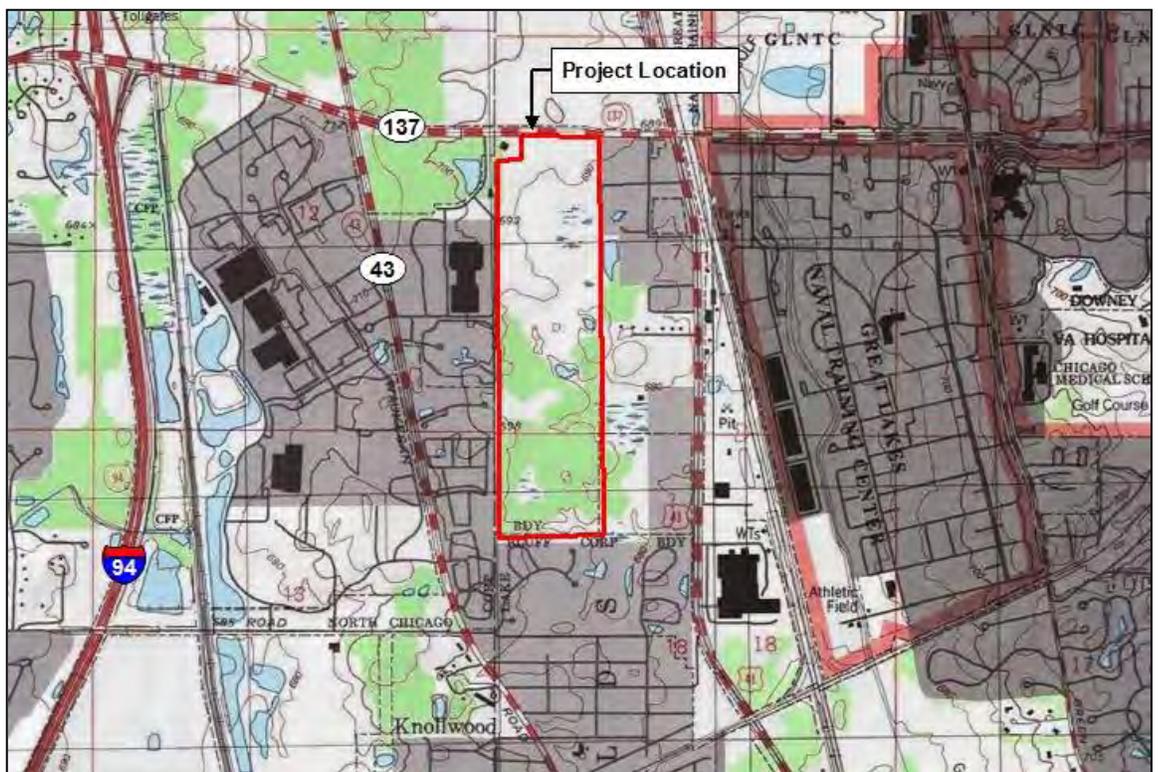


Wetland Delineation Report



Project Site:
North Chicago Wetland Mitigation Site
Lake County, Illinois

IDOT Sequence Number: 13406



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Project Summary

A wetland survey was conducted at the North Chicago Wetland Mitigation Site in Lake County, Illinois. Previously mapped wetlands (Olson *et al.* 1991, Plocher *et al.* 1996, Plocher and Ketzner 2006a, and Plocher and Ketzner 2006b) within the specified project area were examined; one of these sites (44) was found to be significantly larger than previously mapped. Two additional sites met the three criteria of a wetland established in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* [U.S. Army Corps of Engineers (USACE) 2010] and were, therefore, determined to be wetlands. Summary information regarding the wetland determination sites is presented in the wetland project report. Wetland determination forms are found in Appendix A and wetland plant species lists are included in Appendix B. Wetland boundaries were recorded using a Trimble Global Positioning System. The spatial data have been digitally uploaded to the Illinois Site Assessment Tracking System (http://frostycap.isgs.uiuc.edu/idot_extranet). Locations of determination sites were overlaid on a digital orthophoto quadrangle (DOQ) using ArcGIS; the resulting figure is included in Appendix C. Additional maps and figures are also included in Appendix C.

Signed: 
 Dr. Allen Plocher
 INHS/IDOT Project Coordinator

Date: February 22, 2012

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Cover Photo: North Chicago Wetland Mitigation Site location map.

North Chicago Wetland Mitigation Site

Lake County, Illinois

Introduction

A wetland survey was conducted on August 8, 2011 for the new wetland sites on the North Chicago Wetland Mitigation Site in Lake County, Illinois. Several previous reports detail historic wetland mapping at this location; for more information see Olson *et al.* 1991, Plocher *et al.* 1996, Plocher and Ketzner 2006a, and Plocher and Ketzner 2006b. Wetland mitigation monitoring was not conducted for 2011; it is currently scheduled to begin for the 2012 growing season.

Methods

All potential wetlands within the specified study area were examined. Characteristics of vegetation, soils, hydrology, and topography were evaluated during field investigation and on-site wetland determination. Locations of observation points for wetland determinations were selected based on plant community borders and topographic changes. The following sources were examined while surveying the project corridor to determine wetland locations and boundaries: aerial photographs; U.S. States Geological Survey topographic map (Libertyville 7.5 minute quadrangle); National Wetlands Inventory (NWI) map (Libertyville 7.5 minute quadrangle) (U.S. Fish and Wildlife Service); Lake County Wetland Inventory (LCWI) maps (Lake County Stormwater Management Commission 2000), Lake County Advanced Identification (ADID) wetland maps (Northeastern Illinois Planning Commission, U.S. Environmental Protection Agency, Lake County Stormwater Management Commission 1992), Illinois Wetlands Inventory (U.S. Fish and Wildlife Service, Illinois Department of Natural Resources, Illinois Natural History Survey 1996); *National List of Plant Species that Occur in Wetlands: Illinois* (Reed 1988); the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987); the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2010); the USDA-NRCS *Official Series Descriptions*; and the USDA-NRCS *Web Soil Survey*. Positional inaccuracies are known to occur with downloaded sources of digital data listed above. As presented on maps and figures in this report, data can be shifted from their actual position when compared to modern aerial photography.

Wetland determinations were conducted using definitions and guidelines established in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2010). Data from these determinations were recorded on U.S. Army Corps of Engineers' Wetland Determination Data Forms – Midwest Region (Appendix A); a data form was completed for each wetland. Results of these determinations are summarized in the following text. Comprehensive plant species lists were compiled for each new wetland site and are presented in Appendix B.

Wetland boundaries were recorded using a Trimble Global Positioning System (either model Pathfinder Pro XR or Pathfinder Pro XRS), with a presumed accuracy of +/- 0.5 m under optimal field conditions. Spatial data were digitally uploaded to the Illinois Site Assessment Tracking System (http://frostycap.isgs.uiuc.edu/idot_extranet). Locations of determination sites were overlaid on a digital orthophoto quadrangle (DOQ) and approximate area was determined for each wetland site using ArcGIS 10.0 software (ESRI 2010). Resulting areas are calculated in acres, reported to two decimal places. Site location, with respect to the nearest road, was measured from the edge of the pavement and is reported to the nearest foot.

Each native plant species was assigned a “coefficient of conservatism” (C) (Swink and Wilhelm 1994), a subjective rating of species fidelity to undegraded natural communities, ranging from zero to ten. Conservative species - those more likely to be found in “pristine” natural areas - were assigned high numbers, whereas non-conservative species - those that occur in anthropogenically disturbed areas - were given lower numbers. Non-native species and those not identifiable to species level were not assigned a rating. The Floristic Quality Index (FQI) is computed as $FQI = (\text{mean } C) \times (\sqrt{N})$, where mean C is the mean coefficient of conservatism for all native plant species at a site and N is the total number of native plant species at the site. In very general terms, higher FQI values for plant communities indicate more similarity to “pristine” natural areas, as compared to those communities with lower FQI values. Botanical nomenclature follows *Plants of the Chicago Region* (*ibid.*).

Wetland Site Summaries

Site Number: 44

Community type: **Marsh**

Area of site occurring within the project corridor: **1.63 acres**

Total site area: **Undetermined**

Additional remarks: **This site was delineated in 2006. The delineation was confirmed this year and the site was found to be larger than previously reported. The site has increased in size to 1.63 acres from the 0.85 acres reported in 2006 (Plocher and Ketzner, 2006a and 2006b).**

Site Number: 45

Community type: **Marsh**

National Wetlands Inventory code: **U (upland)**

Site location: **Approximately 532 ft south of IL 137 (Buckley Road)**

Hydrophytic vegetation? **Yes** Hydric soils? **Yes** Wetland hydrology? **Yes**

Is this site a wetland? **Yes**

Area of site occurring within the project corridor: **0.17 acres**

Total site area: **0.17 acres**

Is this a Lake County Wetland Inventory site? **No**

Is this site a High Quality Aquatic Resource (HQAR)? **No**

Waters type (USACE and USEPA 2007): **ISOLATE (isolated wetlands)**

HGM type: **Depressional**

Mean Coefficient of Conservatism (mean C): **2.3**

Floristic Quality Index (FQI): **9.9**

Site Number: 46Community type: **Marsh**National Wetlands Inventory code: **U (upland)**Site location: **Approximately 1530 ft south of IL 137 (Buckley Road)**Hydrophytic vegetation? **Yes** Hydric soils? **Yes** Wetland hydrology? **Yes**Is this site a wetland? **Yes**Area of site occurring within the project corridor: **0.07 acres**Total site area: **0.07 acres**Is this site a High Quality Aquatic Resource (HQAR)? **No**Waters type (USACE and USEPA 2007): **ISOLATE (isolated wetlands)**HGM type: **Depressional**Mean Coefficient of Conservatism (mean C): **2.5**Floristic Quality Index (FQI): **11.6****Threatened/Endangered Species and Natural Communities of Special Interest**

There are records of several threatened and endangered plant species present within this mitigation site area (Plocher and Ketzner 2006b, Plocher and Taft, 2009). This survey was confined primarily to locating new wetlands and was not an exhaustive survey of the entire area. During this limited wetland survey, no species listed as threatened or endangered federally or in Illinois were found within the project corridor. In addition, no new natural communities of special interest were noted.

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APPENDIX A

Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: North Chicago Wetland Mitigation Site City/County: Lake County Sampling Date: August 8, 2011
 Applicant/Owner: Illinois Department of Transportation State: IL Sampling Point: 45
 Investigator(s): Plocher, Ketzner, and Keene Section, Township, Range: Sect. 7, T. 44 N., R. 12 E.
 Landform (hillslope, terrace, etc.): Till plain Local relief (concave, convex, none): Concave
 Slope (%): <2% Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: NRCS mapped as Zurich & Nappanee SILs, 2-4% slopes; revised to undetermined NWI classification: U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: Community type: <u>Marsh</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Echinochloa crusgalli</u>	_____	Yes	OBL	<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Typha angustifolia</u>	_____	Yes	OBL	<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____	_____	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: 45

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	N 4/ and 5/	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 4

Water Table Present? Yes No Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: North Chicago Wetland Mitigation Site City/County: Lake County Sampling Date: August 8, 2011
 Applicant/Owner: Illinois Department of Transportation State: IL Sampling Point: 46
 Investigator(s): Plocher, Ketzner, and Keene Section, Township, Range: Sect. 7, T. 44 N., R. 12 E.
 Landform (hillslope, terrace, etc.): Till plain Local relief (concave, convex, none): Concave
 Slope (%): <2% Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: NRCS mapped as Frankfort SIL, 2-4% slopes; revised to undetermined NWI classification: U

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Community type: <u>Marsh</u>					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Eleocharis erythropoda</u>	_____	Yes	OBL	<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Typha angustifolia</u>	_____	Yes	OBL	<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____	_____	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: 46

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	N 4/ and 5/	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>2</u>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>

Wetland Hydrology Present? Yes No

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

Remarks:

APPENDIX B***Wetland Plant Species Lists***

Site 45 – Marsh

SPECIES LIST (Dominant species and strata indicated by bold.)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Agrostis alba</i>	red top	herb	FACW	*
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Carex cristatella</i>	sedge	herb	FACW+	4
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Dipsacus laciniata</i>	cutleaf teasel	herb	UPL	*
<i>Echinochloa crusgalli</i>	barnyard grass	herb	OBL	0
<i>Eleocharis erythropoda</i>	red root spikerush	herb	OBL	2
<i>Erigeron canadensis</i>	horseweed	herb	FAC-	0
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	4
<i>Lycopus americanus</i>	water horehound	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Phalaris arundinacea</i>	reed canarygrass	herb	FACW+	*
<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	water smartweed	herb	OBL	4
<i>Polygonum pennsylvanicum</i>	giant smartweed	herb	FACW+	0
<i>Populus deltoides</i>	cottonwood	herb	FAC+	2
<i>Rorippa palustris</i> var. <i>fernaldiana</i>	marsh yellow cress	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago graminifolia</i>	grassleaf goldenrod	herb	FACW-	4
<i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	4
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	*

* Non-native species

mCv = 2.3

FQI = 9.9

Site 46 – Marsh

SPECIES LIST (Dominant species and strata indicated by bold.)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Agrostis alba</i>	red top	herb	FACW	*
<i>Alisma subcordatum</i>	water plantain	herb	OBL	4
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	4
<i>Aster lateriflorus</i>	panicled aster	herb	FACW	4
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	2
<i>Convolvulus sepium</i>	bindweed	herb	FAC	1
<i>Cyperus esculentus</i>	chufa	herb	FACW	0
<i>Echinochloa crusgalli</i>	barnyard grass	herb	OBL	0
<i>Eleocharis erythropoda</i>	red rooted spikerush	herb	OBL	2
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Geum laciniatum</i>	rough avens	herb	FACW	5
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	4
<i>Lycopus americanus</i>	water horehound	herb	OBL	5
<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	water smartweed	herb	OBL	4
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	0
<i>Rorippa palustris</i> var. <i>fernaldiana</i>	marsh yellow cress	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago graminifolia</i>	grass leaf goldenrod	herb	FACW-	4
<i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	4
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

* Non-native species

mCv = 2.5

FQI = 11.6

APPENDIX C

Figures

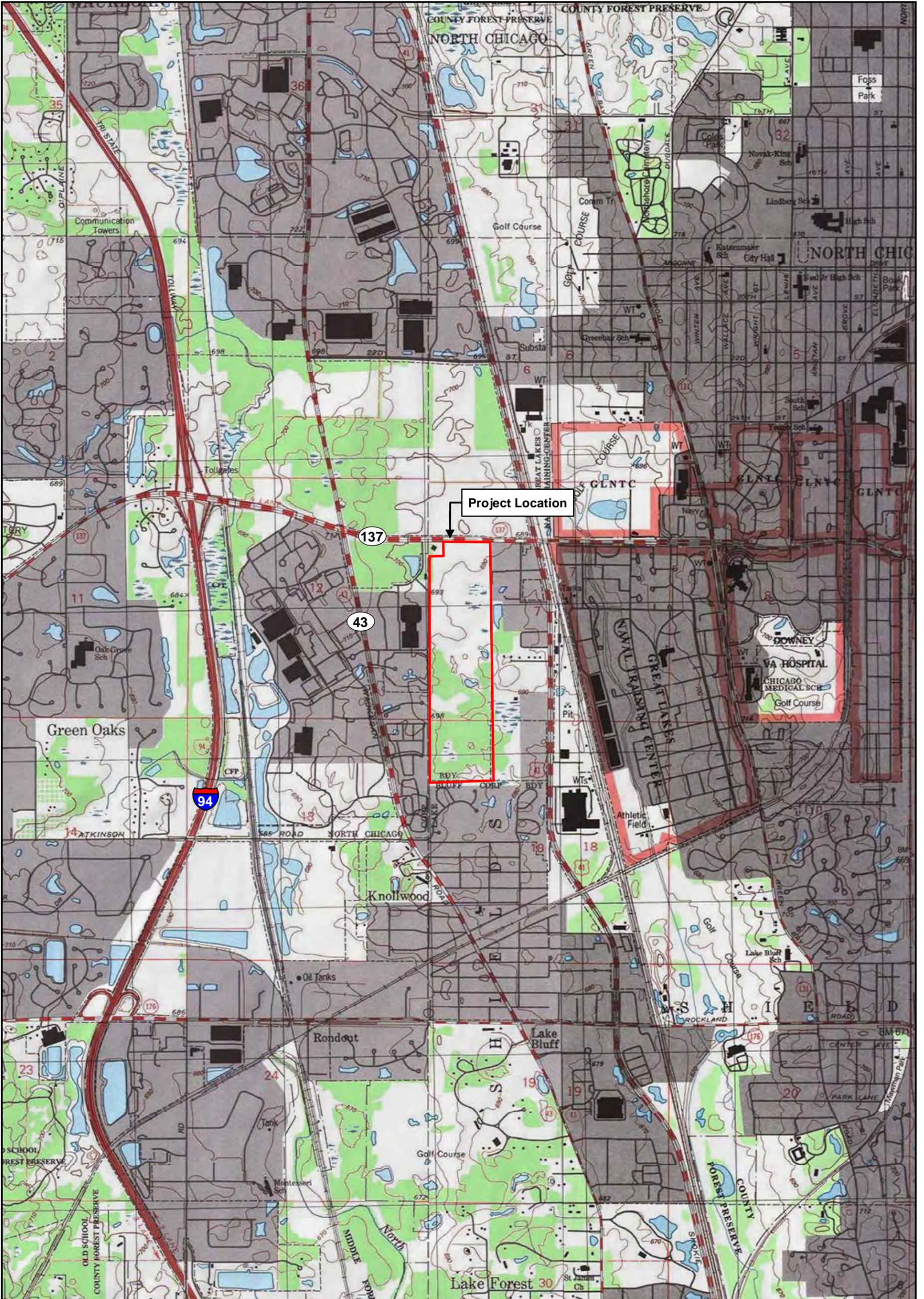
Figure 1 – Project Location Map

Figure 2 – National Wetlands Inventory Map

Figure 3 – ADID and County Wetland Inventory Map

Figure 4 – Soil Survey Map

Figure 5 – Wetland Delineation Map



Wetland Science Program
 Illinois Natural History Survey
 Prairie Research Institute
 1816 South Oak Street
 Champaign, Illinois 61820

Project Location Map
North Chicago Wetland Mitigation Site
Lake County

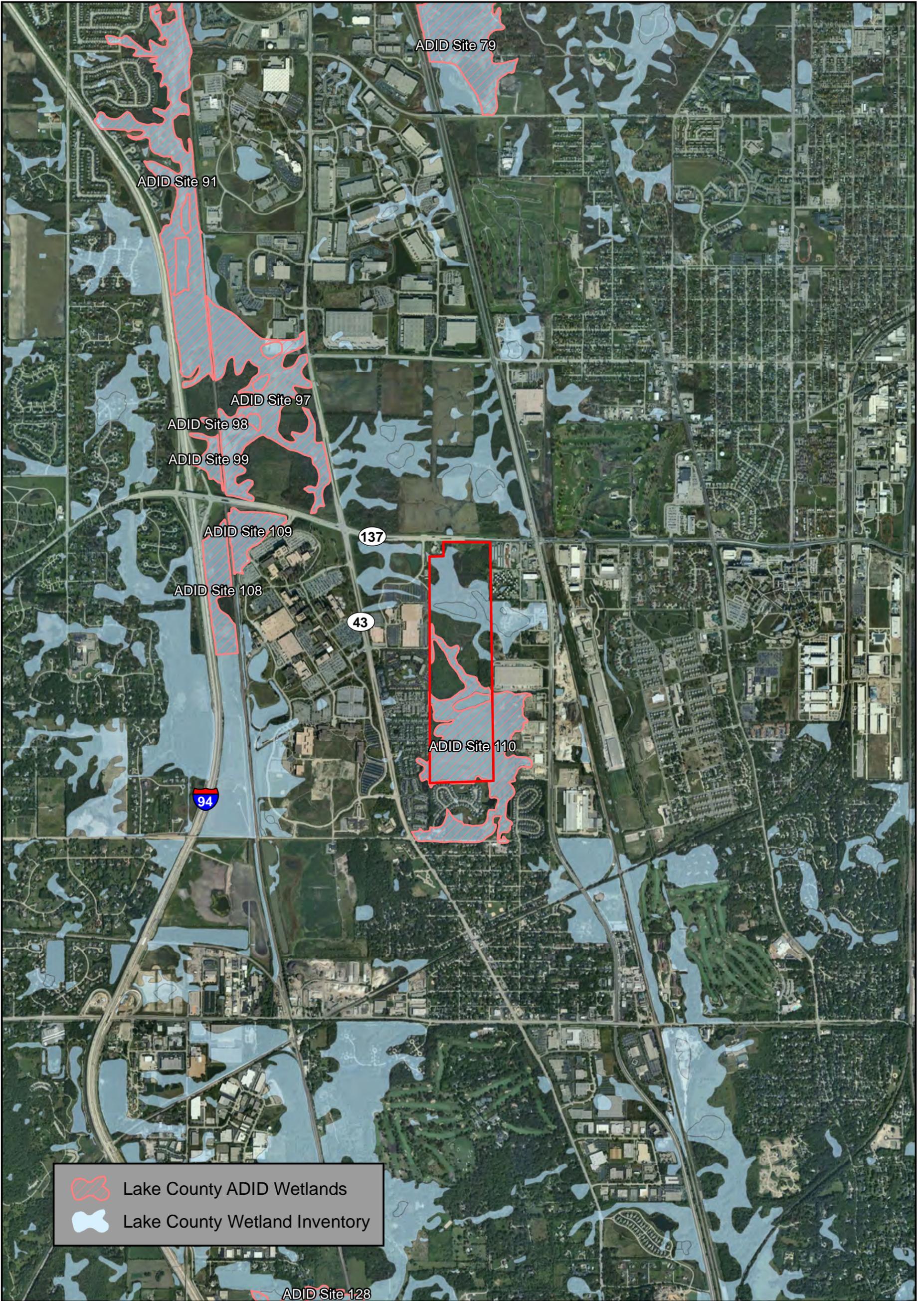
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0 Meters 500
 1 : 24,000

0 Feet 2,000
 1 inch : 2,000 feet

02/2012
 Figure 1





 Lake County ADID Wetlands
 Lake County Wetland Inventory



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 Illinois Natural History Survey
 Prairie Research Institute
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 Champaign, Illinois 61820

Lake County ADID & Wetland Inventory Map
North Chicago Wetland Mitigation Site
Lake County

Seq. No: 13406

0 Meters 500

 1 : 24,000

0 Feet 2,000

 1 inch : 2,000 feet

02/2012
 Figure 3





298A - Beecher silt loam, 0 to 2 percent slopes
 298B - Beecher silt loam, 2 to 4 percent slopes
 320A - Frankfort silt loam, 0 to 2 percent slopes
 320B - Frankfort silt loam, 2 to 4 percent slopes
 320B2 - Frankfort silty clay loam, 2 to 4 percent slopes
 4103A - Houghton muck, ponded, 0 to 2 percent slopes
 465A - Montgomery silty clay loam, 0 to 2 percent slopes
 983B - Zurich and Nappanee silt loams, 2 to 4 percent slopes



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Soil Survey Map
North Chicago Wetland Mitigation Site
Lake County

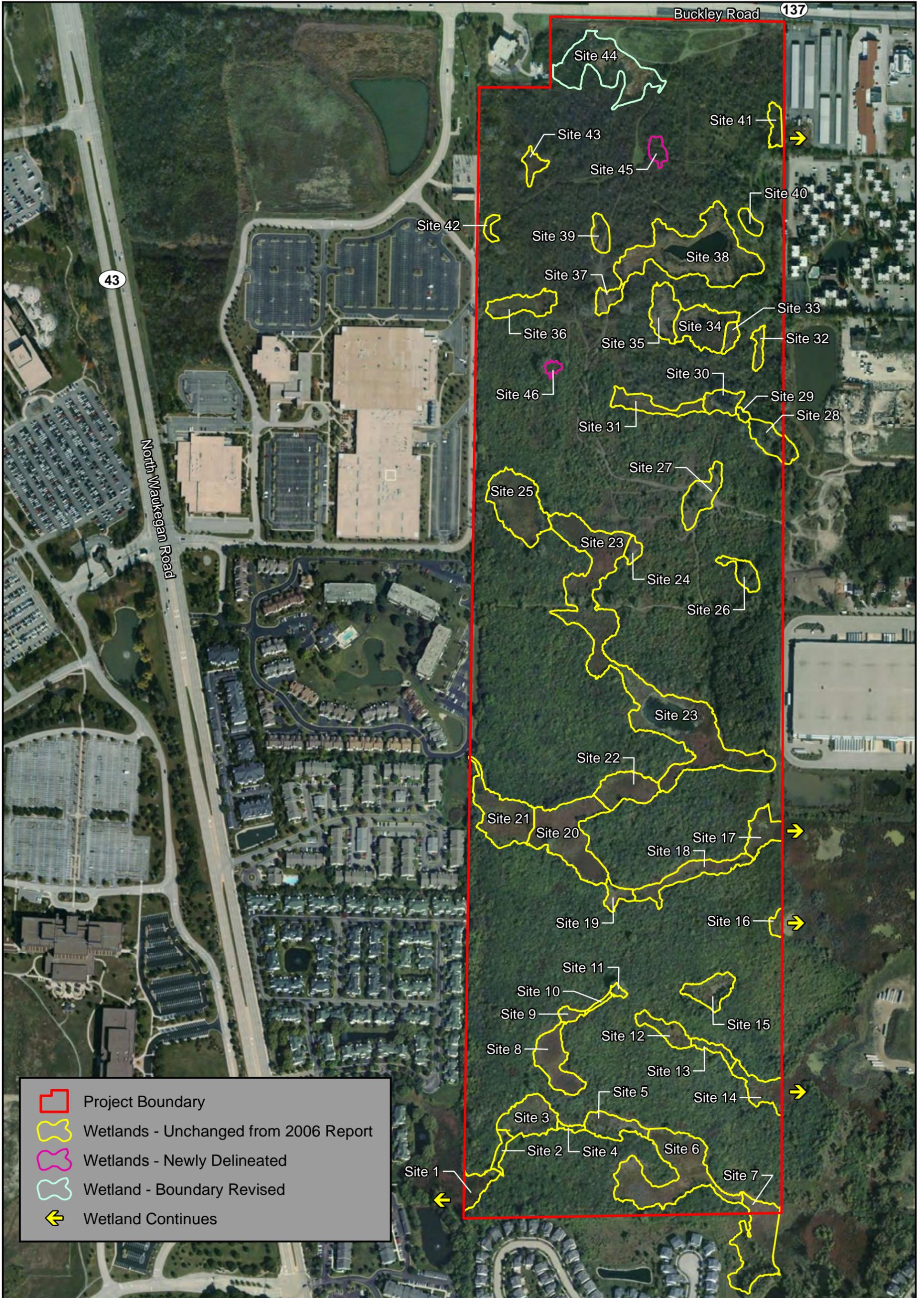
Seq. No: 13406

0 Meters 500
 1 : 24,000

0 Feet 2,000
 1 inch : 2,000 feet

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 Figure 4





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Wetland Delineation Map
North Chicago Wetland Mitigation Site
Lake County

Seq. No: 13406

0 Meters 100
 1 : 4,800

0 Feet 400
 1 inch : 400 feet

02/2012
 Figure 5

