Sulfide red Rhizos nce of Red fuck Surfa e or Well D (Explain in Depth ( Depth (	ants (B14) e Odor (C <sup>2</sup> pheres on duced Iron luction in T duce (C7) Data (D9) n Remarks (inches): (inches):	) Living Roots (C4) illed Soils	econdary Ind Surface Drainag Dry-Sea Crayfish Saturati Stunted Geomo FAC-Ne	dicators (minimum of two requi Soil Cracks (B6) e Patterns (B10) ison Water Table (C2) a Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) rphic Position (D2) eutral Test (D5) dicators of wetland
ype: epth (inch emarks: YDROL etland Hy imary Indi Surface High Wa Saturati Water M Sedimer Drift De Algal Ma Iron Dep Inundati Sparsely Water-S eld Obse urface wat vater table aturation p ncludes ca	DGY drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca itained Leaves (B9) rvations: er present? present? present? present? ipillary fringe)	rs: of one is of one is I Imagery ve Surface Yes Yes Yes	- (B7) 	Aquat True / Hydro Oxidia (C3) Prese Rece (C6) Thin I Gaug Other	ic Fauna (I Aquatic Pla gen Sulfide red Rhizos nce of Red fuck Surfa e or Well D (Explain in Depth ( Depth (	ants (B14) e Odor (C <sup>2</sup> pheres on duced Iron luction in T duce (C7) Data (D9) n Remarks (inches): (inches):	) Living Roots (C4) illed Soils	econdary Ind Surface Drainag Dry-Sea Crayfish Saturati Stunted Geomo FAC-Ne	dicators (minimum of two requi Soil Cracks (B6) e Patterns (B10) ison Water Table (C2) a Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) rphic Position (D2) eutral Test (D5) dicators of wetland

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	- 23		

WETLAND DETERMINATION DATA Project/Site SE Growth Area Water & Sanitary City/County: N	FORM - Midwest Region Iorth Liberty/Johnson Sampling Date: 6.11.14
Applicant/Owner: City of North Liberty State:	lowa Sampling Point: N4
	tion, Township, Range: 19/80W/8W
	relief (concave, convex, none): Concave
Slope (%):         0 - 2         Lat:         671323         Long:	4619997 Datum: NAD 83 Zone 15
Soll Map Unit Name Spillville Ioam	VWI Classification: No
Are climatic/hydrologic conditions of the site typical for this time of the year?	(If no, explain in remarks)
Are vegetation, soil, or hydrologysignificant Are vegetation, soil, or hydrologynaturally p SUMMARY OF FINDINGS	tly disturbed? Are "normal circumstances" problematic? present? Yes (If needed, explain any answers in remarks.)
	sampled area within a wetland? Y
Remarks: (Explain alternative procedures here or in a separate report.) VEGETATION Use scientific names of plants.	
Absolute Dominan	Indicator Dominance Test Worksheet
Tree Stratum       (Plot size:)       % Cover       t Species         1       Acer saccharinum       100       Y	Staus     Number of Dominant Species       FACW     that are OBL, FACW, or FAC:     2     (A)
2	Total Number of Dominant Species Across all Strata: 3 (B)
4	Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)
100 = Total Cove	
Sapling/Shrub stratum (Plot size:)	Prevalence Index Worksheet
1	Total % Cover of:
2	OBL species 0 x 1 = 0
3	FACW species $170 \times 2 = 340$
4	FAC species 0 x 3 = 0 FACU species 30 x 4 = 120
0 = Total Cove	
Herb stratum (Plot size: )	Column totals 200 (A) 460 (B)
1     Phalaris arundinacea     70     Y       2     Polygonum erectum     30     Y	FACW Prevalence Index = B/A = 2.30
2 <i>Folygonum erectum</i> 30 1	Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation
5	X     Dominance test is >50%       X     Prevalence index is ≤3.0*
7 8 9	Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
10	Problematic hydrophytic vegetation*
Woody vine stratum (Plot size:)	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
	Hydrophytic
2	vegetation

0	1

SOIL								Samplin	ng Point:	N4
Profile Des	cription: (Descri	be to th	e depth needed	to docu	ment the	e indicat	or or confirm the	absence of i	ndicators.)	
Depth	Matrix		Rec	lox Feat						
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks	S
0-12	10YR 2/1	70	7.5 YR 4/3	2+	С	M	loam			
12-20	10YR 2/1 - 3//1	70	7.5 YR 4/3	2+	С	М	loam to silty cla	av loam		
					<u> </u>		louin to only on			
					-					
	- 1. TO			1990						
					l					1.1
	Concentration, D =	Depleti	on, RM = Reduce	d Matrix	k, MS = N	lasked S			= Pore Lining,	
-	bil Indicators:		Sor	du Clau	od Motrix	(04)			c Hydric Soils	
	tisol (A1)			idy Giey idy Reda	ed Matrix	(54)		rairie Redox ( <i>F</i> rface (S7) (LR	16) (LRR K, L	, K)
	tic Epipedon (A2) ck Histic (A3)			•	atrix (S6)				es (F12) (LRR	
	brogen Sulfide (A4	<b>`</b>			ky Minera			allow Dark Sur		к, <b>ь</b> , к <i>)</i>
	atified Layers (A5)	•		-	ed Matrix			xplain in rema		
	n Muck (A10)				atrix (F3)				na)	
	pleted Below Dark	Surface			Surface					
	ck Dark Surface (/				ark Surfa		*Indicator	e of hydrophyt	ic vegetation ar	nd weltan
	ndy Mucky Minera				ressions (	• •			sent, unless dis	
	n Mucky Peat or I			ion bop		()	njurolog		ematic	
—	Layer (if observe					<u> </u>			the state of the s	
ype:	Layer (II Observe	a).					Hydric soi	I present?	Y	
epth (inche	ae).				-		nyune soi	presentr _		
emarks:						<b>—</b> 7				-
YDROL	OGY									_
	drology Indicato	rs'								
	cators (minimum		required: check	all that s			Same	dony Indiactor	s (minimum of	
	Water (A1)	or one is	Tequiled, check			12)		Surface Soil C		two requi
	ater Table (A2)				Fauna (B Juatic Plar	,		Drainage Patte		
Saturatio					en Sulfide				ater Table (C2)	
	larks (B1)						·	Crayfish Burro		
	nt Deposits (B2)			(C3)					ible on Aerial Im	agery (C9
	posits (B3)			Presend	ce of Redu	uced Iron			essed Plants (D	
Algal Ma	at or Crust (B4)			Recent	Iron Redu	uction in T	illed Soils	Geomorphic P	osition (D2)	
Iron Dep	oosits (B5)			(C6)				FAC-Neutral T	est (D5)	
-	on Visible on Aeria	-			ick Surfac	. ,				
	Vegetated Conca		ce (B8)		or Well Da					
	tained Leaves (B9)			Other (E	Explain in	Remarks	)			
ield Obser										_
	er present?	Yes	No	X	Depth (i		197			
ater table		Yes	No No		Depth (i				ors of wetland	~
aturation p		Yes	X No		Depth (i	inches):		nyarolo	ogy present?	<u> </u>
	pillary fringe)				=					
escribe re	corded data (strea	im gaug	e, monitoring well	, aerial <sub>l</sub>	photos, p	revious i	nspections), if ava	ailable:		
Remarks:										

WETLAND DET				-	S	0.44.44
Project/Site SE Growth Area Water & Sanitary	City/	-		ohnson Sampling [		6.11.14
Applicant/Owner: City of North Liberty		State:	lowa	1 0		N5
nvestigator(s): Kevin M. Griggs and Bill Martin			ion, Township	· · · · · · · · · · · · · · · · · · ·	19/80W/	
Landform (hillslope, terrace, etc.): Elevated strea		-				onvex
Slope (%): 0 - 3 Lat:617331		Long:	4620021			Zone 15
Soil Map Unit Name Chelesa-Lamont-Fayette compl				Classification:	Ye	es
Are climatic/hydrologic conditions of the site typical	for this time o	of the year?	()	f no, explain in remar	ks)	
Are vegetation, soil, or hydr	ology	significantl	ly disturbed?	Are "norma	al circumsta	nces"
Are vegetation, soil, or hydr	ology	naturally p	roblematic?		pre	esent? Yes
SUMMARY OF FINDINGS				(If needed, explain	any answe	rs in remarks.)
Hydrophytic vegetation present?						
Hydric soil present?		is the s	sampled area	within a wetland?	1	N
Indicators of wetland hydrology present?		f yes, o	ptional wetlan	d site ID:		
Remarks: (Explain alternative procedures here or in VEGETATION Use scientific names of pla						
	Absolute	Dominan	Indicator	Dominance Test	Vorksheet	
Tree Stratum (Plot size: )		t Species	Staus	Number of Dominan	t Species	
1 Celtis occidentalis	40	Y	FAC	that are OBL, FACW	, or FAC:	3 (A)
2 Carya ovata	20	Y	FACU	Total Number of	Dominant	
3 Acer saccharinum	20	Y	FACW	Species Across	all Strata:	6 (B)
4				Percent of Dominan	•	
5				that are OBL, FACW	, or FAC:	50.00% (A/B)
Sapling/Shrub stratum (Plot size:	) 80	= Total Cove	er	Prevalence Index	Workshee	t
1	- ′			Total % Cover of:		-
2				OBL species	0 x 1 =	0
3				FACW species	40 x 2 =	80
4				FAC species	40 x 3 =	120
5				FACU species	80 x 4 =	320
	0	= Total Cove	er	UPL species	0 x 5 =	0
Herb stratum (Plot size:	_)			Column totals	160 (A)	(B)
1 Solidago canadensis	40	Y	FACU	Prevalence Index =	= B/A =	3.25
2 Urtica dioica	20	Y	FACW			
3 Gleditsia triacanthos	20	Y	FACU	Hydrophytic Vege		
4				Rapid test for I		vegetation
5				Dominance tes		
6				Prevalence ind		
8				Morphogical ac		
8 9				supporting data separate sheet		NO UI UII 8
10				Problematic hy		egetation*
	、 <u> </u>	= Total Cove	er	(explain)		
Meedu vine streture (Dist size	1			*Indicators of hydric s present, unles		
<u>Woody vine stratum</u> (Plot size:1	-'					
Woody vine stratum     (Plot size:       1				Hydrophytic		
Woody vine stratum     (Plot size:       1		= Total Cove			N	

Griggs	Environmental	Strategies.	Inc.
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rofile Des	cription: (Descri	ne to m	o aoparne		10 0000	the cite	, maioue				
Depth	Matrix		•		dox Feat					· · · · · · · · · · · · · · · · · · ·	
(Inches)	Color (moist)	%	Color (m	_	%	Type*	Loc**	Textu	re	Remarks	
0-8	10YR 2/2	90						silty clay loa	m		
8-15+	10YR 5/4	90						silty clay loa			
0-13+	1011(3/4	- 30						Silty Clay IUa			
		_									
									-		-
										Source of the second	
	Concentration, D =	= Depleti	on, RM = F	Reduc	ed Matrix	(, MS = N	lasked S			n: PL = Pore Lining, M = I	Matr
-	oil Indicators:									ematic Hydric Soils:	
	tisol (A1)		_			ed Matrix	: (S4)			dox (A16) (LRR K, L, R)	
	tic Epipedon (A2)		_		ndy Redo					7) (LRR K, L)	
Bla	ck Histic (A3)			Str	ipped Ma	trix (S6)		Iron-N	langanese	Masses (F12) (LRR K, L,	, R)
— Нус	drogen Sulfide (A4	4)		Loa	amy Muc	ky Minera	al (F1)	Very :	Shallow Dai	rk Surface (TF12)	
Stra	atified Layers (A5)	)		Loa	amy Gley	ed Matrix	(F2)	Other	(explain in	remarks)	
2 ci	m Muck (A10)			De	pleted M	atrix (F3)					
Dep	pleted Below Dark	Surface	(A11)	Re	dox Dark	Surface	(F6)				
Thi	ck Dark Surface (A	A12)		De	pleted Da	ark Surfac	ce (F7)	*Indica	tors of hydro	ophytic vegetation and we	eltar
Sar	ndy Mucky Minera	l (S1)		Re	dox Depr	essions (	(F8)			e present, unless disturbe	
5 cr	m Mucky Peat or	Peat (S3)	) —					•		problematic	
etrictive	Laver /if observe	d).			100						
	Layer (if observe	ed):						Hydric	oil presen	+2 N	
pe:		ed):						Hydric s	soil presen	t? <u>N</u>	
/pe: epth (inche		ed):				-		Hydric s	soil presen	t? <u>N</u>	
rpe: epth (inche emarks:	es):	əd):						Hydric s	soil presen	t? <u>N</u>	
pe: epth (inche emarks: YDROL(	es):							Hydric s	soil presen	t? <u>N</u>	
pe: epth (inche emarks: YDROL( etland Hy	es): DGY rdrology Indicato	urs:			all that a	-					
pe: epth (inche emarks: YDROL( etland Hy imary Indi	DGY rdrology Indicato cators (minimum	ors: of one is	required; c	check			12)		condary Ind	icators (minimum of two r	requ
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface	DGY drology Indicato cators (minimum Water (A1)	ors: of one is	required; c	check	Aquatic	Fauna (B			condary Ind Surface \$	icators (minimum of two r Soil Cracks (B6)	equ
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa	DGY drology Indicato cators (minimum Water (A1) ater Table (A2)	ors: of one is	required; o	check	Aquatic True Aq	Fauna (B uatic Plar	nts (B14)	Ser	condary Ind Surface \$ Drainage	icators (minimum of two r Soil Cracks (B6) Patterns (B10)	equ
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatio	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3)	ors: of one is	required; o	check	Aquatic True Aq Hydroge	Fauna (B uatic Plar en Sulfide	nts (B14) Odor (C1	<u>Se</u>	condary Ind Surface S Drainage Dry-Seas	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2)	equ
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water N	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1)	ors: of one is	required; o	check	Aquatic True Aq Hydroge Oxidized	Fauna (B uatic Plar en Sulfide	nts (B14) Odor (C1	Ser	condary Ind Surface S Drainage Dry-Seas Crayfish	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)	
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimen	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2)	ors: of one is	required; o	check	Aquatic True Aq Hydroge Oxidized (C3)	Fauna (B uatic Plar en Sulfide d Rhizosp	nts (B14) Odor (C1 heres on	See 	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery	
Ppe: epth (inche emarks: PDROL( etland Hy imary Indi Surface High Wa Saturatie Vater M Sedimer Drift Dep	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)	ors: of one is	required; o		Aquatic True Aq Hydroge Oxidized (C3) Presenc	Fauna (B uatic Plan en Sulfide d Rhizosp ce of Redu	nts (B14) Odor (C1 heres on uced Iron	Ser 	Condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted of	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1)	
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimen Drift Dep Algal Ma	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	ors: of one is	required; o		Aquatic True Aq Hydroge Oxidized (C3) Presenc Recent	Fauna (B uatic Plan en Sulfide d Rhizosp ce of Redu	nts (B14) Odor (C1 heres on uced Iron	See 	Condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	icators (minimum of two r Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2)	
rpe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimer Drift Dep Algal Ma Iron Dep	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	ors: of one is			Aquatic True Aq Hydroge Oxidized (C3) Presenc Recent (C6)	Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	nts (B14) Odor (C1 heres on uced Iron action in T	Ser 	Condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1)	
rpe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria	ors: of one is	y (B7)		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu	Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac	nts (B14) Odor (C1 heres on uced Iron nction in T ee (C7)	Ser 	Condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	icators (minimum of two r Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2)	
Ppe: epth (inche emarks: PDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca	ors: of one is I Imagery ve Surfac	y (B7)		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge o	Fauna (B uatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac or Well Da	nts (B14) Odor (C1 heres on uced Iron action in T ee (C7) ata (D9)	) Living Roots (C4)	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	icators (minimum of two r Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2)	
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pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimen Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S eld Obser	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca itained Leaves (B9) rvations:	ors: of one is of limagery ve Surfac	y (B7)		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge ( Other (E	Fauna (B uatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu ick Surfac or Well Da Explain in	nts (B14) Odor (C1 heres on uced Iron inction in T ata (D9) Remarks	) Living Roots (C4)	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	icators (minimum of two r Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2)	
pe: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimen Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S eld Obser	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 rvations: er present?	ors: of one is of one is ul Imagery ve Surfac	y (B7)		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge o Other (E	Fauna (B uatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac or Well Da Explain in	nts (B14) Odor (C1 heres on uced Iron inction in T ee (C7) ata (D9) Remarks nches):	) Living Roots (C4)	condary Ind Surface 3 Drainage Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2) utral Test (D5)	
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Ppe: epth (inche emarks: PDROLO etland Hy imary Indi Surface High Wa Saturatio Water M Sedimen Drift Dep Inundati Sparsely Water-S eld Obser attration pe	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 vations: er present? present?	ors: of one is of one is ul Imagery ve Surfac	y (B7)		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge o Other (E	Fauna (B uatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac or Well Da Explain in	nts (B14) Odor (C1 heres on uced Iron inction in T ee (C7) ata (D9) Remarks nches): nches):	) Living Roots (C4)	condary Ind Surface 3 Drainage Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2) utral Test (D5)	
ype: epth (inche emarks: YDROL( Yetland Hy rimary Indi Surface High Wa Saturatie Water N Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S water table aturation p ncludes ca	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca itained Leaves (B9 rvations: er present? present? present? present? pillary fringe)	I Imagery ve Surfac Yes Yes Yes	/ (B7) ;e (B8)	No	Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge o Other (E	Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 heres on uced Iron nction in T ee (C7) ata (D9) Remarks nches): nches): nches):	(C4)	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomory FAC-Neu Inc hy	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2) utral Test (D5)	γ (Cs
ype: epth (inche emarks: YDROL( Yetland Hy rimary Indi Surface High Wa Saturatie Water N Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S water table aturation p ncludes ca	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca tained Leaves (B9 vations: er present? present?	I Imagery ve Surfac Yes Yes Yes	/ (B7) ;e (B8)	No	Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge o Other (E	Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 heres on uced Iron nction in T ee (C7) ata (D9) Remarks nches): nches): nches):	(C4)	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomory FAC-Neu Inc hy	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2) utral Test (D5)	γ (Cs
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ype: epth (inche emarks: YDROL( etland Hy imary Indi Surface High Wa Saturatie Water M Sedimer Drift Deg Algal Ma Iron Deg Inundati Sparsely Water-S eld Obset urface wat vater table aturation p nocludes ca escribe red	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca itained Leaves (B9 rvations: er present? present? present? present? pillary fringe)	I Imagery ve Surfac Yes Yes Yes	/ (B7) ;e (B8)	No	Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge o Other (E	Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 heres on uced Iron nction in T ee (C7) ata (D9) Remarks nches): nches): nches):	(C4)	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomory FAC-Neu Inc hy	icators (minimum of two r Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery or Stressed Plants (D1) ohic Position (D2) utral Test (D5)	γ (Cs
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18/5

Project/Site SE Growth Area Water & Sanitary	City/	County: No	rth Liberty/J	ohnson Sampling Date: 6.11.14
Applicant/Owner: City of North Liberty		State:	lowa	
Investigator(s): Kevin M. Griggs and Bill Martin		Sectio	on, Townshij	o, Range: 19/80W/8W
	n terrace			re, convex, none): Concave
Slope (%): 0 - 2 Lat: 671496		Long:	461985	9 Datum: NAD 83 Zone 15
Soil Map Unit Name Spillville Ioam				Classification: Yes
Are climatic/hydrologic conditions of the site typical f	or this time c	of the year?	(I	f no, explain in remarks)
	ology			Are "normal circumstances"
Are vegetation , soil , or hydro		naturally pro		present? Yes
SUMMARY OF FINDINGS				(If needed, explain any answers in remarks.)
Hydrophytic vegetation present? Y				
Hydric soil present? Y		Is the s	ampled area	a within a wetland? Y
Indicators of wetland hydrology present? Y				nd site ID: NL_2
Remarks: (Explain alternative procedures here or in		-		
VEGETATION Use scientific names of pla	nts.			
	Absolute	Dominan	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size:)	% Cover	t Species	Staus	Number of Dominant Species
1 Ulmus americana 2 Celtis occidentalis	30	<u> </u>	FACW	that are OBL, FACW, or FAC: 5 (A)
3 Betula nigra		<u> </u>	FAC	Total Number of Dominant Species Across all Strata: 6 (B)
4		·		Percent of Dominant Species
5				that are OBL, FACW, or FAC: 83.33% (A/B)
	90	= Total Cover		
Sapling/Shrub stratur (Plot size:	)			Prevalence Index Worksheet
1		•		Total % Cover of:
2		•	·	OBL species $40 \times 1 = 40$
3	•			FACW species $90 \times 2 = 180$
5				FAC species         30         x 3 =         90           FACU species         30         x 4 =         120
5	0	= Total Cover		UPL species $0 \times 5 = 0$
Herb stratum (Plot size:	)			Column totals 190 (A) 430 (B)
1 Phalaris arundinacea	- 30	Y	FACW	Prevalence Index = B/A = 2.26
2 Polygonum erectum	30	Y	FACU	
3 Carex comosa	30	Y	OBL	Hydrophytic Vegetation Indicators:
A Didana asmus	10	N	OBL	Rapid test for hydrophytic vegetation
4 Bidens cernua				N Death and the CON
4 Bidens cernua 5				X Dominance test is >50%
				$\frac{X}{X}$ Prevalence index is $\leq 3.0^*$
5 6 7				X Prevalence index is ≤3.0* Morphogical adaptations* (provide
5 6 7 8				X Prevalence index is ≤3.0* Morphogical adaptations* (provide supporting data in Remarks or on a
5 6 7 8 9				X Prevalence index is ≤3.0* Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
5 6 7 8		= Total Cover		X Prevalence index is ≤3.0* Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation*
5 6 7 8 9		= Total Cover		X Prevalence index is ≤3.0* Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
5 6 7 8 9 10				X       Prevalence index is ≤3.0*         Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)         Problematic hydrophytic vegetation* (explain)         *Indicators of hydric soil and wetland hydrology must be

Griggs	Environmental	Strategies,	lnc.
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SOIL								Samplin	ng Point: N6
Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the	e absence of i	indicators.)
Depth	Matrix			lox Feat					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks
0-12	10YR 2/1	70	7.5 YR 4/3	2+	С	М	loam		
12-20	10YR 3//1	70	10YR 5/6	2+	C	M	loam to silty cla	av loam	
12-20	101110/11		1011(0/0	2.					
		<u> </u>		_					
		121.011							
									Constant Street
*Type: C = (	Concentration D:	I = Depleti	on, RM = Reduce	d Matri		lasked S	and Grains	**Location: Pl	= Pore Lining, M = Ma
	il Indicators:	- Depiet		u wath	x, 1913 – IV	naskeu S			ic Hydric Soils:
•	tisol (A1)		San	dy Glev	ed Matrix	((\$4)			A16) (LRR K, L, R)
	tic Epipedon (A2)			dy Red		((04)		Inface (S7) (LR	
	ck Histic (A3)			-	atrix (S6)				es (F12) ( <b>LRR K, L, R</b>
	Irogen Sulfide (A	4)		•	ky Miner			allow Dark Su	
	atified Layers (A5			-	ed Matri			explain in rema	
	m Muck (A10)	,			atrix (F3)				
	pleted Below Dark	<ul> <li>Surface</li> </ul>	· · · ·		Surface				
	ck Dark Surface (		· · ·		ark Surfa	• •	*Indicator	s of hydrophyt	ic vegetation and welt
	dy Mucky Minera				ressions	• •			sent, unless disturbed
	m Mucky Peat or	• •				. ,	, .		lematic
	Layer (if observ	ed).							
Type:	Layer (II Observ	euj.					Hydric soi	il present?	Y
Depth (inch	e).				-		Tryuno so		
_				_					
HYDROL				_					
-	drology Indicate								
Primary Ind	cators (minimum	of one is	required; check	all that a	apply)		Secon	ndary Indicator	rs (minimum of two red
Surface	Water (A1)				Fauna (E			Surface Soil C	racks (B6)
High Wa	ater Table (A2)		· · · · · · · · ·		quatic Pla			Drainage Patte	
Saturati					en Sulfide				/ater Table (C2)
	larks (B1)				d Rhizosp	pheres on	Living Roots	Crayfish Burro	
	nt Deposits (B2)			(C3)			· · · · · · · · · · · · · · · · · · ·		ible on Aerial Imagery (
	posits (B3)				ce of Red				essed Plants (D1)
_	at or Crust (B4)				Iron Redi	uction in I	Filled Soils	Geomorphic P FAC-Neutral T	
	oosits (B5) on Visible on Aeria	al Imager	v (B7)	(C6) Thin Mi	uck Surfac			-	est (D5)
	Vegetated Conca	-	· · ·		or Well D				
	tained Leaves (B9				Explain in		;)		
Field Obse		,		· · · ·			,	1	
Surface wat		Yes	No	х	Depth (	inches):			
Water table	•	Yes	No			inches):		Indicato	ors of wetland
Saturation p		Yes	X No			inches):			ogy present? Y
(includes ca	pillary fringe)		10-6-21		_				
Describe re	corded data (strea	am gauq	e, monitoring well	, aerial	photos, p	revious i	nspections), if ava	ailable:	
		5 5							
Demo									
Remarks:									

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#### Griggs Environmental Strategies, Inc. WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site SE Growth Area Water & Sanitary				ohnson Sampling D	)ate: 6	.11.14
Applicant/Owner: City of North Liberty		State:	lowa			N7
Investigator(s): Kevin M. Griggs and Bill Martin		Sectio	on, Township	, Range:	·	1
	lope			e, convex, none):	Conv	
Slope (%): 0 - 3 Lat: 61751		Long:			NAD 83 2	Zone 15
Soil Map Unit Name Chelesa-Lamont-Fayette comp				lassification:	Yes	
Are climatic/hydrologic conditions of the site typical		of the year?		no, explain in remar		
	rology		disturbed?		l circumstance	e"
	rology	naturally pr				nt? Yes
SUMMARY OF FINDINGS				(If needed, explain	any answers ir	n remarks.)
Hydrophytic vegetation present?	Y I	. i I				
Hydric soil present?	N	Is the s	ampled area	within a wetland?	N	
Indicators of wetland hydrology present?	N	f yes, op	tional wetlan	d site ID:		
Remarks: (Explain alternative procedures here or in	a separate r	report.)				
		/				
VEGETATION Use scientific names of pla	ants	1				1.00
	Absolute	Dominan	Indicator	Dominance Test V	Vorksheet	
Tree Stratum (Plot size: )		t Species	Staus	Number of Dominan	t Species	
1 Betula nigra	75	Y	FACW	that are OBL, FACW		2 (A)
2	_			Total Number of		
3				Species Across	-	4 (B)
4	-		<u> </u>	Percent of Dominan	•	0.00/ (A/D)
5		= Total Cover		that are OBL, FACW	, or FAC: 50.	.00% (A/B)
Sapling/Shrub straturr (Plot size:	) 75			Prevalence Index	Worksheet	
1	_'			Total % Cover of:		
2				OBL species	0 x 1 =	0
3				FACW species	25 x 2 =	250
4				FAC species	0 x 3 =	0
5					$\frac{40}{2} \times 4 = -$	160
Uset starture (Dist size)	<u> </u>	= Total Cover		UPL species	$0 \times 5 =$	0
Herb stratum (Plot size:	_'		54.014		165 (A)	410 (B)
1 Phalaris arundinacea 2 Bromus inermis		- <del>Y</del>	FACW	Prevalence Index =	B/A =	.48
3 Oxalis stricta	20	- <u> </u>	FACU FACU	Hydrophytic Vege	tation Indicat	ors:
4				Rapid test for h		
5				Dominance tes		
6				X Prevalence ind	ex is ≤3.0*	
7				Morphogical ac	laptations* (pro	ovide
8				supporting data		or on a
9			Contraction Contraction Contraction	separate sheet		4 - 41 +
10	90	= Total Cover		Problematic hy (explain)	arophytic vege	etation
Woody vine stratum (Plot size:	)	-			all and walland by	
				Indicators of hydric s present, unles	oil and wetland ny	
2				Hydrophytic		
	0	= Total Cove	r	vegetation	×	
				present?	<u> </u>	
Remarks: (Include photo numbers here or on a sep	arate sheet)					
Photo 7						

 $\phi_{1}=1,\dots,N$ 

rofile Des	Matrix			Redox Feat				
Depth (Inches)	Color (moist)	%	Color (moist		Type* Lo	.** Т	Fexture	Remarks
· /				) 70				Keinaiks
0-8	10YR 2/2	90		1 2 2 2		silty cla		
8-15+	10YR 5/4	90				silty cla	y loam	
	1							
vpe: C = (	Concentration, D =	Depleti	on RM = Redu	uced Matri	x MS = Mask	ed Sand Grain	s **Loca	ition: PL = Pore Lining, M = Matri
	bil Indicators:	Depica						blematic Hydric Soils:
•	tisol (A1)		s	andy Glev	ed Matrix (S4			Redox (A16) (LRR K, L, R)
	tic Epipedon (A2)			andy Red				(S7) (LRR K, L)
Bla	ck Histic (A3)		— s	stripped Ma	atrix (S6)	I	ron-Mangane	se Masses (F12) (LRR K, L, R)
— Нус	drogen Sulfide (A4	)	L	.oamy Muc	ky Mineral (F	I)V	/ery Shallow	Dark Surface (TF12)
	atified Layers (A5)		L	oamy Gley	yed Matrix (F2	)	Other (explain	in remarks)
	m Muck (A10)			Depleted M	• •			
	oleted Below Dark		· · · —		Surface (F6)			
	ck Dark Surface (			•	ark Surface (F	•		drophytic vegetation and weltan
	ndy Mucky Minera	• •		Redox Dep	ressions (F8)	h	ydrology mus	t be present, unless disturbed of
	m Mucky Peat or	·	)					problematic
aetrictiva	Layer (if observe	d).						
	Layer (II Observe	<i></i>						
ype:			ar mati		_	Нус	dric soil pres	ent? N
ype: epth (inch						Нус	dric soil pres	ent? <u>N</u>
rpe: epth (inchr emarks: YDROL etland Hy imary Ind Surface	OGY /drology Indicato vators (minimum Water (A1)	rs:	required; cher	Aquatio	Fauna (B13)		Secondary	Indicators (minimum of two requi ce Soil Cracks (B6)
ype: epth (incho emarks: YDROL etland Hy imary Ind Surface High Wa	OGY /drology Indicato /drology Indicato /drology Indicato /drology Indicato /drology Indicato	rs:	required; cher	Aquatic True Ac	: Fauna (B13) quatic Plants (I	314)	Secondary Surfa	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10)
ype: epth (incho emarks: YDROL( etland Hy imary Ind Surface High Wa Saturati	OGY /drology Indicato /drology Indicato /drology Indicato /drology Indicato /drology Indicato	rs:	required; cher	Aquatio True Ac Hydrog	: Fauna (B13) quatic Plants (I en Sulfide Odo	314) r (C1)	Secondary Surfa Draina Dry-S	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2)
ype: epth (incho emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Water M	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	rs:	required; cher	Aquatio True Ac Hydrog	: Fauna (B13) quatic Plants (I en Sulfide Odo	314)	Secondary Surfa Drain: Dry-S ots Crayfi	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) ish Burrows (C8)
Ppe: ppth (incho emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Water M Sedime Drift De	es): OGY /drology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) flarks (B1) nt Deposits (B2) posits (B3)	rs:	required; cher	Aquatic True Ac Hydrog Oxidize (C3)	: Fauna (B13) quatic Plants (I en Sulfide Odo	814) r (C1) s on Living Roc	Secondary Surfa Drain Dry-S ots Crayf Satur	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1)
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Ppe: ppth (incho emarks: <b>YDROL</b> etland Hy imary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Deg	DGY vdrology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	rs: of one is		Aquatic True Ac Hydrog Oxidize (C3) Presen Recent (C6)	Fauna (B13) quatic Plants (I en Sulfide Odo d Rhizosphere ce of Reduced Iron Reduction	814) r (C1) s on Living Roc Iron (C4) n in Tilled Soils	Secondary Surfa Drain Dry-S ots Crayf Satur Sturte Captor Satur Sturte Sturte Sturte	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1)
Ppe: ppth (incho emarks: PDROL etland Hy imary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Deg Inundati	DGY vdrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria	rs: of one is	- - - - y (B7)	Aquatic True Ac Hydrog Oxidize (C3) Presen Recent (C6) Thin Mu	Fauna (B13) quatic Plants (I en Sulfide Odd d Rhizosphere ce of Reduced Iron Reduction uck Surface (C	814) r (C1) s on Living Roc Iron (C4) n in Tilled Soils 7)	Secondary Surfa Drain Dry-S ots Crayf Satur Sturte Captor Satur Sturte Sturte Sturte	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) norphic Position (D2)
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ype: epth (inch emarks: warks: ype: emarks: (ype: ype: emarks: (ype: ype: (ype	OGY drology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca bitained Leaves (B9 rvations: present? present? present? apillary fringe)	rs: of one is of one is ve Surfa ) Yes Yes Yes	y (B7)	Aquatic True Ac Hydrog Oxidize (C3) Presen Recent (C6) Thin Mu Gauge Other (1 X X	Fauna (B13) quatic Plants (I en Sulfide Odd d Rhizosphere ce of Reduced Iron Reduction uck Surface (C or Well Data (I Explain in Rem Depth (inche Depth (inche	814) r (C1) s on Living Roc lron (C4) n in Tilled Soils 7) 29) arks) es):	Secondary Surfa Drain: Dry-S ots Saturt Saturt Georr FAC-	Indicators (minimum of two requi ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C9 ed or Stressed Plants (D1) norphic Position (D2) Neutral Test (D5) Indicators of wetland hydrology present? N
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	Griggs Environmental Strategies, Inc.	
Ľ	AND DETERMINATION DATA FORM - Midwest Re	an

			FORM - Mi		(egion	
Project/Site SE Growth Area Water & Sanitary	City/	County: No	orth Liberty/Jo	ohnson	Sampling Date:	6.11.14
Applicant/Owner: City of North Liberty		State:	lowa		Sampling Point:	N8
Investigator(s): Kevin M. Griggs and Bill Martin		Secti	on, Township	, Range:	19/80	N/8W
Landform (hillslope, terrace, etc.): Strea	im terrace	Local r	elief (concave	e, convex	, none):	Concave
Slope (%): 0 - 2 Lat: 61764	1	Long:	4619769	)	Datum: NAD	83 Zone 15
Soil Map Unit Name Spillville Ioam			NWI C	lassificat	tion:	Yes
Are climatic/hydrologic conditions of the site typica	I for this time o	f the year?	(If	i no, expla	ain in remarks)	
Are vegetation , soil , or hyd	drology	significantly	v disturbed?		Are "normal circums	stances"
	drology		oblematic?			present? Yes
SUMMARY OF FINDINGS				(If need	led, explain any ansv	vers in remarks.)
Hydrophytic vegetation present?	Y					·
Hydric soil present?	Y	is the s	ampled area	within a	wetland?	Y
	Y		tional wetlan			
Remarks: (Explain alternative procedures here or i						
VEGETATION Use scientific names of p						
	Absolute	Dominan	Indicator		ance Test Workshe	
Tree Stratum (Plot size:)	% Cover 50	t Species Y	Staus FAC		of Dominant Species OBL, FACW, or FAC:	
1 Quercus macrocarpa 2 Celtis occidentalis			FAC		Number of Dominant	
3 Ulmus americana			FACW		cies Across all Strata:	
4					of Dominant Species	
5					OBL, FACW, or FAC:	
Sapling/Shrub stratur         (Plot size:           1	) 50 20       	= Total Cove	OBL FACU FACW	Total % OBL sp FACW FAC sp FACU s UPL sp Columr Prevale Hydrop X Doi X Pre Mo sup sep Pro (ex *Indicat	species $30 \times 2$ species $80 \times 3$ species $20 \times 4$ becies $0 \times 5$ in totals $180$ (A) ence Index = B/A = <b>ohytic Vegetation In</b> pid test for hydrophy minance test is >50% evalence index is $\leq 3$ . orphogical adaptation oporting data in Rem oparate sheet) oblematic hydrophytic plain) tors of hydric soil and wet present, unless disturbed <b>drophytic</b>	= 50 $= 240$ $= 240$ $= 0$ $= 0$ $= 0$ (B) 2.39 (B) 2.39 (B) 3.39 (C) 3.
Remarks: (Include photo numbers here or on a se Photo 8	0 parate sheet)	= Total Cove			getation esent? Y	-

e = n + - g

Griggs	Environn	nental	Strategies,	Inc.
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Depth	Matrix			dox Feat		.	_		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	•	Remarks
0-12	10YR 2/1	70	7.5 YR 4/3	2+	С	м	loam		
12-20	10YR 3//1	70	10YR 5/6	2+	С	м	loam to silty c	lay loam	
		-				ni.	<b>1 1</b>		
	1								
	Concentration, D	= Deplet	ion, RM = Reduc	ed Matrix	x, MS = N	Masked S			PL = Pore Lining, M = Matr
	oil Indicators:								atic Hydric Soils:
	tisol (A1)				ed Matrix	x (S4)			(A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)			ndy Redo	• •			urface (S7) (I	
	ck Histic (A3)			•••	atrix (S6)				sses (F12) (LRR K, L, R)
Hyd	drogen Sulfide (A4	4)	Loa	amy Muc	ky Miner	al (F1)	Very S	hallow Dark S	Surface (TF12)
Str	atified Layers (A5	) —	Loa	amy Gley	ed Matri	x (F2)	Other (	explain in ren	narks)
2 c	m Muck (A10)		De	pleted M	atrix (F3)	)	_		
De	pleted Below Dark	Surface	e (A11) X Re	dox Dark	Surface	e (F6)			
	ck Dark Surface (	A12)	· · _		ark Surfa		*Indicate	ors of hydroph	ytic vegetation and weltan
	ndy Mucky Minera	,			ressions	• •			resent, unless disturbed or
	m Mucky Peat or					(,	,	+• ·	blematic
estrictive	Layer (if observe	ed):				<u></u>			
<b>3911101140</b>	Layer (II Observ								
ne.							Hydric se	il present?	×
					-		Hydric so	oil present?	Y
epth (inch					_		Hydric so	bil present?	
epth (inch emarks:	es):				_		Hydric so	oil present?	<u> </u>
epth (inch emarks: YDROL	es): OGY				_		Hydric so	oil present?	
epth (inch emarks: YDROL etland Hy	es): OGY /drology Indicato	ors:			-				
epth (inch emarks: YDROL etland Hy imary Ind	es): OGY /drology Indicato icators (minimum	ors: of one is						ondary Indica	tors (minimum of two requi
epth (inch emarks: YDROL etland Hy imary Ind Surface	es): OGY /drology Indicato icators (minimum Water (A1)	ors: of one is		Aquatic	Fauna (E			ondary Indica Surface Soi	tors (minimum of two requi Cracks (B6)
epth (inch emarks: YDROL etland Hy imary Ind Surface High W	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2)	ors: of one is		Aquatic True Ac	Fauna (E quatic Pla	nts (B14)	Seco	ondary Indica Surface Soil Drainage Pa	tors (minimum of two requi Cracks (B6) ttterns (B10)
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High W Saturati	es): OGY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	ors: of one is		Aquatic True Ac Hydroge	: Fauna (E quatic Pla en Sulfide	nts (B14) e Odor (Cʻ	<u>Sec</u>	ondary Indica Surface Soil Drainage Pa Dry-Season	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2)
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High Wi Saturati Water M	es): OGY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1)	ors: of one is		Aquatic True Ac Hydroge Oxidize	: Fauna (E quatic Pla en Sulfide	nts (B14) e Odor (Cʻ	Seco	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bur	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8)
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High W Saturati Water N Sedime	es): OGY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2)	ors: of one is		Aquatic True Ac Hydroge Oxidize (C3)	: Fauna (E quatic Pla en Sulfide d Rhizosp	nts (B14) e Odor (C <sup>-</sup> pheres on	<u>Secc</u> 1) Living Roots	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish But Saturation V	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) 'isible on Aerial Imagery (C9
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Vater N Sedime C Drift De	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)	ors: of one is		Aquatic True Ac Hydroge Oxidize (C3) Present	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red	ints (B14) e Odor (C pheres on luced Iron	Secc 1) Living Roots (C4)	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bu Saturation V Stunted or S	tors (minimum of two requi Cracks (B6) Itterns (B10) Water Table (C2) rrows (C8) Visible on Aerial Imagery (C9 Stressed Plants (D1)
Pepth (inch emarks: YDROL YDROL etland Hy imary Ind Surface High Wa Saturati Saturati Saturati Drift De Algal M	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	ors: of one is		Aquatic True Ac Hydroge Oxidize (C3) Present Recent	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red	ints (B14) e Odor (C pheres on luced Iron	<u>Secc</u> 1) Living Roots	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bu Saturation V Stunted or S Geomorphic	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) lisible on Aerial Imagery (C9 Stressed Plants (D1) : Position (D2)
Pepth (inch emarks: PDROL Petland Hy imary Ind Surface High Wa Saturati Saturati Water M Sedime Corift De Algal M Iron De	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	ors: of one is		Aquatic True Ac Hydroge Oxidize (C3) Present (C6)	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red Iron Red	Ints (B14) e Odor (C <sup>2</sup> pheres on luced Iron u <b>c</b> tion in T	Secc 1) Living Roots (C4)	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bu Saturation V Stunted or S	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) lisible on Aerial Imagery (C9 Stressed Plants (D1) : Position (D2)
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Pepth (inch emarks: YDROL etland Hy imary Ind Surface High Wi Saturati Saturati Drift De Algal M Iron De Inundat Sparsel	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca	ors: of one is al Imager ave Surfa	y (B7)	Aquatic True Ac Hydroge Oxidize (C3) Present Recent (C6) Thin Mu Gauge	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red Iron Redu uck Surfac or Well D	nts (B14) e Odor (C <sup>-</sup> pheres on luced Iron uction in T ce (C7) pata (D9)	1) Living Roots	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bu Saturation V Stunted or S Geomorphic	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) lisible on Aerial Imagery (C9 Stressed Plants (D1) : Position (D2)
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YDROL etland Hy imary Ind Surface High W Saturati Vater M Sedime Algal M Iron De Inundat Sparsel Water-S eld Obse urface wa	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 rvations:	ors: of one is al Imager ave Surfa	y (B7) ce (B8)	Aquatic True Ac Hydroge (C3) Present (C6) Thin Mu Gauge Other (I	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red Iron Red uck Surfac or Well D Explain in	Ints (B14) e Odor (C pheres on luced Iron uction in T ce (C7) pata (D9) n Remarks	1) Living Roots	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bur Saturation V Stunted or S Geomorphic FAC-Neutra	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) lisible on Aerial Imagery (C9 Stressed Plants (D1) : Position (D2)
epth (inch emarks: YDROL etland Hy rimary Ind Surface High W Saturati Water M Sedime C Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse urface wa /ater table	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 rvations: ter present?	ors: of one is al Imager ave Surfa )) Yes	y (B7) ce (B8)	Aquatic True Ac Hydroge (C3) Present (C6) Thin Mu Gauge Other (I	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red Iron Red uck Surfac or Well D Explain in  Depth ( 	Ints (B14) e Odor (C <sup>-</sup> pheres on luced Iron uction in T ce (C7) pata (D9) n Remarks (inches):	1) Living Roots	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bu Saturation V Stunted or S Geomorphic FAC-Neutra	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) Visible on Aerial Imagery (C9 Stressed Plants (D1) : Position (D2) I Test (D5)
epth (inch emarks: <b>IYDROL</b> <b>/etland Hy</b> rimary Ind Surface High Water M Saturati Water M Saturati Unit De Algal M Iron De Inundat Sparsel Water-S <b>ield Obse</b> urface war /ater table aturation p	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 rvations: ter present?	al Imager ave Surfa )) Yes Yes	y (B7) ce (B8)	Aquatic True Ac Hydroge (C3) Present (C6) Thin Mu Gauge Other (I	Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red Iron Red uck Surfac or Well D Explain in  Depth ( 	Ints (B14) e Odor (C pheres on luced Iron uction in T ce (C7) pata (D9) n Remarks (inches): (inches):	1) Living Roots	ondary Indica Surface Soil Drainage Pa Dry-Season Crayfish Bu Saturation V Stunted or S Geomorphic FAC-Neutra	tors (minimum of two requi Cracks (B6) atterns (B10) Water Table (C2) rrows (C8) fisible on Aerial Imagery (C9 Stressed Plants (D1) : Position (D2) I Test (D5)
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# Griggs Environmental Strategies, Inc.

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Project/Site SE Growth Area Water & Sanitary		Citv/	County: No	rth Liberty/J	ohnson Sampling Date: 6.11.14
Applicant/Owner: City of North Liberty			State:	lowa	
Investigator(s): Kevin M. Griggs and Bill Martin				on, Township	
Landform (hillslope, terrace, etc.):	Slop	)e			re, convex, none): Convex
	7511		Long:	461988	
Soil Map Unit Name Chelesa-Lamont-Fayette c			Long		Classification: Yes
Are climatic/hydrologic conditions of the site typ			f the year?		f no, explain in remarks)
			significantly		
	-	ogy			Are "normal circumstances"
Are vegetation, soil, or, or, summary OF FINDINGS	hydrolo		naturally pro	Spiematic?	present? Yes (If needed, explain any answers in remarks.)
Hydrophytic vegetation present?	Y				
Hydric soil present?	N		is the sa	ampled area	a within a wetland? N
Indicators of wetland hydrology present?	N		f yes, op	tional wetlar	nd site ID:
Remarks: (Explain alternative procedures here VEGETATION Use scientific names o					
	r plant	Absolute	Dominan	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size:	)	% Cover	t Species	Staus	Number of Dominant Species
1 Quercus macrocarpa	-'	70	Y	FAC	that are OBL, FACW, or FAC: 4 (A)
2 Carya ovata		20	Y	FACU	Total Number of Dominant
3 Celtis occidentalis		10	N	FAC	Species Across all Strata: 7 (B)
4					Percent of Dominant Species
5					that are OBL, FACW, or FAC: 57.14% (A/B)
the second se		100	= Total Cover		
Sapling/Shrub straturr (Plot size:	)				Prevalence Index Worksheet
1 Lonicera tatarica		40	<u> </u>	FACU	Total % Cover of:
2					OBL species0x 1 =0FACW species20x 2 =40
3					FAC species $130 \times 3 = 390$
*5				·	FACU species $80 \times 4 = 320$
		40	= Total Cover		UPL species $0 \times 5 = 0$
Herb stratum (Plot size:	)				Column totals 230 (A) 750 (B)
1 Carex blanda		30	Y	FAC	Prevalence Index = B/A = 3.26
2 Urtica dioica		20	Y	FACW	
3 Parthenocissus quinquefolia	1.0	20	Y	FACU	Hydrophytic Vegetation Indicators:
		20 20	Y Y	FACU FAC	Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation
3 Parthenocissus quinquefolia					Rapid test for hydrophytic vegetation X Dominance test is >50%
<ul> <li>3 Parthenocissus quinquefolia</li> <li>4 Toxicodendron radicans</li> </ul>					Rapid test for hydrophytic vegetation
<ul> <li>3 Parthenocissus quinquefolia</li> <li>4 Toxicodendron radicans</li> <li>5</li> <li>6</li> <li>7</li> </ul>					Rapid test for hydrophytic vegetation         X         Dominance test is >50%         Prevalence index is ≤3.0*         Morphogical adaptations* (provide
<ul> <li>3 Parthenocissus quinquefolia</li> <li>4 Toxicodendron radicans</li> <li>5</li> <li>6</li> <li>7</li> <li>8</li> </ul>					Rapid test for hydrophytic vegetation         X       Dominance test is >50%         Prevalence index is ≤3.0*         Morphogical adaptations* (provide supporting data in Remarks or on a
<ul> <li>3 Parthenocissus quinquefolia</li> <li>4 Toxicodendron radicans</li> <li>5</li> <li>6</li> <li>7</li> <li>8</li> <li>9</li> </ul>					Rapid test for hydrophytic vegetation         X       Dominance test is >50%         Prevalence index is ≤3.0*         Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
3       Parthenocissus quinquefolia         4       Toxicodendron radicans         5				FAC	Rapid test for hydrophytic vegetation         X       Dominance test is >50%         Prevalence index is ≤3.0*         Morphogical adaptations* (provide supporting data in Remarks or on a
<ul> <li>3 Parthenocissus quinquefolia</li> <li>4 Toxicodendron radicans</li> <li>5</li> <li>6</li> <li>7</li> <li>8</li> <li>9</li> </ul>			Y	FAC	Rapid test for hydrophytic vegetation         X       Dominance test is >50%         Prevalence index is ≤3.0*         Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)         Problematic hydrophytic vegetation* (explain)
3       Parthenocissus quinquefolia         4       Toxicodendron radicans         5			Y	FAC	Rapid test for hydrophytic vegetation         X       Dominance test is >50%         Prevalence index is ≤3.0*         Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)         Problematic hydrophytic vegetation* (explain)         *Indicators of hydric soil and wetland hydrology must be

Griggs I	Environ	mental	Strategies,	Inc.
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Sampling Point: N9

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Depth	Matrix			dox Feat	iment the tures				and solid a settor office
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks
0-8	10YR 2/2	90					silty clay loa	m	
8-15+	10YR 5/4	90					silty clay loa		
0 10.	1011(0,4						Sinty Clay IOa		
				ļ		1			
		ļ					1. The second		
	fitter t			1000	1.1.1.1				
			1-1-1-1						
									the second second
Type: C = C	Concentration, D	- = Deplet	ion, RM = Reduc	ed Matrix	x, MS = N	lasked S	and Grains.	**Location:	PL = Pore Lining, M = Matri
	il Indicators:				.,				atic Hydric Soils:
•	isol (A1)		Sai	ndy Gley	ed Matrix	: (S4)			x (A16) (LRR K, L, R)
	ic Epipedon (A2)	1		ndy Red		, í		Surface (S7) (	
	ck Histic (A3)			-	atrix (S6)				asses (F12) (LRR K, L, R)
— Hyd	rogen Sulfide (A	4)	Loa	my Muc	ky Minera	al (F1)	Very S	Shallow Dark	Surface (TF12)
Stra	tified Layers (A5	)	Loa	amy Gley	ed Matrix	(F2)	Other	(explain in real	marks)
2 cr	n Muck (A10)		De	oleted M	atrix (F3)				
Dep	leted Below Dari	< Surface	e (A11) 👘 Rei	dox Dark	Surface	(F6)			
	ck Dark Surface (				ark Surfa		*Indicat	tors of hydrop	hytic vegetation and weltand
	dy Mucky Minera	• •		dox Depi	ressions (	(F8)	hydrol		present, unless disturbed or
5 cm	n Mucky Peat or	Peat (S3	3)					pr	oblematic
Restrictive	Layer (if observ	ed):							
Type:							Hvdric s	soil present?	N
	95):	Y remain		- 240					
Remarks:		Y reend							
Remarks:	DGY			- (c) (r)					
Remarks: IYDROLC Vetland Hy	DGY drology Indicate				-				
Remarks: HYDROLC Vetland Hy Primary India	DGY drology Indicate cators (minimum		s required; check			12)		condary Indica	ators (minimum of two required
Remarks: HYDROLC Vetland Hy Primary India Surface	DGY drology Indicato cators (minimum Water (A1)		s required; check	Aquatic	Fauna (B			condary Indica Surface So	ators (minimum of two requir il Cracks (B6)
Remarks: HYDROLC Vetland Hy Primary India Surface ' High Wa	DGY drology Indicate cators (minimum Water (A1) ter Table (A2)		s required; check	Aquatic True Aq	Fauna (B Juatic Plar	nts (B14)	Sec	condary Indica Surface So Drainage P	a <u>tors (minimum of two requir</u> il Cracks (B6) atterns (B10)
Remarks: <b>HYDROLC</b> Vetland Hy Primary India Surface ' High Wa Saturatic	DGY drology Indicate cators (minimum Water (A1) ter Table (A2) on (A3)		s required; check	Aquatic True Aq Hydroge	Fauna (B juatic Plar en Sulfide	nts (B14) Odor (C1	<u>Sec</u>	condary Indica Surface So Drainage P Dry-Seasor	ators (minimum of two requir il Cracks (B6) atterns (B10) n Water Table (C2)
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Remarks: HYDROLC Netland Hy Primary India Surface High Wa Saturatic Water M Sedimen	DGY drology Indicate cators (minimum Water (A1) ter Table (A2) on (A3)		s required; check	Aquatic True Aq Hydroge Oxidized (C3)	Fauna (B juatic Plar en Sulfide	nts (B14) Odor (C1 heres on	Sec 	Condary Indica Surface So Drainage P Dry-Seasor Crayfish Bu Saturation N	ators (minimum of two requir il Cracks (B6) atterns (B10) n Water Table (C2) irrows (C8)
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Remarks: HYDROLC Vetland Hy Primary India Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep	DGY drology Indicato cators (minimum Water (A1) ter Table (A2) on (A3) arks (B1) arks (B1) at Deposits (B2) posits (B3) t or Crust (B4) osits (B5)	of one is		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6)	Fauna (B juatic Plar en Sulfide d Rhizosp ce of Redu iron Redu	nts (B14) Odor (C1 heres on uced Iron action in T	Sec 	Condary Indica Surface So Drainage P Dry-Seasor Crayfish Bu Saturation V Stunted or S	ators (minimum of two requir il Cracks (B6) atterns (B10) n Water Table (C2) Irrows (C8) Visible on Aerial Imagery (C9) Stressed Plants (D1) c Position (D2)
Primary India Surface Y High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic	DGY drology Indicate cators (minimum Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) osits (B3) at or Crust (B4) osits (B5) on Visible on Aeria	<u>of one is</u> al Imager	y (B7)	Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu	Fauna (B juatic Plar en Sulfide d Rhizosp ce of Redu iron Redu	nts (B14) Odor (C1 heres on uced Iron action in T	Sec 	Condary Indica Surface So Drainage P Dry-Seasor Crayfish Bu Saturation V Stunted or S Geomorphi	ators (minimum of two requin il Cracks (B6) atterns (B10) n Water Table (C2) Irrows (C8) Visible on Aerial Imagery (C9) Stressed Plants (D1) c Position (D2)
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Remarks: HYDROLO Wetland Hy Primary India Surface ' High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-St Field Obser Surface wate Water table Saturation pr (includes car	DGY drology Indicate cators (minimum Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) oosits (B3) at or Crust (B4) osits (B5) on Visible on Aeria vegetated Conca tained Leaves (B5) vations: er present? present? present? present? pillary fringe)	al Imager ave Surfa ) Yes Yes Yes	y (B7) ce (B8)	Aquatic True Aq Hydroge Oxidize (C3) Presenc Recent (C6) Thin ML Gauge Other (E X X X	Fauna (B juatic Plar en Sulfide d Rhizosp ce of Redu iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C1 heres on uced Iron netion in T e (C7) ata (D9) Remarks nches): nches): nches):	I) Living Roots (C4) illed Soils	Condary Indica Surface So Drainage P Dry-Seasor Crayfish Bu Saturation V Stunted or 3 Geomorphi FAC-Neutra	ators (minimum of two requir il Cracks (B6) atterns (B10) n Water Table (C2) Irrows (C8) Visible on Aerial Imagery (C9) Stressed Plants (D1) c Position (D2) al Test (D5)
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SOIL

1	010	

WEILAND L Project/Site SE Growth Area Water & Sanitary	)E I Er		County: No		Idwest Region Johnson Sampling Dat	te:	6.11.14
Applicant/Owner: City of North Liberty			State:	lowa	a Sampling Poir	nt:	N10
nvestigator(s): Kevin M. Griggs and Bill Martin			Sectio	on, Townshi	ip, Range:	19/80W/8	W
Landform (hillslope, terrace, etc.):	Slop	e	Local r	elief (conca	ve, convex, none):	Cor	ivex
Slope (%): 0 - 3 Lat: 61	7511		Long:	461988	1 Datum:	NAD 83 -	- Zone 15
Soil Map Unit Name Chelesa-Lamont-Fayette co	mplex			NWI	Classification:	No	
Are climatic/hydrologic conditions of the site typ	ical for	this time o	f the year?	(	If no, explain in remarks	)	
Are vegetation , soil , or	hydrolo	ogy	significantly	y disturbed?	Are "normal c	circumstan	ces"
Are vegetation, soil, or	hydrolo	ogy	naturally pr	oblematic?			ent? Yes
SUMMARY OF FINDINGS					(If needed, explain an	y answers	in remarks.)
Hydrophytic vegetation present?	N						
Hydric soil present?	N		ls the s	ampled are	a within a wetland?	N	
Indicators of wetland hydrology present?	N	-	f yes, op	tional wetla	nd site ID:	-1. No. 11	
Remarks: (Explain alternative procedures here VEGETATION Use scientific names of			port.)				
	plant	Absolute	Dominan	Indicator	Dominance Test Wo	rksheet	
Tree Stratum (Plot size:	)	% Cover	t Species	Staus	Number of Dominant S		
1 Robinia pseudoacacia	-'	100	Y	FACU	that are OBL, FACW, o		0 (A)
2					Total Number of Do	minant	
3					Species Across all	Strata:	4 (B)
4					Percent of Dominant S		
5					that are OBL, FACW, o	or FAC: (	0.00% (A/B)
Contine (Charle stratum (Dist size)	,	100	= Total Cove	r	Drevelence Index 18/	arkahaat	
Sapling/Shrub straturr (Plot size: 1 Lonicera tatarica	)	40	Y	FACU	Prevalence Index W Total % Cover of:	orksneet	
		40			OBL species 0	x 1 =	0
3					FACW species 0		0
4					FAC species 10	) x 3 =	30
5		-			FACU species 230	0 x 4 =	920
		40	= Total Cove	r	UPL species 0	x 5 =	0
Herb stratum (Plot size:	)				Column totals 240	0 (A)	(B)
1 Bromus inermis		70	Υ	FACU	Prevalence Index = B	3/A =	3.96
2 Symphyotrichum pilosum		20	Y	FACU			
3 Alliaria petiolata	ah e	10	<u> </u>	FAC	Hydrophytic Vegeta		
4	·				Rapid test for hyd		egetation
5					Prevalence index		
7							orovido
8					Morphogical ada supporting data in		
9					separate sheet)	. Transformer i 1	
10					Problematic hydr	ophytic ve	getation*
		100	= Total Cove	ſ	(explain)		
Woody vine stratum (Plot size:1	)			1201	*Indicators of hydric soil present, unless of		
2					Hydrophytic		
		0	= Total Cove	r	vegetation present?	N	
					presenti –		
Remarks: (Include photo numbers here or on a	separa	ite sheet)					
Photo 10							

ີສູ່ແລະ ສ nt: N10

	cription: (Descri					- Indiodec		1	
Depth	Matrix			Redox Features			-		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu		Remarks
0-6	10YR 2/2	90			1		silty clay loar	m	
6-20+	10YR 5/4	90				_	silty clay loar	m	
			L Particulo III				100		
						-			
	P10 000 000	C 1 m							
ype: C = (	Concentration, D =	Depletion	n, RM = Reduc	ed Matri	x, MS = N	/lasked S	and Grains.	**Locatio	on: PL = Pore Lining, M = Ma
Hydric So	oil Indicators:			1.00	5. Do. 1		Indicators	s for Probl	ematic Hydric Soils:
His	tisol (A1)		Sa	ndy Gley	ed Matrix	(S4)			dox (A16) (LRR K, L, R)
	tic Epipedon (A2)		Sa	ndy Red	ox (S5)				7) ( <b>LRR K, L)</b>
Bla	ck Histic (A3)		St	ipped M	atrix (S6)		Iron-N	langanese	Masses (F12) (LRR K, L, R
Hy	drogen Sulfide (A4	•)	Lo	amy Muo	cky Miner	al (F1)	Very S	Shallow Da	irk Surface (TF12)
Str	atified Layers (A5)		Lo	amy Gle	yed Matrix	x (F2)	Other	(explain in	remarks)
	m Muck (A10)			•	latrix (F3)				
	pleted Below Dark		·		k Surface				
	ck Dark Surface (/				ark Surfa				rophytic vegetation and welta
	ndy Mucky Minera		Re	dox Dep	ressions	(F8)	hydrol	ogy must b	e present, unless disturbed
5 c	m Mucky Peat or I	Peat (S3)							problematic
estrictive	Layer (if observe	ed):		_					
	Layer (if observe	ed):					Hydric s	soil preser	nt? N
ype: epth (inch		ed):		2	_		Hydric s	soil preser	nt? <u>N</u>
/pe: epth (inch emarks:	es):	ed):		3	_		Hydric s	soil preser	nt? <u>N</u>
ype: epth (inch emarks: YDROL	es):						Hydric s	soil preser	nt? <u>N</u>
ype: epth (inch emarks: YDROL /etland Hy	es): OGY /drology Indicato	rs:							
ype: epth (inch emarks: IYDROL /etland Hy rimary Ind	es): OGY /drology Indicato icators (minimum	rs: of one is r	equired; check					condary Inc	dicators (minimum of two req
ype: epth (inch emarks: YDROL /etland Hy rimary Ind Surface	es): OGY /drology Indicato icators (minimum Water (A1)	rs: of one is r	equired; check	Aquatio	c Fauna (B			condary Inc	dicators (minimum of two req Soil Cracks (B6)
ype: epth (inch emarks: YDROL Yetland Hy rimary Ind Surface High W	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2)	rs: of one is r	equired; check	Aquatio	c Fauna (B quatic Plai	nts (B14)	Sec	condary Inc Surface Drainage	<u>dicators (minimum of two req</u> Soil Cracks (B6) e Patterns (B10)
ype: epth (inch emarks: YDROL Yetland Hy rimary Ind Surface High W Saturati	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	rs: of one is r	equired; check	Aquatio True A Hydrog	c Fauna (E quatic Pla len Sulfide	nts (B14) e Odor (C	<u>Sec</u>	condary Inc Surface Drainage Dry-Sea	dicators (minimum of two req Soil Cracks (B6) e Patterns (B10) son Water Table (C2)
ype: epth (inch emarks: YDROL Yetland Hy rimary Ind Surface High W Saturati Water M	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) flarks (B1)	rs: of one is r	equired; check	Aquatio True A Hydrog Oxidize	c Fauna (E quatic Pla len Sulfide	nts (B14) e Odor (C	Sec	condary Inc Surface Drainago Dry-Sea Crayfish	dicators (minimum of two req Soil Cracks (B6) e Patterns (B10) ison Water Table (C2) i Burrows (C8)
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ype: epth (inch emarks: YDROL Vetland Hy rimary Ind Surface High W Saturati Water N Sedime Drift De Algal M Iron De	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	rs: of one is r		Aquatio True A Hydrog Oxidize (C3) Presen Recent (C6)	c Fauna (E quatic Plan en Sulfide ed Rhizosp nce of Red t Iron Redu	nts (B14) e Odor (C oheres on uced Iron uction in T	Sec 1) Living Roots (C4)	Condary Inc Surface Drainage Dry-Sea Crayfish Saturatio Stunted Geomor	dicators (minimum of two req Soil Cracks (B6) e Patterns (B10) ison Water Table (C2) b Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1)
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ype: epth (inch emarks: YDROL /etland Hy rimary Ind Surface High W Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse urface wa Vater table	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 rvations: ter present? present?	I Imagery ( ve Surface ) Yes	(B7) (B8) (B8) No	Aquatic True A Hydrog Oxidize (C3) Presen (C6) Thin M Gauge Other (	c Fauna (E quatic Plan en Sulfide ed Rhizosp ice of Red t Iron Redu uck Surfac or Well Di Explain in Depth ( Depth (	nts (B14) Odor (C oheres on uced Iron uction in 1 ce (C7) ata (D9) Remarks inches):	Sec 1) Living Roots (C4) "Illed Soils	condary Inc Surface Drainage Dry-Sea Crayfish Saturatio Stunted Geomor FAC-Ne	dicators (minimum of two req Soil Cracks (B6) e Patterns (B10) son Water Table (C2) b Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1) phic Position (D2) outral Test (D5)
ype: epth (inch emarks: IYDROL Vetland Hy rimary Ind Surface High W Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse Surface wa Vater table saturation p	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 rvations: ter present? present?	I Imagery ( ve Surface ) Yes	(B7) 9 (B8) No No	Aquatic True A Hydrog Oxidize (C3) Presen (C6) Thin M Gauge Other ( X X	c Fauna (E quatic Plan en Sulfide ed Rhizosp ice of Red t Iron Redu uck Surfac or Well Di Explain in Depth ( Depth (	nts (B14) e Odor (C oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	Sec 1) Living Roots (C4) "Illed Soils	condary Inc Surface Drainage Dry-Sea Crayfish Saturatio Stunted Geomor FAC-Ne	dicators (minimum of two req Soil Cracks (B6) e Patterns (B10) son Water Table (C2) b Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1) phic Position (D2) utral Test (D5) dicators of wetland
ype: Pepth (inch Pepth (inch Permarks: IYDROL Vetland Hy Primary Ind Surface High W Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S Sield Obse Surface wa Vater table Saturation p Includes ca	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 rvations: ter present? present? present? apillary fringe)	I Imagery ( ve Surface) Yes _ Yes _	(B7) (B8) (B8) No No No	Aquatic True A Hydrog Oxidize (C3) Presen Recent (C6) Thin M Gauge Other ( X X	c Fauna (E quatic Plan en Sulfide ed Rhizosp ice of Red t Iron Redu uck Surfac or Well Di Explain in Depth ( Depth (	nts (B14) Odor (C' oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	Sec 1) Living Roots (C4) 	Condary Inc Surface Drainage Dry-Sea Crayfish Saturatio Stunted Geomor FAC-Ne	dicators (minimum of two req Soil Cracks (B6) e Patterns (B10) son Water Table (C2) b Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1) phic Position (D2) utral Test (D5) dicators of wetland
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				-	6.11.14
Project/Site SE Growth Area Water & Sanitary	City/	·		ohnson Sampling Date:	
Applicant/Owner: City of North Liberty		State:	lowa		
nvestigator(s): Kevin M. Griggs and Bill Martin					9/80W/8W
	/Slope			e, convex, none):	Convex
Slope (%): 0 - 3 Lat: 617897		Long:	461984	i Datum: N	NAD 83 Zone 15
Soil Map Unit Name Chelesa-Lamont-Fayette comple	x		NWI (	Classification:	No
Are climatic/hydrologic conditions of the site typical f	or this time o	of the year?	(1	f no, explain in remarks)	
Are vegetation, soil, or hydro	ology	significantly	disturbed?	Are "normal circ	cumstances"
Are vegetation , soil , or hydro	ology	naturally pro	oblematic?		present? Yes
SUMMARY OF FINDINGS				(If needed, explain any	answers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present? N		Is the sa	ampled area	a within a wetland?	Ν
Indicators of wetland hydrology present? N			tional wetlar		Constant Hole and
Remarks: (Explain alternative procedures here or in	I	•			
temarks. (Explain alternative procedures here of in-		50011.)			
VEGETATION Use scientific names of pla	nts.				
	Absolute	Dominan	Indicator	Dominance Test Work	sheet
Tree Stratum (Plot size: )	% Cover	t Species	Staus	Number of Dominant Spe	ecies
1 Betula nigra	70	Y	FACW	that are OBL, FACW, or F	FAC:4 (A)
2 Robinia pseudoacacia	30	Y	FACU	Total Number of Domi	inant
3		_		Species Across all St	trata: 6 (B)
4				Percent of Dominant Spe	
5				that are OBL, FACW, or I	FAC: 66.67% (A/B)
	100	= Total Cover			
Sapling/Shrub stratur (Plot size:	.)	V	FACU	Prevalence Index Wor	ksneet
1 Lonicera tatarica	20	<u> </u>	FACU	Total % Cover of:	x 1 = 0
2	•			OBL species 0 FACW species 150	$x_{2} = \frac{0}{300}$
A				FAC species 0	$x_3 = 0$
5				FACU species 50	$x = \frac{1}{200}$
	20	= Total Cover		UPL species 0	$x_{5} = 0$
Herb stratum (Plot size:	)				(A) 500 (B)
1 Phalaris arundinacea	-' 40	Y	FACW	Prevalence Index = B/A	
2 Carex vulpinoidea	20	Y	FACW		
3 Urtica dioica	20	Y	FACW	Hydrophytic Vegetatio	on Indicators:
4				Rapid test for hydro	ophytic vegetation
5				X Dominance test is >	>50%
6				X Prevalence index is	s ≤3.0*
7				Morphogical adapta	ations* (provide
8		LI DI MA	10 Mar 10	supporting data in I	Remarks or on a
9		11.1		separate sheet)	
10				Problematic hydrop	phytic vegetation*
	80	= Total Cove		(explain)	
Woody vine stratum (Plot size:	)				d wetland hydrology must be
1				present, unless dist	turbed or problematic
2		Tatal Ori		vegetation	
	0	= Total Cove		present?	Y
Pomorko: (Includo photo numboro horo er en o	rata abaati				
Remarks: (Include photo numbers here or on a sepa	indle Sneet)				
Photo 11					

T ( 1 - 7

Depth	cription: (Describ Matrix			dox Feat		marcat		····	
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks
0-6	10YR 2/2	90			.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		silty clay loar		
6-20+	10YR 5/4	90					silty clay loar		
0-201	1011(3)4					Sitty Clay IOa			
				-					
	for many,								
	and the state of the	1.00							n na Girle Table (1975)
vne: C = 1	Concentration, D =	Denleti	on RM = Reduc	ed Matrix		lasked S	and Grains	**Location	: PL = Pore Lining, M = Matri
	oil Indicators:	Depicti			A, 1910 - 19	laskeu o			matic Hydric Soils:
-	tisol (A1)		Sa	ndv Glev	ed Matrix	(S4)			ox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Red		(-,		Surface (S7)	
	ck Histic (A3)			•	atrix (S6)				lasses (F12) (LRR K, L, R)
	drogen Sulfide (A4)	)			ky Minera	al (F1)	Very S	Shallow Dark	Surface (TF12)
	atified Layers (A5)		Lo	amy Gley	yed Matrix	(F2)		(explain in re	
2 c	m Muck (A10)		De	pleted M	latrix (F3)			1000	
Dep	oleted Below Dark	Surface	(A11) Re	dox Dark	Surface	(F6)			
Thi	ck Dark Surface (A	(12)	De	pleted Da	ark Surfa	ce (F7)	*Indicat	ors of hydro	phytic vegetation and weltan
Sa	ndy Mucky Mineral	(S1)	Re	dox Dep	ressions (	(F8)	hydrol	ogy must be	present, unless disturbed or
5 c	m Mucky Peat or F	Peat (S3	)					p	problematic
estrictive	Layer (if observe	d):							
						1			
	2458 24						Hydric s	oil present	? <u>N</u>
epth (inch	es):				_		Hydric s	oil present	? <u>N</u>
epth (inch emarks:	1. ideas. (*						Hydric s	oil present	? <u>N</u>
epth (inch emarks: YDROL	DGY						Hydric s	oil present	? <u>N</u>
epth (inch emarks: YDROL etland Hy	OGY drology Indicator				_ 				
epth (inch emarks: YDROL Vetland Hy rimary Ind	OGY rdrology Indicator icators (minimum c		required; check			12)		condary Indic	cators (minimum of two requi
epth (inch emarks: YDROL etland Hy imary Ind Surface	DGY rdrology Indicator icators (minimum c Water (A1)		required; check	Aquatic	Fauna (B			condary Indic	cators (minimum of two requi oil Cracks (B6)
epth (inch emarks: YDROL etland Hy imary Ind Surface High Wa	DGY rdrology Indicator icators (minimum c Water (A1) ater Table (A2)		required; check	Aquatic True Ac	Fauna (B quatic Plar	nts (B14)	Sec	condary Indic	<u>cators (minimum of two requi</u> oil Cracks (B6) Patterns (B10)
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High Wi Saturati	DGY rdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3)		required; check	Aquatic True Ac Hydroge	Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C	<u>Sec</u>	condary Indic Surface S Drainage I Dry-Seaso	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2)
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Water M	DGY rdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) farks (B1)		required; check	Aquatic True Ac Hydroge Oxidize	Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C	Sec	condary Indic Surface S Drainage I Dry-Seasc Crayfish B	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8)
Pepth (inch emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Water M Sedime	DGY rdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3)		required; check	Aquatic True Ac Hydroge Oxidize (C3)	Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C heres on	Sec 1) Living Roots	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8)
epth (inch emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Water M Sedime Drift De	DGY rdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) flarks (B1) nt Deposits (B2)		required; check	Aquatic True Ac Hydroge Oxidize (C3) Presence	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu	nts (B14) Odor (C heres on	Sec 1) Living Roots	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9
epth (inch emarks: YDROL /etland Hy rimary Ind Surface High Wi Saturati Water M Sedime Drift De Algal Mi Iron De	DGY vdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	of one is		Aquatic True Ac Hydroge Oxidize (C3) Presence	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu	nts (B14) Odor (C heres on	Sec 1) Living Roots (C4)	Condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1)
epth (inch emarks: YDROL /etiand Hy rimary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron De Inundat	DGY vdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial	of one is		Aquatic True Ac Hydroge Oxidize (C3) Present Recent (C6) Thin Mu	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	odor (C Odor (C oheres on uced Iron uction in T ce (C7)	Sec 1) Living Roots (C4)	Condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2)
Pepth (inch emarks: YDROL /etland Hy cimary Ind Surface High Wi Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel	OGY drology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav	imagen ve Surfac		Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mu Gauge	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da	nts (B14) Odor (C heres on ucced Iron uction in T ce (C7) ata (D9)	I) Living Roots (C4) Tilled Soils	Condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2)
epth (inch emarks: YDROL etland Hy imary Ind Surface High Wi Saturati Water N Sedime Algal M Iron Dej Inundat Sparsel Water-S	DGY drology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav stained Leaves (B9)	imagen ve Surfac		Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mu Gauge	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	nts (B14) Odor (C heres on ucced Iron uction in T ce (C7) ata (D9)	I) Living Roots (C4) Tilled Soils	Condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2)
epth (inch emarks: YDROL etiand Hy cimary Ind Surface High Wi Saturati Water N Sedime Drift De Algal M Iron De Inundat Sparsel Water-S eld Obse	DGY vdrology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav stained Leaves (B9) rvations:	of one is Imagen /e Surfa	/ (B7) ce (B8)	Aquatic True Ac Hydroge Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	nts (B14) Odor (C heres on uced Iron iction in T ce (C7) ata (D9) Remarks	I) Living Roots (C4) Tilled Soils	Condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2)
epth (inch emarks: YDROL etland Hy imary Ind Surface High Wi Saturati Water N Sedime Iron De Inundat Sparsel Water-S eld Obse	DGY drology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: per present?	lmagery /e Surfar Yes	/ (B7) ce (B8) No	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	nts (B14) Odor (C heres on uced Iron iction in T ce (C7) ata (D9) Remarks	I) Living Roots (C4) Tilled Soils	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5)
epth (inch emarks: YDROL etland Hy rimary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Mi Iron De Inundati Sparsel Water-S eld Obse urface wat vater table	DGY drology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: rer present? present?	Imagen /e Surfa Yes Yes	/ (B7) 	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mu Gauge Other (B	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron iction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) Tilled Soils	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) I Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5) cators of wetland
epth (inch emarks: YDROL etland Hy rimary Ind Surface High Wi Saturati Water M Sedime Drift De Algal Mi Sedime Iron De Inundati Sparsel Water-S eld Obse urface wat /ater table aturation p	DGY drology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: rer present? present?	lmagery /e Surfar Yes	/ (B7) ce (B8) No	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	nts (B14) Odor (C heres on uced Iron iction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) Tilled Soils	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) o Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5)
epth (inch emarks: YDROL Vetland Hy rimary Ind Surface High Wa Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse urface wat Vater table aturation p ncludes ca	DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: eer present? present? present? ipillary fringe)	Imagen ve Surfa Yes Yes Yes	/ (B7) ce (B8)	Aquatic True Ac Hydroge Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches): inches):	Sec 1) Living Roots (C4) illed Soils )	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) I Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5) cators of wetland
epth (inch emarks: PYDROL /etland Hy rimary Ind Surface High Wa Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse urface wa /ater table aturation p ncludes ca	DGY drology Indicator icators (minimum c Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: rer present? present?	Imagen ve Surfa Yes Yes Yes	/ (B7) ce (B8) No No No	Aquatic True Ac Hydroge Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches): inches):	Sec 1) Living Roots (C4) illed Soils )	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) I Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5) Cators of wetland
epth (inch emarks: YDROL Vetland Hy rimary Ind Surface High Wi Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse urface wat /ater table aturation p ncludes ca escribe re	DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: eer present? present? present? ipillary fringe)	Imagen ve Surfa Yes Yes Yes	/ (B7) ce (B8) No No No	Aquatic True Ac Hydroge Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches): inches):	Sec 1) Living Roots (C4) illed Soils )	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) I Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5) cators of wetland
rimary Ind Surface High Wa Saturati Water M Sedime Drift De Algal M Iron De Inundat Sparsel Water-S ield Obse urface wat /ater table aturation p ncludes ca	DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial y Vegetated Concav itained Leaves (B9) rvations: eer present? present? present? ipillary fringe)	Imagen ve Surfa Yes Yes Yes	/ (B7) ce (B8) No No No	Aquatic True Ac Hydroge Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (E	Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches): inches):	Sec 1) Living Roots (C4) illed Soils )	condary Indic Surface S Drainage I Dry-Seasc Crayfish B Saturation Stunted or Geomorph FAC-Neut	cators (minimum of two requi oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8) I Visible on Aerial Imagery (C9 r Stressed Plants (D1) nic Position (D2) ral Test (D5) Cators of wetland

oject/Site SE Growth Area Water & Sanitary				idwest Region Johnson Sampling Date:	6.11.14
oplicant/Owner: City of North Liberty		State:	low	a Sampling Point:	N12
vestigator(s): Kevin M. Griggs and Bill Martin		Secti	on, Townshi	p, Range: 19/80W	//8W
ndform (hillslope, terrace, etc.):	ench/Slope	Local r	elief (conca	ve, convex, none):	Convex
ope (%): 0 - 3 Lat: 617	992	Long:	461985	8 Datum: NAD 8	3 Zone 15
il Map Unit Name Chelesa-Lamont-Fayette cor	mplex		NWI	Classification:	No
e climatic/hydrologic conditions of the site typic	cal for this time o	of the year?	(	If no, explain in remarks)	
e vegetation , soil , or h	ydrology	significantly	/ disturbed?	Are "normal circumst	ances"
e vegetation , soil , or h	ydrology	naturally pr	oblematic?		esent? Yes
JMMARY OF FINDINGS				(If needed, explain any answe	ers in remarks.)
Hydrophytic vegetation present?	Y				
Hydric soil present?	N	is the s	ampled are	a within a wetland?	N
Indicators of wetland hydrology present?	N	f yes, op	tional wetla	nd site ID:	
marks: (Explain alternative procedures here o	r in a separate re	eport.)			
EGETATION Use scientific names of	· · · · · · · · · · · · · · · · · · ·			Dominance Test Workshee	
Free Stratum (Plat aize:	Absolute ) % Cover	Dominan t Species	Indicator Staus		
<u>Free Stratum</u> (Plot size: I <i>Betula nigra</i>	70	Y	FACW	Number of Dominant Species that are OBL, FACW, or FAC:	4 (A)
2 Acer negundo		Y	FAC	- Total Number of Dominant	
				Species Across all Strata:	5 (B)
والمحالية ومستعودة والمراجع	1.44			Percent of Dominant Species	
5				that are OBL, FACW, or FAC:	80.00% (A/I
	90	= Total Cove	r		
Sapling/Shrub stratum (Plot size:	)		FAOL	Prevalence Index Workshe	et
Lonicera tatarica	10	<u> </u>	FACU	Total % Cover of: OBL species 0 x 1 =	= 0
2				OBL species 0 x 1 = FACW species 140 x 2 =	
4				FAC species 20 x 3 =	
5				FACU species 20 x 4 =	
	10	= Total Cove	r	UPL species 0 x 5 =	= 0
Herb stratum (Plot size:	)			Column totals 180 (A)	420 (B)
1 Phalaris arundinacea	50	Y	FACW	Prevalence Index = B/A =	2.33
2 Urtica dioica	20	Y	FACW		
3 Galium aparine	10	N	FACU	Hydrophytic Vegetation Inc	
4				Rapid test for hydrophyti	
				X Dominance test is >50% X Prevalence index is ≤3.0	
7		·			
9				Morphogical adaptations supporting data in Rema separate sheet)	
		= Total Cove		Problematic hydrophytic (explain)	vegetation*
,				*Indicators of hydric soil and wetla	
Woody vine stratum (Plot size:	)			present, unless disturbed	or problematic
0 <u>Woody vine stratum</u> (Plot size: 1 2	)			Hydrophytic	or problematic
Woody vine stratum (Plot size:	)	= Total Cove			or problematic

9. 1 A T

Depth	Matrix			Redox Fea			or or confirm t		
(Inches)	Color (moist)	%	Color (moist		Type*	Loc**	Textur	e	Remarks
0-6	10YR 2/2	90					silty clay loar		
6-20+	10YR 5/4	90					silty clay loar		
0-20+	1011 3/4						Sity Clay IOal		
				_					
1.0									
ype: C = 0	Concentration, D =	= Depleti	on, RM = Red	uced Matri	x, MS = M	lasked S			n: PL = Pore Lining, M = Matri
•	oil Indicators:			1.	1				ematic Hydric Soils:
	tisol (A1)			Sandy Gley		(S4)			dox (A16) (LRR K, L, R)
	tic Epipedon (A2)			andy Red					() (LRR K, L)
	ck Histic (A3)			stripped M					Masses (F12) (LRR K, L, R)
	drogen Sulfide (A4			oamy Muo	•			explain in	rk Surface (TF12)
	atified Layers (A5) m Muck (A10)			oamy Gle	-			(explain in	remarks)
	pleted Below Dark	Surface		Redox Darl					
	ck Dark Surface (		· · ·	Depleted D		. ,	*Indicat	ors of hydr	ophytic vegetation and weltan
	ndy Mucky Minera			Redox Dep		. ,			e present, unless disturbed or
	m Mucky Peat or I	• •				,	,		problematic
pe: pth (inch	Layer (if observe				_		Hydric s	oil presen	t? <u>N</u>
rpe: epth (inchr emarks:	es):						Hydric s	oil presen	t? <u>N</u>
pe: epth (inch emarks: YDROL	es):						Hydric s	oil presen	t? <u>N</u>
pe: epth (inch emarks: YDROL etland Hy	es): OGY /drology Indicato	nrs:							
pe: epth (inch emarks: YDROL etland Hy imary Ind	es): OGY /drology Indicato icators (minimum	nrs:	required; che			13)		condary Ind	icators (minimum of two requi
pe: pth (inch marks: YDROL etland Hy imary Ind Surface	es): OGY /drology Indicato icators (minimum Water (A1)	urs:	required; che	Aquatio	: Fauna (B		Sec	condary Ind	icators (minimum of two requi Soil Cracks (B6)
pe: pth (inch marks: YDROL etland Hy imary Ind Surface	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2)	urs:	required; che	Aquatio	c Fauna (B quatic Plan	nts (B14)	<u>Sec</u>	condary Ind Surface S Drainage	icators (minimum of two requi
pe: ppth (inch marks: YDROL etland Hy imary Ind Surface High Wa Saturati	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2)	urs:	required; che	Aquatio True Ac Hydrog	c Fauna (B quatic Plan en Sulfide	nts (B14) Odor (C	<u>Sec</u>	condary Ind Surface S Drainage Dry-Seas	icators (minimum of two requi Soil Cracks (B6) Patterns (B10)
pe: ppth (inch marks: YDROL( etland Hy imary Ind Surface High Wa Saturati Water M Sedime	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2)	urs:	required; che	Aquatio True Ad Hydrog Oxidize (C3)	c Fauna (B quatic Plan len Sulfide ed Rhizosp	nts (B14) Odor (C' heres on	Sec 1) Living Roots	condary Indi Surface S Drainage Dry-Seas Crayfish Saturatio	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9
pe: epth (inch emarks: YDROL( etland Hy imary Ind Surface High Wa Saturati Vater M Sedime Drift De	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)	urs:	required; che	Aquatio True Ad Hydrog Oxidize (C3) Presen	c Fauna (B quatic Plan len Sulfide ed Rhizosp ce of Redu	nts (B14) Odor (C' heres on uced Iron	<u>Sec</u> 1) Living Roots	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 or Stressed Plants (D1)
pe: pth (inch marks: YDROL etland Hy imary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	urs:	required; che	Aquation True Ad Hydrog Oxidize (C3) Presen Recent	c Fauna (B quatic Plan len Sulfide ed Rhizosp ce of Redu	nts (B14) Odor (C' heres on uced Iron	Sec 1) Living Roots	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomorp	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) ohic Position (D2)
Ppe: ppth (inch emarks: PDROL etland Hy imary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	rs: of one is		Aquatio True A Hydrog Oxidize (C3) Presen Recent (C6)	c Fauna (B quatic Plan en Sulfide ed Rhizosp ce of Redu t Iron Redu	nts (B14) Odor (C wheres on uced Iron uction in T	<u>Sec</u> 1) Living Roots	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomorp	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 or Stressed Plants (D1)
pe: epth (inch emarks: YDROL etland Hy imary Ind Surface High Wa Saturati Saturati Water M Sedime Drift De Algal Ma Iron Dep Inundati	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria	rs: of one is	- - - - -	Aquatic True Ad Hydrog Oxidize (C3) Presen Recent (C6) Thin M	c Fauna (B quatic Plan len Sulfide ed Rhizosp ce of Redu lron Redu uck Surfac	nts (B14) Odor (C heres on uced Iron uction in T ce (C7)	<u>Sec</u> 1) Living Roots	condary Ind Surface S Drainage Dry-Seas Crayfish Saturatio Stunted o Geomorp	icators (minimum of two requi Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9 or Stressed Plants (D1) ohic Position (D2)
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Applicant/Owner:       City of North Liberty       State:       Iowa       Sampling Point       N15         Investigator(s):       Kevin M. Griggs and Bill Martin       Section, Township, Range:       1980W/8W         Landform (hildspice, tarrace, etc.):       Slope       Local relif (concave, convex, none):       None         Stope (%):       0-3       Lat:       618070       Local relif (concave, convex, none):       None         Solid Map Unit Name Cheless-Lamont-Fayette complex       VVVI Classification:       No       No         Are unactivity of the site typical for this time of the year?       (ff noedd, explain any answers in remarks)         Are vegetation       , soli       , or hydrology       naturally problematic?       Are "normal circumstances"         Hydrophytic vegetation present?       Y       Is the sampled area within a wetland?       N         Hydrophytic vegetation resent?       Y       Is the sampled area within a wetland?       N         Hydrophytic vegetation resent?       Y       Is the sampled area within a wetland?       N         Hydrophytic vegetation resent?       Y       Is the sampled area within a wetland?       N         Hydrophytic vegetation resent?       Y       FACW       Nomber of Dominant Species         Indicators of wetland hydrology present?       N       FACW	Project/Site SE Growth Area Water & Sanitary				Idwest Region Johnson Sampling Date:	6.11.14
westigator(s): Kevin M. Griggs and Bill Martin       Section, Township, Range:       19/60W/8W         andform (Inlisiope, terrace, etc.):       Stope       Long:       420159       Datum:       NAD 83 – Zone 15         Soli Map Unit Name Chelesa-Lamont-Fayette complex       wWit Classification:       No       No         Are segatation       , soli       , or hydrology:       significantly disturbed?       Are "normal circumstances"         Are vegetation       , soli       , or hydrology       significantly disturbed?       Are "normal circumstances"         Hydrophylic vegetation present?       Y       Is the sampled area within a wetland?       N         Hydrophylic vegetation present?       N       f yes, optional wetland site ID:       Remarks: (Explain alternative procedures here or in a separate report.)         VEGETATION Use scientific names of plants.       Dominance Test Worksheet       More 30       Y         Tata Stratum       (Plot size:       )       % Cover t Species       Staus       Batua rigra       30       Y       FACW       Hat are OBL, FACW, or FAC:       6 (A         2       General starding       20       Y       FACW       Hat are OBL, FACW, or FAC:       7 (AOK)       6 (A         3       Frazinus pennsylvanica       20       Y       FACW       Nome of Dominant <th>· · · · · · · · · · · · · · · · · · ·</th> <th></th> <th></th> <th></th> <th></th> <th></th>	· · · · · · · · · · · · · · · · · · ·					
Landrom (hillslope, terrace, etc.):       Slope       Local relief (concew, convex, none):       None         Slope (%):       0-3       Lat       618070       Long:       4820159       Datum:       NAD 83 – Zone 15         Solid May Unit Name Chelesa-Lamont-Fayette complex       VWI Classification:       No         Are climatic/hydrologic conditions of the site typical for this time of the year?       (If no, explain in remarks)         Are vegetation       , soli       , or hydrology       naturally problematic?       Are "normal circumstances"         SUMMARY OF FINDINGS       (If needed, explain any answers in remarks)         Hydrophytic vegetation present?       N       Is the sampled area within a wetland?       N         Indicators of wetland hydrology present?       N       Is the sampled area within a wetland?       N         Tree Stratum       (Plot size:       )       Absolute       Dominan       Indicator         I Botula nigra       200       Y       FACW       FACW       Species Across all Strata:       8 (B         Satin nigra       20       Y       FACW       FACW       Species Across all Strata:       8 (B         Satin nigra       20       Y       FACW       FACW       Prevalence Index Worksheet       Total Socies         1       00						
Slope (%): 0 - 3       Lat:       618070       Long:       4820159       Datum:       NAD 83 - Zone 15         Soli Map Unit Name Chelesa-Lamont-Fayette complex       WVI Classification:       No         Are climatic/hydrologic conditions of the site typical for this time of the year?       (If no, explain any answers in remarks)         Are vegetation       , soil       , or hydrology       naturally problematic?       Are "normal circumstances"         Are vegetation       , soil       , or hydrology       naturally problematic?       Are "normal circumstances"         Hydrophytic vegetation present?       Y       Is the sampled area within a wetland?       N         Hydrophytic vegetation present?       N       f yes, optional wetland site ID:       N         Remarks: (Explain alternative procedures here or in a separate report.)       Mosolute       Dominance Test Worksheet         VEGETATION – Use scientific names of plants.       Absolute       Dominant       Species Atroas         1       Botuin nitre       30       Y       FACW       Total Number of Dominant         3       Frazinus pernsylvanica       20       Y       FACW       Species Atroas       (Plot size:         1       Lonicera latarica       40       Y       FACW       FACW       Species Atroas       0       X1 = 20 </td <td></td> <td>Slope</td> <td></td> <td></td> <td></td> <td></td>		Slope				
Soil Map Unit Name Chelesa-Lamont-Fayette complex       WWI Classification:       No         Are climatichydrologic conditions of the site typical for this time of the year?       (If no, explain in remarks)         Are vegetation       , soil       , or hydrology         Are vegetation       , soil       , or hydrology         Are vegetation       , soil       , or hydrology         Hydrophytic vegetation present?       Y         Hydro objection present?       N         Indicators of wetland hydrology present?       N         Indicators of wetland hydrology present?       N         Indicators of wetland hydrology present?       N         Image americana       20       Y         Image americana       20       Y         Quillow americana       20       Y         Quillow americana       20       Y         Quillow americana       20       Y         Salix nigra       20       Y			-			
Are climatic/hydrologic conditions of the site typical for this time of the year?       (If no, explain in remarks)         Are vegetation       , soil       , or hydrology       insturally problematic?       Are "normal circumstances" present? Yes.         SUMMARY OF FINDINGS       (If needed, explain any answers in remarks)         Hydrophytic vegetation present?       Y       Is the sampled area within a wetland?       N         Indicators of wetland hydrology present?       N       f yes, optional wetland site ID:			Long			
Are vegetation			641-0-0-0			
Are vegetation						
SUMMARY OF FINDINGS       (if needed, explain any answers in remarks         Hydric soil present?       Y         Hydric soil present?       N         Indicators of wetland hydrology present?       N         Remarks: (Explain alternative procedures here or in a separate report.)         VEGETATION Use scientific names of plants.         Tree Stratum       (Plot size:)         1       Betule nigra         20       Y         4       Saix nigra         20       Y         5       90         90       = Total Cover         Y       OBL         90       = Total Cover         90       = Total Cover         1       Lonicera tatarica         4       20         3       Fraxinus pennsylvanica         90       = Total Cover         90       = Total Cover         1       Lonicera tatarica         40       Y         5       1         1       Lonicera tatarica         40       Y         41       Secies         1       Patalaris arundinacea         40       Y         40       Y						
Hydrophytic vegetation present?       Y       N       Is the sampled area within a wetland?       N         Hydrophytic vegetation present?       N       f yes, optional wetland site ID:       N         Indicators of wetland hydrology present?       N       f yes, optional wetland site ID:       N         Remarks: (Explain alternative procedures here or in a separate report.)       Mumber of Dominant Species       Mumber of Dominant Species         1       Betula nigra       30       Y       FACW       Total Number of Dominant         2       Ulinus americana       20       Y       FACW       Total Number of Dominant         3       Y       FACW       Species Across all Strata:       8 (B)         4       Salix nigra       20       Y       FACW         5       90       = Total Cover       Prevalence Index Worksheet         7       00       Y       FACU       Prevalence Index Worksheet         7       00       Y       FACU       Prevalence Index Worksheet         1       Conicer ataerice       40       Y       FACU         2       40       Y       FACU       Prevalence Index Worksheet         1       Problematic saundinacea       40       Y       FACW         <		drology	naturally pr	oblematic?		
Hydric soil present?       N       Is the sampled area within a wetland?       N         Indicators of wetland hydrology present?       N       f yes, optional wetland site ID		Y				,
Indicators of wetland hydrology present?       N       f yes, optional wetland site ID:         Remarks: (Explain alternative procedures here or in a separate report.)			is the s	ampled are	a within a wetland?	N
Remarks: (Explain alternative procedures here or in a separate report.)         VEGETATION Use scientific names of plants.         Tree Stratum (Plot size:)       Monitor of plants.         Dominant indicator % Cover t Species Staus         1       Batula nigra       30       Y       FACW       Total Number of Dominant Species         2       Ulmus americana       20       Y       FACW       Species Across all Strata:	_					
VEGETATION Use scientific names of plants.         Image: Tree Stratum (Plot size:)       Absolute Dominan Species Staus 30 Y FACW 100 Staus 20 Y FACW 200		<u>N</u>	i yes, op			
Tree Stratum       (Plot size:)       % Cover       t Species       Staus       Number of Dominant Species         1       Betula nigra       20       Y       FACW       Total Number of Dominant Species       (A         2       Ulruus americana       20       Y       FACW       Total Number of Dominant Species       (A         3       Fraxinus pennsylvarica       20       Y       FACW       Percent of Dominant Species       (B         4       Salix nigra       20       Y       OBL       Percent of Dominant Species       (B         5	VEGETATION Use scientific names of p	plants.	_			
1       Betula nigra       30       Y       FACW       FACW       that are OBL, FACW, or FAC:       6       (A         2       Ulmus americana       20       Y       FACW       Total Number of Dominant       Species Across all Strata:       8       (B         4       Salix nigra       20       Y       OBL       Percent of Dominant Species       8       (B         5       90       = Total Cover       Prevalence Index Worksheet       Total % Cover of:       OBL species       20       X 1 =       20         3       90       = Total Cover       FACU       OBL species       20       X 1 =       20         4       20       Y       FACU       OBL species       20       X 1 =       20         5       90       = Total Cover       OBL species       0       X 1 =       20         4       90       = Total Cover       OBL species       0       X 3 =       0         FAC species       0       X 3 =       0       Column totals       210       (A)       520       (B       X 4 =       240         1       Phalaris arundinacea       40       Y       FACW       FACW       Prevalence Index = B/A =       2.48		Absolute	Dominan	Indicator	Dominance Test Workshee	et 👘
2       Ulmus americana       20       Y       FACW       Total Number of Dominant         3       Fraxinus pennsylvanica       20       Y       GAL       Species Across all Strata:       8       (B)         4       Salix nigra       20       Y       OBL       Percent of Dominant Species       8       (B)         5       90       = Total Cover       90       = Total Cover       Prevalence Index Worksheet       Total % Cover of:       00       20       X 1 =       20       X 2 =       260       X 3 =       0       FACW species       0 x 2 =       260       X 3 =       0       FACW species       0 x 2 =       260       X 4 =       240       UPL species       0 x 5 =       0       Column totals       210       (A)       520       (C)       Column totals       210       (A)	Tree Stratum (Plot size:)	% Cover	t Species			
3       Frazinus pennsylvanica       20       Y       FACW         4       Salix nigra       20       Y       OBL         5       90       = Total Cover       Percent of Dominant Species         1       Lonicera tatarica       40       Y       FACU         2       90       = Total Cover       Prevalence Index Worksheet         1       Lonicera tatarica       40       Y       FACU         3       90       = Total Cover       OBL species       20       x 1 =       20         4       90       Y       FACU       FACU species       10       x 3 =       0         5       90       = Total Cover       FACU species       0       x 3 =       0         FACU species       0       x 4 =       240       UPL species       0       x 5 =       0         1       Phalaris arundinacea       40       Y       FACU       FACU       FACU species       0       x 5 =       0         2       Urtica dioica       20       Y       FACU       FACU       Prevalence Index is \$3.0*       0*         6       9       9       9       =       9       1       1       1	1 Betula nigra				that are OBL, FACW, or FAC:	6 (A)
4       Salix nigra       20       Y       OBL         5       90       = Total Cover       FACW       Prevalence Index Worksheet         1       Lonicera tatarica       40       Y       FACU       OBL species       20       x 1 =       20         2		20				
Sapling/Shrub stratur       (Plot size:)         1       Lonicera tatarica         40       Y         7       A0         40       Y         FACU       FACU         7       A0         1       Prevalence Index Worksheet         7       A0         1       Prevalence Index Worksheet         7       A0         8       A0         90       = Total Cover         40       Y         FACU       Secies         20       X 1 =         20       X 1 =         20       Y         40       = Total Cover         0       OBL species         0       X 2 =         20       Y         1       Phalaris arundinacea         40       Y         20       Y         7       A0         8       20         9       Y         10       X         10       X         10       X         10       X         10       X         10       X         10					Species Across all Strata:	8 (B)
Sapling/Shrub stratum       (Plot size:)         1       Lonicera tatarica       40       Y       FACU         2		20	<u> </u>	OBL	· · ·	
Sapling/Shrub stratum       (Plot size:)         1       Lonicera tatarica       40       Y       FACU         2	5		- Tatal Origina		that are OBL, FACW, or FAC:	(A/B)
1       Lonicera tatarica       40       Y       FACU         2	Contine (Christian Color circa)	´ <u> </u>	= I otal Cove	r	Drevelance Index Worksho	ot
2	· · · · · · · · · · · · · · · · · · ·		V	EACU		et
3		40				= 20
4	2					
5	4					
Herb stratum       (Plot size:)       40       = Total Cover       UPL species       0       x 5 =       0         1       Phalaris arundinacea       40       Y       FACW       Prevalence Index = B/A =       2.48         2       Urtica dioica       20       Y       FACW       Hydrophytic Vegetation Indicators:         3       Bromus inermis       20       Y       FACU       Hydrophytic Vegetation Indicators:         4	5					
1       Phalaris arundinacea       40       Y       FACW       Prevalence Index = B/A =       2.48         2       Urtica dioica       20       Y       FACW       Hydrophytic Vegetation Indicators:         3       Bromus inermis       20       Y       FACU       Hydrophytic Vegetation Indicators:         4		40	= Total Cove	r		= 0
2       Urtica dioica       20       Y       FACW         3       Bromus inermis       20       Y       FACU       Hydrophytic Vegetation Indicators:         4       20       Y       FACU       Rapid test for hydrophytic vegetation         5	Herb stratum (Plot size:	)			Column totals 210 (A)	520 (B)
2       Urtica dioica       20       Y       FACW         3       Bromus inermis       20       Y       FACU       Hydrophytic Vegetation Indicators:         4       20       Y       FACU       Hydrophytic Vegetation Indicators:         5	1 Phalaris arundinacea		Y	FACW	Prevalence Index = B/A =	2.48
4			Y			
5	3 Bromus inermis	20	Y	FACU	Hydrophytic Vegetation Inc	dicators:
6	4				Rapid test for hydrophyt	ic vegetation
7	5		1.1		X Dominance test is >50%	J
8	6				X Prevalence index is ≤3.0	)*
9	7					
10						arks or on a
Woody vine stratum     (Plot size:)       1     *Indicators of hydric soil and wetland hydrology mu present, unless disturbed or problematic       2     Hydrophytic	termine the second s			_	·	10.77249-96-71
1     present, unless disturbed or problematic       2     Hydrophytic	10	80	= Total Cove	r		vegetation*
2 Hydrophytic		)				
						or provientatio
0 = Total Cover Vegetation	L	0	= Total Cove		vegetation	
present? Y		0	- 10(010000			
Remarks: (Include photo numbers here or on a separate sheet)	Remarks: (Include photo numbers here or on a se	enarate sheet)				· · · · ·

A 0.4 P

Depth (Inches) 0-6	Matrix					marcat		he absence of ind	
	Color (moist)	%	Color (moist)	<u>Redox Features</u> moist) % Type*			Textur	F	Remarks
0-0	10YR 2/2	90		70		Loc**	silty clay loan		
0.001					+		silty clay loan		
6-20+	10YR 5/4	90		-	+ +		Silly Clay IDali		
					$\left  \right $		-		
								100	
		<u> </u>		1.8.6.1.5				**! +!	Dave Lining M - Metr
	Concentration, D = il Indicators:	Depletion	n, RM = Redu	ced Matri	x, MS = M	lasked S		for Problematic I	Pore Lining, M = Matr
•	tisol (A1)		Se	andy Glev	ed Matrix	(S4)		Prairie Redox (A16	
	tic Epipedon (A2)			andy Red		(04)		Surface (S7) (LRR	• •
	ck Histic (A3)			•	atrix (S6)				(F12) (LRR K, L, R)
	Irogen Sulfide (A4	)			ky Minera	al (F1)		hallow Dark Surfa	
	atified Layers (A5)	-		•	yed Matrix	• •		(explain in remarks	
	m Muck (A10)				atrix (F3)	. ( ,			
Der	pleted Below Dark	Surface (	A11) Re	edox Dark	surface	(F6)			
Thic	ck Dark Surface (A	A12)	De	epleted D	ark Surfac	ce (F7)	*Indicate	ors of hydrophytic	vegetation and weltar
San	ndy Mucky Minera	I (S1)		edox Dep	ressions (	(F8)	hydrold	ogy must be preser	nt, unless disturbed o
5 cr	m Mucky Peat or I	Peat (S3)						problem	natic
estrictive	Layer (if observe	ed):				_			
/pe:							Hydric s	oil present?	N
epth (inche	es):								_
YDROLO	OGY								
	drology Indicato	rs:							
•	cators (minimum		equired: checi	k all that a	apply)		Sec	ondary Indicators (	
innary mu	Water (A1)		equired, chec		: Fauna (B			Surface Soil Crac	minimum of two requ
Surface				riquade		13)			
			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	True Ad					cks (B6)
High Wa					quatic Plan	nts (B14)	-	Drainage Pattern	cks (B6) s (B10)
High Wa	on (A3)			Hydrog	quatic Plan en Sulfide	nts (B14) Odor (C	1) —		cks (B6) s (B10) er Table (C2)
High Wa Saturatio Water M				Hydrog	quatic Plan en Sulfide	nts (B14) Odor (C	-	Drainage Pattern Dry-Season Wate Crayfish Burrows	cks (B6) s (B10) er Table (C2) (C8)
High Wa Saturatio Water M Sedimer Drift Dep	on (A3) Iarks (B1) nt Deposits (B2) posits (B3)			Hydrog Oxidize (C3) Presen	quatic Plan en Sulfide ed Rhizosp ce of Redu	nts (B14) Odor (C heres on	1) Living Roots (C4)	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma	on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)			Hydrog Oxidize (C3) Presen Recent	quatic Plan en Sulfide d Rhizosp	nts (B14) Odor (C heres on	1) Living Roots (C4)	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep	on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)			Hydrog Oxidize (C3) Presen Recent (C6)	quatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu	nts (B14) Odor (C heres on uced Iron uction in <sup>–</sup>	1) Living Roots (C4)	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati	on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria	I Imagery	· · ·	Hydrog Oxidize (C3) Presen Recent (C6) Thin M	quatic Plan en Sulfide ed Rhizosp ce of Redu Iron Redu uck Surfac	odor (C odor (C heres on uced Iron uction in ce (C7)	1) Living Roots (C4)	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely	on (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca	I Imagery	· · ·	Hydrog Oxidize (C3) Presen Recent (C6) Thin Mi Gauge	quatic Plan en Sulfide d Rhizospl ce of Redu Iron Redu uck Surfac or Well Da	nts (B14) Odor (C heres on uced Iron uction in <sup>-</sup> ce (C7) ata (D9)	1) Living Roots (C4) Filled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S	on (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) fon Visible on Aeria y Vegetated Conca Stained Leaves (B9	I Imagery	· · ·	Hydrog Oxidize (C3) Presen Recent (C6) Thin Mi Gauge	quatic Plan en Sulfide ed Rhizosp ce of Redu Iron Redu uck Surfac	nts (B14) Odor (C heres on uced Iron uction in <sup>-</sup> ce (C7) ata (D9)	1) Living Roots (C4) Filled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S	on (A3) Marks (B1) Int Deposits (B2) poosits (B3) at or Crust (B4) poosits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 <b>rvations:</b>	Il Imagery Ive Surface )	e (B8)	Hydrog Oxidize (C3) Presen (C6) Thin Mi Gauge Other (	quatic Plan en Sulfide ed Rhizospi ce of Redu Iron Redu uck Surfac or Well Da Explain in	hts (B14) Odor (C heres on uced Iron uction in ce (C7) ata (D9) Remarks	1) Living Roots (C4) Filled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat	on (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 <b>rvations:</b> ter present?	I Imagery	· · ·	Hydrog Oxidize (C3) Presen Recent (C6) Thin Mi Gauge	quatic Plan en Sulfide d Rhizospl ce of Redu Iron Redu uck Surfac or Well Da	nts (B14) Odor (C heres on uced Iron uction in the (C7) ata (D9) Remarks	1) Living Roots (C4) Filled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos FAC-Neutral Tes	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2)
High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat /ater table	on (A3) Marks (B1) Int Deposits (B2) poosits (B3) at or Crust (B4) poosits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 <b>rvations:</b> ter present? present?	Il Imagery Ive Surface ) Yes	(B8)	Hydrog Oxidize (C3) Presen (C6) Thin M Gauge Other (	quatic Plan en Sulfide ed Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	hts (B14) Odor (C heres on uced Iron inction in the (C7) ata (D9) Remarks inches): inches):	1) Living Roots (C4) Filled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos FAC-Neutral Tes Indicators	s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2) t (D5)
High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat /ater table aturation p	on (A3) Marks (B1) Int Deposits (B2) poosits (B3) at or Crust (B4) poosits (B5) ion Visible on Aeria y Vegetated Conca Stained Leaves (B9 <b>rvations:</b> ter present? present?	Il Imagery Ive Surface ) Yes _ Yes _	(B8)	Hydrog Oxidize (C3) Presen (C6) Thin M Gauge Other ( X X	quatic Plan en Sulfide ed Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	hts (B14) Odor (C heres on uced Iron inction in the (C7) ata (D9) Remarks inches): inches):	1) Living Roots (C4) Filled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos FAC-Neutral Tes Indicators	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C8 sed Plants (D1) ition (D2) t (D5)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat /ater table aturation p ncludes ca	on (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca Stained Leaves (B9 <b>rvations:</b> ter present? present?	ll Imagery ive Surface ) Yes Yes	e (B8)	Hydrog Oxidize (C3) Presen Recent (C6) Thin M Gauge Other ( X X	quatic Plan en Sulfide d Rhizospl ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in the (C7) ata (D9) Remarks inches): inches):	1) Living Roots (C4) Tilled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos FAC-Neutral Tes Indicators hydrolog	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C8) sed Plants (D1) ition (D2) t (D5)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat Vater table aturation p ncludes ca	on (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca tained Leaves (B9 <b>rvations:</b> ter present? present? present? apillary fringe)	ll Imagery ive Surface ) Yes Yes	e (B8)	Hydrog Oxidize (C3) Presen Recent (C6) Thin M Gauge Other ( X X	quatic Plan en Sulfide d Rhizospl ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in the (C7) ata (D9) Remarks inches): inches):	1) Living Roots (C4) Tilled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos FAC-Neutral Tes Indicators hydrolog	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C9 sed Plants (D1) ition (D2) t (D5)
High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Sparsely Water-S ield Obser urface wat /ater table aturation p ncludes ca	on (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria y Vegetated Conca tained Leaves (B9 <b>rvations:</b> ter present? present? present? apillary fringe)	ll Imagery ive Surface ) Yes Yes	e (B8)	Hydrog Oxidize (C3) Presen Recent (C6) Thin M Gauge Other ( X X	quatic Plan en Sulfide d Rhizospl ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) Odor (C heres on uced Iron uction in the (C7) ata (D9) Remarks inches): inches):	1) Living Roots (C4) Tilled Soils	Drainage Pattern Dry-Season Wate Crayfish Burrows Saturation Visible Stunted or Stress Geomorphic Pos FAC-Neutral Tes Indicators hydrolog	cks (B6) s (B10) er Table (C2) (C8) e on Aerial Imagery (C8 sed Plants (D1) ition (D2) t (D5)

100	0 1	100
122	0 1	18

WETLAND DETE				-
Project/Site SE Growth Area Water & Sanitary Applicant/Owner: City of North Liberty		State:		
Investigator(s): Kevin M. Griggs and Bill Martin				p, Range: 20/80W/8W
Landform (hillslope, terrace, etc.): Slo				/e, convex, none): None
	he	Long:	462015	
Slope (%): 0 - 3 Lat: 618070 Soil Map Unit Name Chelesa-Lamont-Fayette comple:		Long	~	Classification: No
Are climatic/hydrologic conditions of the site typical for		f the year?		If no, explain in remarks)
		significantly	·	
	logy			Are "normal circumstances" present? Yes
Are vegetation, soil, or hydro SUMMARY OF FINDINGS	logy	naturally pro	Diematicr	(If needed, explain any answers in remarks.)
Hydrophytic vegetation present? Y				
Hydric soil present? Y		is the sa	mpled are	a within a wetland? Y
Indicators of wetland hydrology present? Y	_	f yes, opt	ional wetla	nd site ID:Wetland NL_3
Remarks: (Explain alternative procedures here or in a <b>VEGETATION</b> Use scientific names of plan		eport.)		
	Absolute	Dominan	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size: )	% Cover		Staus	Number of Dominant Species
1 Betula nigra	30	Y	FACW	that are OBL, FACW, or FAC: 4 (A)
2 Ulmus americana	20	Y	FACW	Total Number of Dominant
3				Species Across all Strata: 4 (B)
4				Percent of Dominant Species
5		- Tatal Osua		that are OBL, FACW, or FAC: 100.00% (A/B)
Sapling/Shrub strature (Plot size)	,	= Total Cover		Prevalence Index Worksheet
Sapling/Shrub stratur (Plot size:	)			Total % Cover of:
2		· ·		OBL species $0 \times 1 = 0$
3				FACW species 170 x 2 = 340
4				FAC species $0 \times 3 = 0$
5				FACU species 0 x 4 = 0
	0	= Total Cover		UPL species $0 \times 5 = 0$
Herb stratum (Plot size:	)			Column totals <u>170</u> (A) <u>340</u> (B)
1 Phalaris arundinacea	60	Y	FACW	Prevalence Index = B/A = 2.00
2 Impatiens capensis	40	Y	FACW	
3 Urtica dioica	20	N	FACW	Hydrophytic Vegetation Indicators:
4				Rapid test for hydrophytic vegetation X Dominance test is >50%
5 6			_	$\frac{1}{X}$ Prevalence index is $\leq 3.0^*$
7				Morphogical adaptations* (provide
89				supporting data in Remarks or on a separate sheet)
10				Problematic hydrophytic vegetation*
	120	= Total Cover		(explain)
Woody vine stratum         (Plot size:           1	)			*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
2	0	= Total Cover		Hydrophytic vegetation present? Y
Remarks: (Include photo numbers here or on a separ Photo 16	ate sheet)	-		

n 1 1 2

TOTHE DES	cription: (Descr	ibe to th	e depth nee	eded 1	to docu	ment the	e indicat	or or contirm t	ne abșene	e of mulcators.)
Depth	Matrix		-	Red	ox Feat	ures			LIE I	
(Inches)	Color (moist)	%	Color (mo	oist)	%	Type*	Loc**	Textur	e	Remarks
0-12	10YR 2/2	90	0.000					vegetation		Organic matter
12-15	10YR 4/1	90	· · · · ·					silty clay loan	n	
12 10										
								··		
						1.1.1				
								Provide and a second second		
										2010-0-3-10.0-44
										a ser e de ser e se e se e
ype: C = 0	Concentration, D :	= Depleti	ion, RM = R	educe	d Matrix	<, MS = N	Aasked S	and Grains.	**Locatio	n: PL = Pore Lining, M = Ma
Hydric So	oil Indicators:							Indicators	for Proble	ematic Hydric Soils:
His	tisol (A1)			San	dy Gley	ed Matrix	(S4)	Coast	Prairie Red	dox (A16) (LRR K, L, R)
X His	tic Epipedon (A2)			San	dy Redo	ox (S5)				) (LRR K, L)
Bla	ck Histic (A3)			Strip	oped Ma	atrix (S6)		Iron-M	langanese	Masses (F12) ( <b>LRR K, L, R</b>
	drogen Sulfide (A4			_	•	ky Minera				k Surface (TF12)
	atified Layers (A5	) –				ed Matrix		Other	(explain in	remarks)
	m Muck (A10)					atrix (F3)				
	pleted Below Dark		e (A11)	_		Surface	. ,			
	ck Dark Surface (					ark Surfa				ophytic vegetation and welt
	ndy Mucky Minera		_	_Red	ox Depi	ressions	(F8)	hydrolo		e present, unless disturbed
5 c	m Mucky Peat or	Peat (S3	3)							problematic
estrictive	Layer (if observe	ed):								
ype:										
ype.								Hydric s	oil presen	t?Y
epth (inch	es):					-		Hydric s	oil presen	t? <u>Y</u>
epth (inch emarks:						-		Hydric s	oil presen	t? <u>Y</u>
epth (inch emarks:	OGY							Hydric s	oil presen	t? <u>Y</u>
epth (inch emarks: IYDROL Vetland Hy	OGY /drology Indicato									
epth (inch emarks: IYDROL /etland Hy rimary Ind	OGY /drology Indicato icators (minimum		s required; c						condary Ind	icators (minimum of two rec
epth (inch emarks: YDROL /etland Hy rimary Ind < Surface	OGY /drology Indicato icators (minimum Water (A1)		s required; c		Aquatic	Fauna (B			condary Ind	icators (minimum of two rec Soil Cracks (B6)
epth (inch emarks: YDROL /etland Hy rimary Ind < Surface < High W	OGY /drology Indicato icators (minimum Water (A1) ater Table (A2)		s required; c	_	Aquatic True Aq	Fauna (B juatic Plai	nts (B14)	Sec	condary Ind Surface Surface	icators (minimum of two rec Soil Cracks (B6) Patterns (B10)
epth (inch emarks: YDROL Vetland Hy rimary Ind Surface High Wi Saturati	OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)		s required; c	=	Aquatic True Aq Hydroge	Fauna (B juatic Plai en Sulfide	nts (B14) • Odor (C	Sec	condary Ind Surface S Drainage Dry-Seas	icators (minimum of two red Soil Cracks (B6) Patterns (B10) son Water Table (C2)
epth (inch emarks: YDROL Vetland Hy rimary Ind C Surface High Wi C Saturati	OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) /larks (B1)		s required; c	_	Aquatic True Aq Hydroge Oxidize	Fauna (B juatic Plai en Sulfide	nts (B14) • Odor (C	Sec	condary Ind Surface : Drainage Dry-Seas Crayfish	icators (minimum of two red Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
epth (inch emarks: VPDROL Vetland Hy rimary Ind C Surface High W: C Saturati C Saturati C Water N Sedime	OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) /larks (B1) nt Deposits (B2)		s required; c	_	Aquatic True Aq Hydroge Oxidize (C3)	Fauna (B juatic Plai en Sulfide d Rhizosp	nts (B14) Odor (C oheres on	Sec I) Living Roots	condary Ind Surface 3 Drainage Dry-Seas Crayfish Saturatic	icators (minimum of two rec Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (
epth (inch emarks: YDROL Vetland Hy rimary Ind C Surface G High Wa C Saturati C Saturati C Water N Sedime Drift De	OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)		s required; c	_	Aquatic True Aq Hydroge Oxidize (C3) Presend	Fauna (B juatic Plai en Sulfide d Rhizosp ce of Red	nts (B14) Odor (C oheres on uced Iron	Sec 	condary Ind Surface 3 Drainage Dry-Seas Crayfish Saturatic Stunted	icators (minimum of two rec Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery ( or Stressed Plants (D1)
epth (inch emarks: YDROL Vetland Hy rimary Ind C Surface G High W C Saturati C Saturati C Water N Sedime Drift De Algal M	OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)		s required; c		Aquatic True Aq Hydroge Oxidized (C3) Presend Recent	Fauna (B juatic Plai en Sulfide d Rhizosp ce of Red	nts (B14) Odor (C oheres on uced Iron	Sec I) Living Roots	Condary Ind Surface S Drainage Dry-Seas Crayfish Saturatic Stunted Geomor	icators (minimum of two rec Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery ( or Stressed Plants (D1) ohic Position (D2)
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#### Griggs Environmental Strategies, Inc. TLAND DETERMINATION DATA FORM - Midwest Region

on       Sampling Date:       6.11.14         Sampling Point:       N17         nge:       20/80W/8W         nvex, none):       Convex         Datum:       NAD 83 Zone 15         fication:       No         explain in remarks)       Are "normal circumstances"         Are "normal circumstances"       Present?         present?       Yes         needed, explain any answers in remarks.)         hin a wetland?       N         hild:
nge: 20/80W/8W nvex, none): Convex Datum: NAD 83 Zone 15 fication: No explain in remarks) Are "normal circumstances" present? Yes needed, explain any answers in remarks.) nin a wetland? N HD: N HD: (A) Total Number of Dominant Species Across all Strata: 6 (B) cent of Dominant Species
Datum:       NAD 83 Zone 15         fication:       No         explain in remarks)       Are "normal circumstances" present? Yes         needed, explain any answers in remarks.)         atin a wetland?       N         atil:       N         atil:       Second Sec
Datum:       NAD 83 Zone 15         fication:       No         explain in remarks)       Are "normal circumstances" present? Yes         needed, explain any answers in remarks.)         nin a wetland?       N         alD:
fication: No explain in remarks) Are "normal circumstances" present? Yes needed, explain any answers in remarks.) in a wetland? N ID:
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Are "normal circumstances" present? Yes needed, explain any answers in remarks.) nin a wetland? N ID: N Definition of Deminant Species are OBL, FACW, or FAC: 3 (A) Total Number of Dominant Species Across all Strata: 6 (B) cent of Dominant Species
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Total Number of Dominant         Species Across all Strata:       6         (B)         cent of Dominant Species
Species Across all Strata: 6 (B) cent of Dominant Species
cent of Dominant Species
valence index Worksheet
al % Cover of:
L species 0 x 1 = 0
CW species 80 x 2 = 160
C species 0 x 3 = 0
CU species 140 x 4 = 560
L species 0 x 5 = 0
umn totals 220 (A) 720 (B)
valence index = B/A = 3.27
12 A 1997 - 1997
drophytic Vegetation Indicators: Rapid test for hydrophytic vegetation
Dominance test is >50%
Prevalence index is ≤3.0*
Morphogical adaptations* (provide supporting data in Remarks or on a
separate sheet)
Problematic hydrophytic vegetation* (explain)
dicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
Hydrophytic
vegetation present? N

Griggs I	Environmental	Strategies,	Inc.
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	cription: (Descri				dox Feat			or or committe		
Depth	Matrix	~	0.1				1	<b>.</b>		Demedia
(Inches)	Color (moist)	%	Color (m	oist)	%	Type*	Loc**	Texture		Remarks
0-6	10YR 2/2	90	198 D. 1		. 0. 200			silty clay loan		
6-20+	10YR 5/4	90			1000	0 m	d	silty clay loan	ו	
		×	4 - ec - * - 1							
_		némini	Ministra a					1	1 m m	
			111			1.1				
					0.000				1	
Land										series designed
	Concentration, D =	= Depletic	n RM = R	Peduc	d Matrix		lasked S	and Grains	**Location	: PL = Pore Lining, M = Matr
	bil Indicators:	- Depietit		euuc	eu maun	K, 1913 – 191	laskeu o			matic Hydric Soils:
-	tisol (A1)			Sai	ndv Glev	ed Matrix	(S4)			ox (A16) (LRR K, L, R)
	tic Epipedon (A2)				ndy Red		(0.)			(LRR K, L)
	ck Histic (A3)				-	atrix (S6)				lasses (F12) (LRR K, L, R)
	drogen Sulfide (A4	l)			• •	ky Minera	al (F1)		-	Surface (TF12)
	atified Layers (A5)				•	ed Matrix			explain in r	
	m Muck (A10)		_			atrix (F3)				CONTRACTOR AND INCOME.
	oleted Below Dark	Surface	(A11)	Re	dox Dark	Surface	(F6)			
	ck Dark Surface (		1.00	De	pleted Da	ark Surfac	ce (F7)	*Indicate	ors of hydro	phytic vegetation and weltan
	ndy Mucky Minera					ressions (				present, unless disturbed or
5 c	m Mucky Peat or	Peat (S3)	)							problematic
estrictive	Layer (if observe	ad).								
		su).								
vpe:		su).						Hydric s	oil present	? N
							-	Hydric se	oil present	? <u>N</u>
epth (inch				1	111 20 1111 - 2	-		Hydric se	oil present	? <u>N</u>
epth (inch emarks: YDROL	es):							Hydric se	oil present	? <u>N</u>
epth (inch emarks: YDROL /etland Hy	es): OGY /drology Indicato	ors:			oll that a	- -				
epth (inch emarks: YDROL /etland Hy rimary Ind	es): OGY /drology Indicato icators (minimum	ors: of one is		check			12)		ondary India	cators (minimum of two requ
epth (inch emarks: YDROL etland Hy imary Ind Surface	es): OGY /drology Indicato icators (minimum Water (A1)	ors: of one is		check	Aquatic	Fauna (B			ondary India Surface S	cators (minimum of two requ oil Cracks (B6)
epth (inch emarks: YDROL /etland Hy rimary Ind Surface High W	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2)	ors: of one is		check	Aquatic True Ac	Fauna (B quatic Plan	nts (B14)	Sec	ondary India Surface S Drainage	cators (minimum of two requ oil Cracks (B6) Patterns (B10)
Pepth (inch emarks: YDROL Vetland Hy rimary Ind Surface High W Saturati	es): OGY /drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	ors: of one is		check	Aquatic True Ac Hydrogo	Fauna (B quatic Plan en Sulfide	nts (B14) Odor (C	<u>Sec</u>	ondary India Surface S Drainage Dry-Seaso	cators (minimum of two requ oil Cracks (B6) Patterns (B10) on Water Table (C2)
epth (inch emarks: YDROL Vetland Hy rimary Ind Surface High W Saturati Water M	es): OGY vdrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1)	ors: of one is		check	Aquatic True Ac Hydrogo Oxidize	Fauna (B quatic Plan en Sulfide	nts (B14) Odor (C	Sec	ondary India Surface S Drainage Dry-Seaso Crayfish E	cators (minimum of two requ oil Cracks (B6) Patterns (B10) on Water Table (C2) Burrows (C8)
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(Iowa 2009 Wetland Mapping Conventions for Agricultural Lands for 1985 Food Security Act as Amended and Section 404 Clean Water Act) **FSA Offsite Determination for Agricultural Lands** 

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06/30/14	Johnson	Iowa	Final	Determination	(N/N)	z	Z	z	z	z	N								
Date:	County:	State:	Meets Wetland	Mapping	Convention (Y/N)	N	N	N	N	N	N							-	
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SE Growth Area Water and Sanitary	irty				Section	2	~	18	17	19	20								
wth Area V	City of North Liberty	Kevin M. Griggs			Range	6W	6W	6W	6W	6W	6W					100			
SE Grov	City of 1	Kevin N			Twp	80N	80N	80N	80N	80N	80N								
Project/Site:	Applicant/Owner:	Investigator:		Wetland	Site ID	•		•	1	1	3								

# \* Wetland Signatures:

I = Hydrophytic vegetation (observed as different color than crop or forage)

2 = Surface water (oxbows, depressions, etc.)

3 = Flooded or drowned out crops, wet/base soil within cropped fields

4 = Stressed crops due to wetness (crop stress is seen on the ASCS slides as areas of yellowish tined crop, or sparse canopy coverage of crop, that has been in stress due to wetness)

5 = Difference in vegetation within field due to different planing dates

6 = Inclusion of wet areas as set aside (these generally show on slides as areas of close grown legumes/grasses surrounded by, or bordering areas of row crops)

7 = Patches of greener vegetation during the years of below normal precipitation (use only as a signature for a "dry year" ASCS slide)