

Appendix S

Water Resources Technical Memorandum

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Chicago Red Line Extension Project

Water Resources Technical Memorandum

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Prepared for: Chicago Transit Authority 567 W. Lake Street Chicago, IL 60661

Prepared by:







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Abbreviations

API Area of Potential Impact

BRT Bus Rapid Transit

CCSMP Cook County Stormwater Management Plan

CFR Code of Federal Regulations
CTA Chicago Transit Authority

CWA Clean Water Act

DWRM Division of Water Resource Management EcoCAT Ecological Compliance Assessment Tool

EIS Environmental Impact Statement

IDNR Illinois Department of Natural Resources
IEPA Illinois Environmental Protection Agency

ILCS Illinois Compiled Statutes

ILRDSS Illinois River Decision Support System

ISWS Illinois State Water Survey

MWRD Metropolitan Water Reclamation District of Greater Chicago

NEPA National Environmental Policy Act

NPDES National Pollution Discharge Elimination System

NRCS Natural Resources Conservation Service

NWI National Wetlands Inventory

RLE Red Line Extension

ROW right-of-way

TARP Tunnel and Reservoir Plan
TMDLs Total Maximum Daily Loads
UPRR Union Pacific Railroad

USACE U.S. Army Corps of Engineers

USC United States Code

USDA U.S. Department of Agriculture

USEPA U.S. Environmental Protection Agency

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

WMO Watershed Management Ordinance





Section 1 Summary

This technical memorandum analyzes the potential impacts of the Red Line Extension (RLE) Project on water resources, including surface and groundwater resources, the local drainage system, water quality, and wetlands. Potential impacts on floodplains are not discussed in this technical memorandum; potential impacts on floodplains will be included in the Draft Environmental Impact Statement (EIS).

The areas of potential impact (APIs) for the water resources evaluation included an area 500 feet on either side of the alternative centerlines; the API is different for each alternative and each alternative option. In order to determine alternative-specific impacts on water resources, existing data on surface and groundwater resources, drainage patterns, water quality, the water supply, and wetlands were reviewed. A field visit was conducted to evaluate potential wetlands.

Lake Michigan is the dominant topographic feature in the region and is approximately 4.8 miles from the RLE alignment at its closest point. Lake Calumet is in the eastern portion of the project area, and the Little Calumet River flows along the southern boundary of the project area. The project area is urbanized and is primarily made up of commercial and residential development. The APIs are in portions of two watersheds: the Chicago/Calumet watershed and the Lake Michigan watershed. The features of all alternatives would be within the Chicago/Calumet watershed. The Lake Michigan watershed is to the east of Union Pacific Railroad (UPRR) Rail Alternative Segment UB; the only portion of the project area that would be in the Lake Michigan watershed is an access road (Illinois River Decision Support System [ILRDSS] 2009). The APIs are not within the Inland Waterway Coastal Zone boundary or a sole source aquifer. The Little Calumet River is on the Illinois 303(d) list of impaired waterways; it is listed as impaired for mercury, polychlorinated biphenyls, aldrin, iron, dissolved oxygen, total phosphorus, and silver (Illinois Environmental Protection Agency [IEPA] 2012b). No Total Maximum Daily Loads (TMDLs) have been developed for this portion of the Little Calumet River. Due to the predominance of impervious surfaces throughout the APIs, minimal percolation to the underlying groundwater occurs.

Potential wetlands were identified at the sites of the Bus Rapid Transit (BRT) Alternative 130th Street park & ride; UPRR Rail Alternative South Station Option and West Station Option; and the 120th Street yard and shop. All sites are highly disturbed and hydrophytic vegetation is present. It is likely that large portions of these sites would be considered wetlands, but not all of the areas may be jurisdictional wetlands subject to regulation. As a basis for impact analysis and to evaluate the maximum potential impact, the following areas (approximate) were considered to be potential wetlands:

 1.5 to 9 acres of the BRT Alternative 130th Street park & ride site (final impact acreage will be dependent on a formal wetland delineation)





- 14 acres in the vicinity of the UPRR Rail Alternative 120th Street yard and shop location
- 7 acres associated with the UPRR Rail Alternative South Station Option
- 6 acres associated with the UPRR Rail Alternative West Station Option

It is likely that some surface water connections exist between these wetland areas and the Little Calumet River, making some of these areas jurisdictional wetlands. It is more likely that a surface water connection exists from the sites of the BRT Alternative park & ride and UPRR Rail Alternative stations to the river than from the yard site to the river. Due to the highly disturbed topography, a connection would require extensive research and fieldwork to confirm. The fieldwork and formal wetland delineation would take place at the time of the permit application, concurrent with final design.

This analysis identifies maximum potential wetland impacts; formal wetland delineations and confirmation of impacts would be performed following the determination of an environmentally preferred alternative and concurrent with final design. Actual impacts would likely be fewer and/or smaller than the maximum impacts described in this report. Table 1-1 (at the end of this section) summarizes the impacts on water resources including drainage, groundwater, water quality, and wetlands.

The physical modifications associated with the alternatives would result in impacts on the existing stormwater drainage infrastructure, particularly where park & ride facilities would be constructed. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. Following mitigation, there would be no adverse permanent impacts on stormwater drainage associated with the alternatives.

Mitigation options proposed herein would be confirmed during the design and engineering process in the event that contaminated groundwater was encountered and it was determined that there would be the potential for the contamination to spread. Additional best management practices that would address potential impacts from encountering contaminated groundwater and groundwater dewatering are proposed in the *Hazardous Materials Technical Memorandum*.

There would be no adverse permanent or construction impacts on water quality associated with the alternatives following mitigation. The transit system would replace automobile trips and there would be an associated reduction in roadway pollutants. The introduction of new impervious surfaces would have the potential to increase the concentration and accumulation of runoff contaminants; however, there would be no adverse permanent or construction impacts following mitigation. Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs in the APIs. Therefore, any potential increases in contaminated surface water runoff would have no adverse impact on groundwater quality.

The RLE Project, with compensatory mitigation, either through creation, restoration, enhancement, or preservation of wetlands, would result in no adverse permanent impacts on





affected wetlands in the APIs. There are several potential underutilized or vacant industrial land areas, with a connection to the Little Calumet River, that exist within 3 miles of the alternative alignments; these land areas could be restored as compensatory mitigation. Construction staging areas would be sited outside of wetlands as much as possible, but if there were any temporary impacts, those areas would be reconstructed as wetlands following construction.

Development of the BRT Alternative, UPRR Rail Alternative, or Halsted Rail Alternative in combination with related renovation, new construction, and transportation projects identified in the vicinity of the proposed project would not contribute to substantial cumulative water quality, hydrology, and/or drainage impacts.

Updated July 28, 2015

In August 2014, based on the technical analysis and public input until then, CTA announced the NEPA Preferred Alternative—the UPRR Rail Alternative. CTA is considering two alignment (route) options of this alternative: the East Option and the West Option. At this time, CTA is also considering only the South Station Option of the 130th Street Station. In late 2014 and early 2015, CTA conducted additional engineering on the East and West Options to refine the East and West Option alignments. Appendix G of this technical memorandum summarizes the refined alignments and any additional or different impacts that would result. The information in Appendix G supersedes information presented in other chapters of this technical memorandum.





Table 1-1: Maximum Potential Water Resources Impacts

	Permanent			Construction				
	Drainage	Groundwater	Water Quality	Wetlands	Drainage	Groundwater	Water Quality	Wetlands
No Build Alternative	No impacts	No impacts	No impacts	No wetlands - No impacts	No impacts	No impacts	No impacts	No wetlands - No impacts
BRT Alternative	No adverse impacts	No adverse impacts	No adverse impacts after mitigation	Compensatory mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	Compensatory mitigation
UPRR Rail Alternative ROW Option Segment UA	No adverse impacts after mitigation - pump station	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
UPRR Rail Alternative East Option Segment UA	No adverse impacts after mitigation - pump station	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation - pump station	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
UPRR Rail Alternative West Option Segment UA	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
UPRR Rail Alternative Segment UB	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	Compensatory mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	Compensatory mitigation
UPRR Rail Alternative 120th Street Yard & Shop	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	Compensatory mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	Compensatory mitigation
Halsted Rail Alternative Segment HA	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts





	Permanent			Construction				
	Drainage	Groundwater	Water Quality	Wetlands	Drainage	Groundwater	Water Quality	Wetlands
Halsted Rail Alternative Segment HB	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
Halsted Rail Alternative 119th Street Yard & Shop	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts

Notes:
BRT = Bus Rapid Transit, UPRR = Union Pacific Railroad, ROW = right-of-way





Section 2 Project Description

The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the existing 95th Street Terminal to the vicinity of 130th Street, subject to the availability of funding. The proposed Red Line Extension (RLE) would include four stations. Each station would include bus transfer and parking facilities. This project is one part of the Red Ahead Program to extend and enhance the entire Red Line. The CTA is also planning 95th Street Terminal improvements that are anticipated to be completed prior to the proposed RLE construction.

The project area is 11 miles south of the Chicago central business district (commonly referred to as the Loop) and encompasses approximately 20 square miles. The boundaries of the project area are 95th Street on the north, Ashland Avenue on the west, Stony Island Avenue on the east, and the Calumet-Sag Channel/Little Calumet River and 134th Street on the south. The I-57 Expressway and I-94 Bishop Ford Freeway cross the western and eastern edges of the project area, respectively. Lake Calumet is in the eastern portion of the project area. The project area encompasses parts of nine community areas in the City of Chicago and the eastern section of the Village of Calumet Park. Chicago community areas include Beverly, Washington Heights, Roseland, Morgan Park, Pullman, West Pullman, Riverdale, Hegewisch, and South Deering. The project area comprises residential (primarily single family), industrial (both existing and vacant), transportation (including freight), and commercial development.

The Draft Environmental Impact Statement (EIS) focuses on the following alternatives (shown in Figure 2-1), which emerged from the Alternatives Analysis and the National Environmental Policy Act (NEPA) scoping process:

- No Build Alternative
- Bus Rapid Transit (BRT) Alternative
- Union Pacific Railroad (UPRR) Rail Alternative
 - Right-of-Way (ROW) Option
 - East Option
 - West Option
- Halsted Rail Alternative





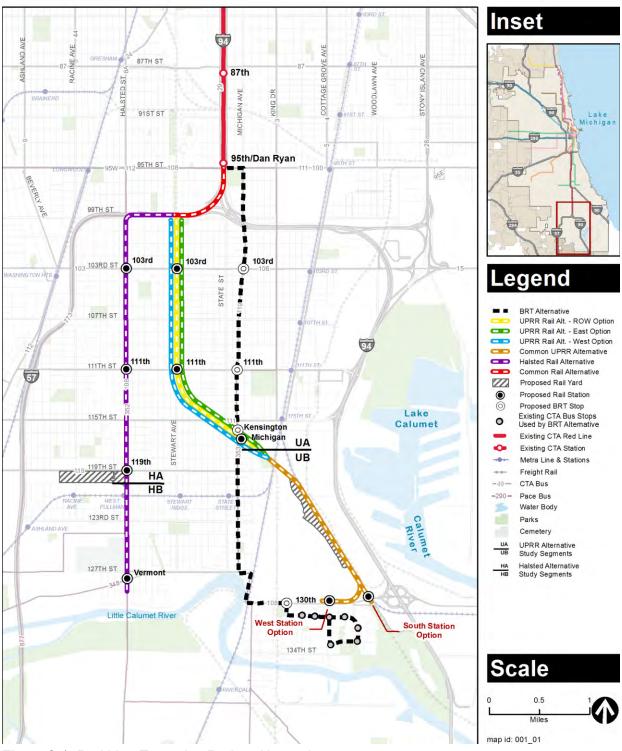


Figure 2-1: Red Line Extension Project Alternatives





The No Build Alternative is a required alternative as part of the NEPA environmental analysis and is used for comparison purposes to assess the relative benefits and impacts of extending the Red Line. The No Build Alternative is carried into the Draft EIS phase of the project development regardless of its performance versus the build alternatives under consideration. No new infrastructure would be constructed as part of the No Build Alternative other than committed transportation improvements that are already in the Chicago Metropolitan Agency for Planning (CMAP) Fiscal Year 2010–2015 Transportation Improvement Program (TIP) and the improvements to 95th Street Terminal. The TIP projects within the project area consist of four bridge reconstructions, several road improvement projects including resurfacing and coordination of signal timing on 95th Street, work on Metra's facilities, construction of a bicycle/pedestrian multiuse trail, and preservation of historic facilities. The No Build Alternative includes regular maintenance of existing track and structures, and bus transit service would be focused on the preservation of existing services and projects. All elements of the No Build Alternative are included in each of the other alternatives. Under this alternative, travel times would not improve from existing conditions.

The BRT Alternative (formerly referred to as the Transportation Systems Management Alternative) is a 5.0-mile, limited-stop, enhanced BRT route, which would operate 24 hours per day between the existing 95th Street Terminal and the intersection of 130th Street and Eberhart Avenue. No dedicated bus lanes would be provided for the BRT Alternative; however, parking lanes would be removed for some portions of the alignment and four stops with improved bus shelters and park & ride facilities would be created at 103rd Street and Michigan Avenue, 111th Street and Michigan Avenue, Kensington Avenue and Michigan Avenue, and 130th Street and Eberhart Avenue. Although BRT service elements would not continue south of the 130th Street stop, the bus route would continue through Altgeld Gardens along the existing route with six stops. The BRT Alternative would be consistent with bus routing changes that may occur as part of improvements to the 95th Street Terminal. Under this alternative, travel times between 130th Street and the Loop would improve over existing conditions.

The UPRR Rail Alternative is a 5.3-mile extension of the heavy rail transit Red Line from its existing 95th Street Terminal to 130th Street, just west of I-94. The Chicago Transit Board designated the UPRR Rail Alternative as the Locally Preferred Alternative at its August 12, 2009 board meeting. This alternative includes construction and operation of new heavy rail transit tracks, mostly in existing transportation corridors. The UPRR Rail Alternative has three options for alignment (ROW, East, and West), all of which would include operation on elevated structure from 95th Street to just past the Canadian National/Metra Electric District tracks near 119th Street. The alignment would then transition to at-grade through an industrial area with no public through streets, terminating at 130th Street in the vicinity of Altgeld Gardens. Four new stations would be constructed at 103rd Street, 111th Street, Michigan Avenue, and 130th Street. The 130th Street station would be the terminal station, with two options under evaluation: the South Station Option and the West Station Option. A new yard and shop facility would be sited near 120th Street and Cottage Grove Avenue. The bus routes in the vicinity of the UPRR Rail Alternative would be modified to enhance connectivity between the Red Line and the bus network. The hours





of operation for the UPRR Rail Alternative would be the same as for the current Red Line (24 hours every day of the year), and the service frequency is expected to be the same as current service. Under this alternative, travel times between 130th Street and the Loop would improve substantially over existing conditions.

The Halsted Rail Alternative is a 5.0-mile heavy rail transit extension of the existing Red Line. In this alternative, the Red Line would operate on an elevated structure running south from 95th Street along I-57 until Halsted Street. The alignment would then turn south and continue along Halsted Street to the intersection of Halsted Street and Vermont Avenue near 127th Street. This alternative would include four new stations at 103rd Street, 111th Street, 119th Street, and Vermont Avenue. A new yard and shop would be sited west of Halsted Street and between the 119th Street and Vermont Avenue stations. The bus routes in the vicinity of the Halsted Rail Alternative would be modified to enhance connectivity to the Red Line. The hours of operation for the Halsted Rail Alternative would be the same as for the current Red Line (24 hours every day of the year), and the service frequency is expected to be the same as current service. Under this alternative, travel times between 127th Street and the Loop would improve substantially over existing conditions. This alternative would not extend rail to Altgeld Gardens, which would be served by bus connecting to the Vermont station.





Section 3 Methods for Impact Evaluation

This analysis included an evaluation of the existing water resources, including wetlands, within an API of 500 feet around each alternative alignment. The analysis also resulted in the identification of proposed best management practices and mitigation measures to avoid, minimize, mitigate, and compensate for adverse impacts. Although floodplain impacts are not analyzed in this technical report, the EIS document reports the results of the floodplain analysis.

3.1 Regulatory Framework

This section describes federal, state, regional, and local regulations and requirements related to water resources.

3.1.1 Federal

3.1.1.1 Clean Water Act (33 United States Code 1251)

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the United States and gives the U.S. Environmental Protection Agency (USEPA) the authority to implement pollution control programs and actions, such as setting wastewater standards for industries.

3.1.1.2 Clean Water Act (Section 303(d))

Section 303(d) of the CWA requires states, territories, and authorized tribes to develop a list of water quality-impaired segments of waterways. The 303(d) list includes water bodies that do not meet water quality standards for their specified beneficial uses, even after point sources of pollution have the minimum required levels of pollution control technology. The law requires that jurisdictions establish priority rankings for water bodies on their 303(d) lists and implement a process, called TMDLs, to meet water quality standards.

Section 4 describes the existing condition of waterways and groundwater in the project area, established beneficial uses, and associated TMDLs. These water quality regulations would be applicable during construction and operation of the project alternatives.

3.1.1.3 Clean Water Act (Section 401)

Section 401 of the CWA requires a State Water Quality Certification to show that the proposed project will comply with State water quality standards for any activity that results in a discharge to a water body. In the event that a proposed alternative requires permitting under CWA Section 404 (described below, Section 404 regulates the discharge of dredged or fill material into waters of the United States), a water quality certification is required under CWA Section 401. These regulatory requirements are applicable during construction.





3.1.1.4 Clean Water Act - National Pollution Discharge Elimination System (Section 402)

The National Pollution Discharge Elimination System (NPDES) permit process provides a regulatory mechanism for the control of point source discharges—a municipal or industrial discharge from a specific location or pipe—to surface waters of the United States. Two exceptions that are regulated under the NPDES program are (1) diffuse source discharges caused by general construction that disturb more than 1 acre, and (2) stormwater discharges from municipal stormwater systems that are a separate system in which runoff is carried through a developed conveyance system to specific discharge locations.

The NPDES program regulates pollution generated by runoff from construction, industrial activities, and general and urban land use, including runoff from streets. Federal stormwater regulations require municipalities to obtain NPDES permits for stormwater discharges from municipal storm drains to surface waters. In 1990, USEPA established final regulations for stormwater discharges through the implementation of Section 402(p) of the CWA. The two permits that enforce Section 402(p), the General Industrial Permit and the General Construction Permit, are major attempts to control non-point source pollutants that discharge to local storm drain systems and receiving waters in urban runoff. A General Construction Permit would be required during construction of the proposed alternatives.

3.1.1.5 Clean Water Act (Section 404)

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (USACE) to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands (33 United States Code [USC] 1344). The USEPA guidelines (40 Code of Federal Regulations [CFR] 230 et seq.), USACE regulatory guidelines (33 CFR 320 et seq.), and NEPA guidelines (40 CFR 1500 et seq.) are the substantive environmental criteria used to evaluate permit applications submitted to USACE. The USEPA's guidelines suggest a sequential approach to project planning; mitigation measures are considered only after the applicant shows that no practicable alternatives are available to achieve the basic project purpose with a lesser environmental impact. The USACE evaluation of permit applications includes an analysis of practicable alternatives, which is the primary screening mechanism used to determine the appropriateness of permitting a discharge. Section 404(b)(1) guidelines prohibit discharges of dredged or fill material into waters of the United States, including wetlands, if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem (provided that the alternative does not cause other significant adverse environmental impacts) (40 CFR 230[a]).

The 1987 USACE *Wetland Delineation Manual* (USACE 1987) is the current federal delineation manual used in the CWA Section 404 for the identification and delineation of wetlands. The three parameters for defining wetlands are as follows:

■ Hydric soils (soils formed under saturation, flooding, or ponding conditions long enough during the growing season to develop anaerobic conditions)





- Wetland hydrology ("areas that are periodically inundated or have soils saturated to the surface at some time during the growing season" [USACE 1987])
- Hydrophytic vegetation (vegetation that thrives in wet conditions)

All three parameters are required "under normal circumstances" for a location to be considered a wetland. Determining whether normal circumstances exist in a disturbed area "involves an evaluation of the extent and relative permanence of the physical alteration of wetland hydrology and hydrophytic vegetation" and consideration of the "purpose and cause of the physical alterations to hydrology and vegetation" (USACE 1987). The Supreme Court refined the requirements for wetlands to be considered jurisdictional based on its 2001 decision *Solid Waste Agency of Northern Cook County v. USACE*, which concluded that a wetland is required to be hydrologically connected to a jurisdictional water of the United States.

3.1.1.6 Rivers and Harbors Appropriation Act of 1899 (33 United States Code 403)

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The Secretary of the Army's approval authority has since been delegated to the Chief of Engineers.

3.1.1.7 Sole Source Aquifers (40 Code of Federal Regulations 149)

Sole source aquifer designation is one tool to protect drinking water supplies in areas with few or no alternative sources to the groundwater resource, and where, if contamination occurred, using an alternative source would be extremely expensive. The designation protects an area's groundwater resource by requiring USEPA to review all proposed projects within the designated area that will receive federal financial assistance. All proposed projects receiving federal funds are subject to review, to ensure that the projects do not endanger the groundwater source.

The USEPA defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas may have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as "sole source aquifers."

3.1.1.8 Protection of Wetlands (Executive Order 11990)

Executive Order 11990 directs federal agencies to minimize the destruction, loss, or degradation of wetlands. It also assures the protection, preservation, and enhancement of the nation's wetlands to the fullest extent practicable during the planning, construction, funding, and operation of transportation facilities and projects.





3.1.1.9 Floodplain Management (Executive Order 11988)

Executive Order 11988 directs federal agencies to avoid conducting, allowing, or supporting actions on a floodplain. The order requires that the federal agency evaluate the potential effects of any actions that it may take in a floodplain.

3.1.2 State

Title 17 of the Illinois Administrative Code covers conservation; Part 3704 covers Regulation of Public Waters. The Division of Water Resource Management (DWRM) of the Illinois Department of Natural Resources (IDNR) issues permits for construction and other activities in public waters of the State. Public waters may generally be described as commercially navigable lakes and streams of the State and the backwater areas of those streams. There are certain public rights in public waters that are reserved for the citizens of the State.

The DWRM reviews proposed activities in public waters to ensure that the public's rights are not diminished by the activity. Activities that require review are not limited to construction. A permit is issued to demonstrate that the activity does not diminish the public's rights. A construction project in public waters may also require review under Parts 3700 (Construction in Floodways of Rivers, Lakes, and Streams), 3702 (Construction and Maintenance of Dams), or 3708 (Floodway Construction in Northeastern Illinois), as well as the Part 3704 rules. A number of common, minor construction activities regulated under Part 3704 are automatically authorized by statewide permits or by Regional Permit No. 3 (Authorizing Construction of Minor Projects in Northeastern Illinois Regulatory Floodways). A permit application submittal to DWRM is not needed for a construction activity that meets the terms and conditions of one or more of these statewide or regional permits.

3.1.2.1 Illinois Coastal Program

The Illinois Coastal Management Program was approved in November 2011. The program defines Inland Waterway Coastal Zone Boundaries, which consist of waterways close to the shore of Lake Michigan and designated land on either side of waterways. These areas are subject to the requirements of the federal Coastal Zone Management Act.

3.1.2.2 Illinois Interagency Wetland Policy Act of 1989

The Illinois Interagency Wetlands Policy Act of 1989 (the Act [20 Illinois Compiled Statues (ILCS) 830 et seq.]) is intended to ensure that there is no overall net loss of the State's existing wetland acres or their functional values resulting from State-supported activities.

The Act charges State agencies with a further duty to "preserve, enhance, and create wetlands where necessary to increase the quality and quantity of the State's wetland resource base" (20 ILCS 830/1-4). The Act uses the same definition for wetlands as defined in the 1987 USACE Wetland Delineation Manual used by federal agencies in implementation of the federal CWA.

All three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation) are required for a location to be considered a wetland. However, areas that have been restored or created as





the result of mitigation or planned construction projects, and that function as wetlands, are also defined as wetlands under the Act even when all three wetland parameters are not yet present.

3.1.2.3 Illinois Rivers, Lakes, and Streams Act

The Illinois Rivers, Lakes, and Streams Act regulates construction in floodplains and focuses on preserving the hydrological integrity of the State's public waters. There are two separate but similar floodplain regulatory programs established in the Illinois Rivers, Lakes, and Streams Act. One is for the six metropolitan counties in northeastern Illinois: Cook, DuPage, Kane, Lake, McHenry, and Will. The second program is for the rest of Illinois. The purpose of both programs is to "protect the rights, safety, and welfare of private and public landowners by the regulation of floodway development, [because] construction activities which restrict a stream's capacity to carry flood flows may result in channel instability and increased flood damages to neighboring properties" (State of Illinois 1994). The Northeastern Illinois Program requires permits be issued for construction in any regulated floodway.

3.1.3 Local

3.1.3.1 Cook County Watershed Management Ordinance

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) began developing a countywide stormwater management regulatory ordinance to be known as the Cook County Watershed Management Ordinance (WMO) in 2007. The WMO's goal is to establish uniform, minimum, countywide stormwater management regulations. Components that may be regulated under the WMO include drainage and detention, floodplain management, wetland protection, stream habitat and riparian environment protection, soil erosion and sediment control, and water quality.

3.1.3.2 Cook County Stormwater Management Plan

On February 15, 2007, the MWRD's Board of Commissioners adopted the Cook County Stormwater Management Plan (CCSMP) by ordinance. The CCSMP is a high-level organizational plan wherein the overall framework for the countywide program is established and which MWRD is required to adopt as a first step in establishing its countywide stormwater management program. The CCSMP is not a regulatory ordinance and does not set forth any rules, regulations, or standards to which a municipality will be held or be required to enforce.

3.1.3.3 City of Chicago Stormwater Management Ordinance

It is the policy of the City of Chicago to encourage and promote programs with the following goals:

- Minimize the negative stormwater impacts of new development and redevelopment.
- Protect and conserve land and water resources in conjunction with orderly and responsible property development.
- Prevent pollution of local waters, groundwater, and land.





- Minimize stormwater flows into the combined sewer system by minimizing impervious surfaces, promoting infiltration, or discharging to local waters, where appropriate.
- Preserve the natural characteristics of stream corridors in order to moderate flood and stormwater impacts, improve water quality, reduce soil erosion, protect aquatic and riparian habitat, provide recreational opportunities, provide aesthetic benefits, and enhance community and economic development.
- Preserve the natural hydrologic and hydraulic functions of watercourses, floodplains, and wetlands.
- Facilitate existing and future intergovernmental agreements for stormwater management.
- Manage stormwater on the site of a regulated development to the fullest feasible extent.

To achieve these goals, the primary stormwater management objectives for development sites are to (1) reduce impervious areas, (2) capture stormwater on site, and (3) either use or retain the stormwater on-site for evaporation and absorption into the ground. Stormwater that is not used or retained may be discharged into a city-owned combined sewer, storm sewer, or open waterway.

3.1.3.4 Village of Calumet Park

Chapter 151 of the Calumet Park Code of Ordinances regulates Flood Protection and Prevention in order to maintain the "Village's eligibility in the National Flood Insurance Program; to minimize potential losses due to periodic flooding including loss of life, loss of property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare; and to preserve and enhance the quality of surface waters, conserve economic and natural values and provide for the wise utilization of water and related land resources" (Village of Calumet Park 2008).

Calumet Park Ordinance 98-712 prohibits the use of groundwater as a potable water supply.

3.2 Impact Analysis Thresholds

While NEPA does not specify federal thresholds of significance for impacts on water resources, it does require that EISs be integrated with the environmental analyses and related surveys and studies required by other federal statutes. Based upon the regulatory framework established by the regulations discussed in Section 3.1, a qualitative evaluation was performed to evaluate potential impacts on water resources.

For the purpose of this EIS, an impact would be adverse if it would do any of the following:

Violate any applicable water quality standards or waste discharge requirements.





- Affect the rate or change the direction of movement of existing groundwater contaminants, or expand the area affected by contaminants.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table.
- Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Destruction, loss, or degradation of wetlands, including any net loss of their functional values.
- Discharges of dredged or fill material into wetlands.
- Otherwise substantially degrade water quality.

3.3 Area of Potential Impact

The APIs for the water resources evaluation extend 500 feet on either side of the project alternative centerlines; the API is different for each alternative and each alternative option. The RLE alternatives are shown in Figure 2-1. Given that the project would occur in a highly urbanized environment, the effects of construction and operation on water resources would not be expected to extend beyond 500 feet.

3.4 Methods

Existing data sources were reviewed to evaluate potential impacts on water resources. The evaluation of potential wetland impacts included a field reconnaissance to establish the potential presence and condition of wetlands within the project area. The potential permanent and/or construction effects of each alternative on identified water resources were evaluated. Measures to avoid, minimize, mitigate, and compensate for potential adverse impacts were proposed.

3.4.1 Review Existing Data

In order to determine alternative-specific impacts on water resources, existing data on surface and groundwater resources, drainage patterns, water quality, and water supply were reviewed. Existing TMDLs and NPDES permits, which could affect the project, were also reviewed. Information from USEPA Region V was reviewed to determine whether the project area has any sole source aquifers. The APIs were reviewed to determine whether they are within the designated coastal zone.





Existing wetland data was obtained from the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and also from the updated coverage prepared by Ducks Unlimited under contract with USFWS. To help locate wetland sites that may have been missed, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey website was used, where available, to locate areas of potentially hydric soils. The IDNR Ecological Compliance Assessment Tool (EcoCAT) was reviewed to identify resources mapped by IDNR.

3.4.2 Field Review

A general field reconnaissance was conducted to identify potential wetlands within the project area. Aerial photographs were used to evaluate existing mapped wetlands and to help pinpoint potential sensitive areas that may not be included in any of the existing wetland maps or inventories. Potential wetlands within the APIs were evaluated to locate any potential wetland resources intersecting the project area.

The 1987 USACE Wetland Delineation Manual was used to determine the presence of wetlands in the project area; the Wetland Delineation Manual defines areas as wetland if they meet all three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation). Reconnaissance level wetland assessments were completed and no formal wetland delineations were conducted, although an estimate of wetland size was calculated from aerial photographs after the field review confirmed the presence and extent of wetland areas. Using the USACE manual, each potential wetland site was evaluated for the presence or absence of hydric soils, the dominance of hydrophytic vegetation, and the presence or absence of wetland hydrology.

3.4.3 Impact Analysis

Potential impacts that would be associated with the alternatives were identified, then categorized and analyzed separately based on whether the impacts would be related to permanent activities or construction-period activities. Results of the field survey were used to determine whether wetlands might be present and whether they might be affected within the project area. Wetland resources were described at a reconnaissance level of detail and each alternative was assessed for potential impacts on wetlands within the project area.

Permanent impacts on water resources could result from stormwater runoff, changes in impervious surfaces throughout the APIs (resulting in changes to groundwater infiltration), and surface water and groundwater contamination. Each of these potential permanent impacts was analyzed in relation to applicable permits and regulations.

Construction-related potential impacts on water resources could result from stormwater runoff as well as impacts on the existing drainage infrastructure. Existing water quality conditions and beneficial uses in project area watersheds were assessed. Water quality regulations that would apply to construction of the project alternatives were identified. Each of the alternatives was analyzed for potential construction-related surface water sedimentation impacts generated by erosion and runoff from construction staging areas. Possible groundwater contamination





resulting from implementation of the alternatives was considered. Mitigation options were identified to address these potential effects in accordance with applicable NPDES permit requirements and other water resources regulations.

For potential wetlands identified in the API of the NEPA preferred alternative, formal wetland delineations would be performed at the time of permit application submittal, concurrent with final design, to refine the specific area of impacts. The NEPA analysis would support the permit application and review in compliance with wetlands regulations as appropriate. This analysis identifies maximum potential wetland impacts; formal wetland delineations and confirmation of impacts would be performed for the NEPA preferred alternative. Actual impacts would likely be fewer and/or smaller than the maximum impacts described in this report.

Each project alternative was qualitatively assessed for potential impacts on water resources within the project area and recommendations were identified for avoiding and minimizing water resources impacts, as well as potential mitigation measures.





Section 4 Affected Environment

Lake Michigan is the dominant topographic feature in the region and is approximately 4.8 miles from the project area at its closest point near the UPRR Rail Alternative alignment. Lake Calumet is in the eastern portion of the project area, and the Little Calumet River flows along the southern boundary of the project area. The project area is urbanized and is primarily made up of commercial and residential development. Figure 4-1 depicts a regional view of the project area and identifies Lake Calumet and the Little Calumet River.

4.1 Municipal Water Supply/Wastewater Collection

The City of Chicago Department of Water Management is responsible for treating and supplying potable water in the project area. Lake Michigan is the drinking water source for Chicago and its suburbs. Groundwater is not a drinking water source within the project area. The Jardine Water Purification Plant draws raw water from Lake Michigan and serves the northern areas of the City and suburbs, while the South Water Purification Plant draws raw water from Lake Michigan and serves southern areas of the City and suburbs. The Village of Calumet Park also receives water from Lake Michigan.

The MWRD is responsible for wastewater collection and treatment in the project area, including the Village of Calumet Park, which has a combined sewer system to collect both sanitary sewage and stormwater runoff. This agency maintains regional sewer interceptors within the project area.

4.2 Surface Water

4.2.1 Regional Surface Water Setting and Conditions

The APIs are in two watersheds: the Chicago/Calumet watershed and the Lake Michigan watershed. The features of all alternatives would be within the Chicago/Calumet watershed. The Lake Michigan watershed is to the east of Segment UB; the only portion of the project that would be in the Lake Michigan watershed is an access road (ILRDSS 2009).

The Lake Michigan watershed (U.S. Geological Survey [USGS] Cataloging Unit 04040002) lies along the Lake Michigan shoreline, and has a drainage area of about 90 square miles (ILRDSS 2011b). The Chicago/Calumet watershed (USGS Cataloging Unit 07120003) lies directly west of the Lake Michigan watershed, and covers about 580 square miles. Both watersheds are primarily residential and urban, with some forests throughout. The far south of the Chicago/Calumet watershed contains a few agricultural areas (ILRDSS 2011a).

Lake Michigan borders Illinois, Indiana, Michigan, and Wisconsin. It is the second largest Great Lake by volume, with 1,180 cubic miles of water. Lake Michigan is the third largest Great Lake by area.





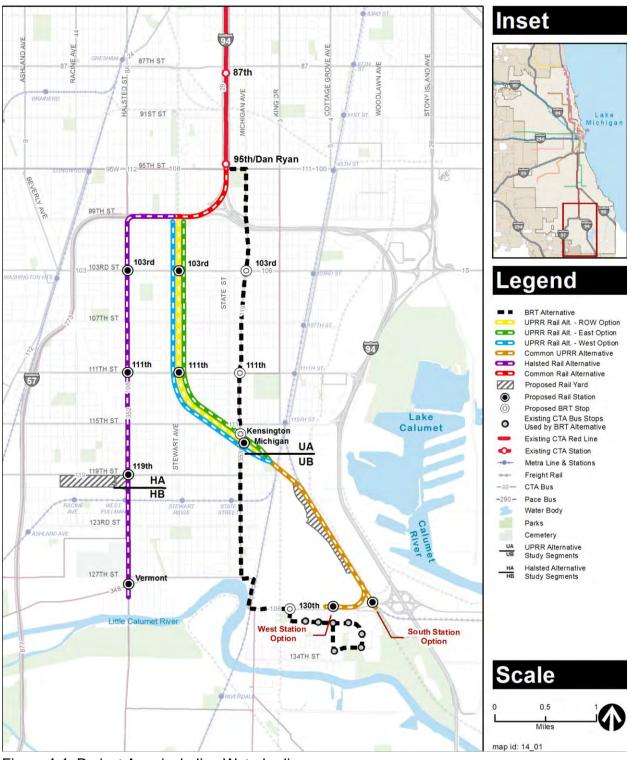


Figure 4-1: Project Area including Waterbodies





The climate for the project area is typically continental with cold winters and warm summers. The average temperature for the project area is around 52 degrees Fahrenheit (°F), with the average high around 83°F in the summer and the average low around 21°F in the winter. There are about 130 rain days per year (Illinois State Water Survey [ISWS] - Illinois State Climatologist Data 2012). Lake Michigan moderates the regional temperature and causes cooler summers and warmer winters (ISWS - Institute of Natural Resource Sustainability 2012) than other areas of the state. Per the Chicago Climate Change Task Force (2007), peak runoff is predicted to increase and levels in Lake Michigan are likely to decrease. Peak flows in local rivers are expected to increase slightly, increasing the risk of flooding and associated damages.

Local topography typically varies less than 40 feet, with a minimum elevation of 580 feet and a maximum elevation of 620 feet above sea level.

4.2.2 Local Surface Water Setting and Conditions

The alternative alignments would not cross or come in contact with any local water bodies.

The Little Calumet River flows along the southern boundary of the project area. The Little Calumet River flows to the west, away from Lake Michigan. The river flows into the Cal-Sag Channel then into the Chicago Sanitary and Ship Canal, and then into the Des Plaines River.

Lake Calumet is approximately 0.5 mile east of the UPRR Rail Alternative alignment. The lake is owned by the Illinois International Port District and is 8.6 acres in size.

Lake Calumet lies within the Inland Waterway Coastal Zone boundary, but the APIs do not. The inland waterway corridor consists of both the waterway and designated land area on either side of the waterway, and meets the requirements of federal regulations and guidelines for the inclusion within the coastal zone of rivers (waterways), on which uses may have direct impacts on coastal waters (IDNR 2011).

4.2.3 Surface Water Drainage

Storm drains throughout the project area divert water into the Tunnel and Reservoir Plan (TARP), maintained by MWRD. The TARP is a system of deep rock tunnels and surface reservoirs that capture, convey, and store combined sewage during storms until it can be distributed to MWRD's treatment plants as capacity becomes available. The project area is along the Mainstream tunnel of the TARP system (MWRD 2012b). The combined sewers in the Village of Calumet Park carry runoff to the MWRD interceptors. Stormwater runoff exceeding MWRD interceptor capacity is conveyed to the TARP system. In the event of high flows, TARP discharges to the Little Calumet River, which receives discharges from 15 permitted outfalls (MWRD 2012a).

4.3 Groundwater

Groundwater in the project area is in the deep bedrock Cambrian-Ordovician aquifers. Wells drilled into this aquifer range from 800 to 1,500 feet deep. The estimated sustained yield for the Cambrian-Ordovician aquifer system is 65 million gallons per day; by 1979, pumping from this





aquifer reached 182.9 million gallons per day. This pumping caused the groundwater levels to drop over 850 feet by 1980. Lake Michigan became a water resource to DuPage, Kane, Lake, McHenry, and Will counties in the early 1980s. Current withdrawals from the Cambrian-Ordovician aquifers are close to the estimated sustainable yield (ISWS - Center for Groundwater Science 2012).

Smaller aquifers overlying the Cambrian-Ordovician aquifers are not widespread and are not utilized for municipal or private water use. Shallow perched groundwater is commonly identified in the Chicago area, though the substrate materials confining the water are characterized as discontinuous lenses and are not laterally continuous. Groundwater generally flows from areas of higher surface elevation to areas of lower surface elevation and toward the nearest surface water body. The flow direction for groundwater underlying the site is assumed to be to the northeast towards Lake Michigan. Localized perched groundwater may flow toward shallower surface water bodies such as Lake Calumet, the Calumet River, or the Little Calumet River.

There are no sole source aquifers in the project area. The closest sole source aquifer is the St. Joseph Aquifer System in northern Indiana, about 70 miles to the east (USEPA Ground Water Branch 2012).

4.4 Water Quality

4.4.1 Surface Water Quality

Urban stormwater runoff from the project area may have negative impacts on surface water quality. Runoff washes residues from the land surface, including deposits from street surfaces, parking surfaces, facility grounds, vehicles, pesticides, and pet waste into the storm drain system.

The Little Calumet River is regulated under the Secondary Contact and Indigenous Aquatic Life Standards. Water bodies regulated under this standard are suited for secondary contact uses and are capable of supporting indigenous aquatic life (IEPA 2012a).

The Little Calumet River is on Illinois 303(d) list of impaired waterways; it is listed as impaired for mercury, polychlorinated biphenyls, aldrin, iron, dissolved oxygen, total phosphorus, and silver (IEPA 2012b). A TMDL analysis has not been developed for this segment of the Little Calumet River system.

4.4.2 Groundwater Quality

The Cambrian-Ordovician aquifers are known to contain high concentrations of naturally occurring barium and radium. The greatest risk for deep aquifer contamination is through contaminant pathways such as abandoned wells; however, vertical migration of chemicals from the land surface poses a low risk of groundwater contamination. Based on information from the Illinois Groundwater Consortium, concentrations of chloride and total dissolved solids have increased in shallow aquifers in the last 20 years (ISWS - Center for Groundwater Science 2012).





4.5 Wetlands

4.5.1 Bus Rapid Transit Alternative

A data review obtained the following about existing conditions within the BRT Alternative API:

Aerial Photographs

A review of the aerial photographs confirmed that the API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API based on the review of aerial photographs.

■ IDNR EcoCAT

A review of the IDNR EcoCAT identified no wetlands (IDNR 2012). Appendix A contains the EcoCAT report.

NRCS Soil

The NRCS Web Soil Survey website defines four soil types within the BRT Alternative API as hydric soils, as described in Table 4-1 (USDA 2012a, USDA 2012k).

Table 4-1: Hydric Soils within Bus Rapid Transit Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Soil Type
Southeast quadrant of the intersection of 98th Street and Indiana Avenue	440 feet east	232A
Southwest quadrant of the intersection of 117th Street and Indiana Avenue	Adjacent to the west	2232A
South of the intersection of 130th Street and the UPRR tracks	Adjacent to the south	69A
South of the intersection of 130th Street and Eberhart Avenue, along Eberhart Avenue	Along the alignment	2232A

Notes:

UPRR = Union Pacific Railroad

See references USDA 2012a and USDA 2012k for soil type definitions

Appendix B includes a summary of information from the NRCS Web Soil Survey website.

NWI

The NWI classifies several wetland areas within the BRT Alternative API. Updated wetland coverage was confirmed using the Ducks Unlimited web database; data is summarized in Table 4-2 (Ducks Unlimited 2012) and shown on Figure 4-2. Table 4-2 provides the wetland location, approximate distance from the alignment, wetland category, and wetland type.





Wetland categories correspond to the classification nomenclature that best describes the habitat; definitions are included in Appendix C.

Table 4-2: National Wetland Inventory Areas within Bus Rapid Transit Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Little Calumet River	50 feet west	R2UBH	Riverine
Kensington Marsh - north of 130th Street, west of the MWRD facility	350 feet north	LTU2BKh	Wetland Type Not Provided
North of the intersection of 130th Street and Eberhart Avenue, south of the MWRD facility, on the 130th Street park & ride site	On the 130th Street park & ride site	PFO1C	Freshwater Shrub/Forested Wetland
Northeast of the intersection of 130th Street and Eberhart Avenue, south of the MWRD facility, west of the MWRD access road, on the 130th Street park & ride site	On the 130th Street park & ride site	PEM1Ch	Freshwater Emergent Wetland
North of 130th Street and east of the 130th Street park & ride site	130 feet east	PFO1C	Freshwater Forested/Shrub Wetland
North of 130th Street and east of the 130th Street park & ride site	400 feet east	PEM1Ch	Freshwater Emergent Wetland

Notes:

MWRD = Metropolitan Water Reclamation District of Greater Chicago See reference Ducks Unlimited 2012 for more info on Wetland Types

■ Field Visit

A field visit was conducted on August 8, 2012 to look for evidence of potential wetlands within the BRT Alternative API. Wetland resources were evaluated at a reconnaissance level of detail; no formal wetland delineations were conducted. The field reconnaissance found some standing water, indicative of potential wetland areas at the proposed 130th Street park & ride location.

The BRT Alterative 130th Street park & ride site is highly disturbed in both soil and topography. Although hydrophytic vegetation is present, the results of this cursory field investigation were inconclusive. As a basis for impact analysis and to evaluate the maximum potential impact, between approximately 1.5 and 9 acres of the 130th Street park & ride site are considered a potential wetland, dependent on a formal wetland delineation. It is likely that there is a surface water connection between this wetland area and the Little Calumet River, indicating that this is a jurisdictional wetland.





Following the determination of an environmentally preferred alternative and as the design is finalized, a formal wetland delineation would be conducted and the amount and type of impact would be refined. As part of obtaining permits for work on the project, mitigation would be needed if wetlands would be affected. Coordination with the local USACE district is recommended.

4.5.2 Union Pacific Railroad Rail Alternative

4.5.2.1 Segment UA

A data review obtained the following about existing conditions within the UPRR Rail Alternative Segment UA API:

Aerial Photographs

A review of the aerial photographs confirmed that most of the API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API in Segment UA.

■ IDNR EcoCAT

A review of the IDNR EcoCAT found no wetlands (IDNR 2012). Appendix A contains the EcoCAT report.

NRCS Soil

The NRCS Web Soil Survey website defines one soil type within the UPRR Rail Alternative Segment UA API as hydric soil, as described in Table 4-3 (USDA 2012a, USDA 2012k).





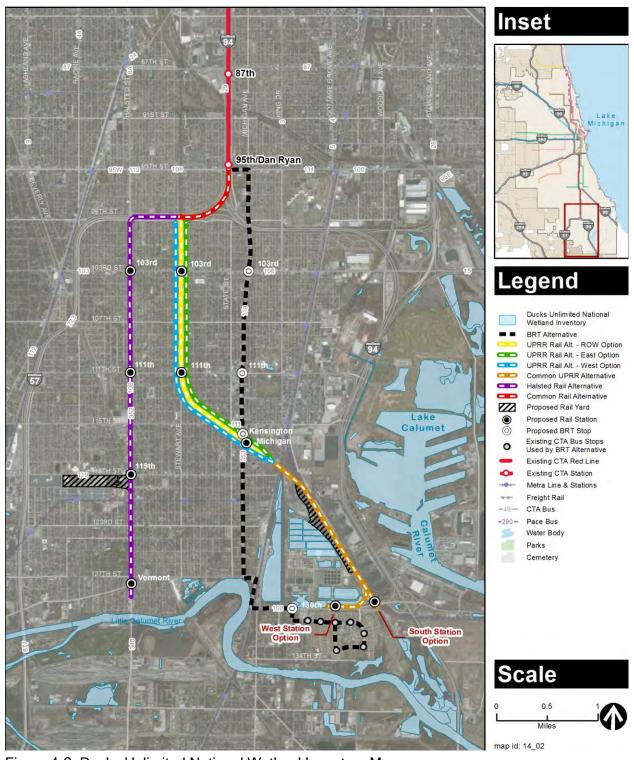


Figure 4-2: Ducks Unlimited National Wetland Inventory Map





Table 4-3: Hydric Soils within Segment UA of Union Pacific Railroad Rail Alternative Area of Potential Impact

Location	Distance from Alignment	Soil Type
Southwest quadrant of the intersection of 117th Street and Indiana Avenue	0 feet	2232A

Notes:

See references USDA 2012a, USDA 2012k for more info on soil types

A summary of information from the NRCS Web Soil Survey website is included in Appendix B.

■ <u>NWI</u>

The NWI does not classify any wetland areas within Segment UA of the UPRR Rail Alternative API.

■ Field Visit

A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands along Segment UA of the UPRR Rail Alternative alignment. Wetland resources were evaluated at a reconnaissance level of detail; no formal wetland delineations were conducted. The field reconnaissance found no evidence of potential wetland areas.

4.5.2.2 Segment UB

A data review obtained the following about existing conditions within Segment UB of the UPRR Rail Alternative API:

Aerial Photographs

Aerial photographs display potentially sensitive areas east of the Canadian National/Metra Electric crossing along the southern end of the UPRR Rail Alternative API, between the MWRD treatment plant and the Northern Indiana Commuter Transportation District/Chicago South Shore & South Bend Railroad tracks. A review of the aerial photographs confirmed that most of the API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API other than in the vicinity of the 120th Street yard and shop, South Station Option, and West Station Option.

■ IDNR EcoCAT

A review of the IDNR EcoCAT found no wetlands (IDNR 2012). Appendix A contains the EcoCAT report.





■ NRCS Soil

The NRCS Web Soil Survey website defines two soil types within Segment UB of the UPRR Rail Alternative API as hydric soils, as described in Table 4-4 (USDA 2012a, USDA 2012k).

Table 4-4: Hydric Soils within Segment UB of the Union Pacific Railroad Rail Alternative Area of Potential Impact

Location	Distance from Alignment	Soil Type
Southwest quadrant of the intersection of 117th Street and Indiana Avenue	0 feet	2232A
Kensington Park	70 feet to the southwest	232A

Notes:

See references USDA 2012a, USDA 2012k for more info on soil types

A summary of information from the NRCS Web Soil Survey website is included in Appendix B.

■ <u>NWI</u>

The NWI classifies several wetland areas within Segment UB of the UPRR Rail Alternative API. Updated wetland coverage was confirmed using the Ducks Unlimited web database; data is summarized in Table 4-5 (Ducks Unlimited 2012) and shown on Figure 4-2 in relation to the API. Table 4-5 provides the wetland location, approximate distance from the alignment, wetland category, and wetland type. Wetland categories correspond to the classification nomenclature that best describes the habitat; definitions are included in Appendix C. The MWRD drying ponds, which are within the API, are classified as freshwater ponds.

Table 4-5: National Wetland Inventory Areas within Segment UB of the Union Pacific Railroad Rail Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Five MWRD drying ponds	75-200 feet west	PUBKh	Freshwater Ponds
West of UPRR Rail Alternative, south of yard, north of South Station Option site	180 feet west	PUBGx	Freshwater Pond
Along South Station Option site, north of 130th Street	0 feet	PEM1Kh	Freshwater Forested/Shrub Wetland
West of South Station Option site, north of 130th Street	58 feet west	PUBKh	Freshwater Pond
Along West Station Option site, north of 130th Street	0 feet	PEM1Kh	Freshwater Forested/Shrub Wetland
Along West Station Option site, north of 130th Street	0 feet	PEM1Ch	Freshwater Emergent Wetland
North of West Station Option site, north of 130th Street	100 feet north	PUBKh	Freshwater Pond





Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Along West Station Option site, north of 130th Street	0 feet	PFO1C	Freshwater Forested/Shrub Wetland
West of West Station Option site, north of 130th Street	25 feet west	PEM1Ch	Freshwater Emergent Wetland
West of West Station Option site, north of 130th Street	415 feet west	PFO1C	Freshwater Forested/Shrub Wetland

Notes:

MWRD = Metropolitan Water Reclamation District of Greater Chicago, UPRR = Union Pacific Railroad See reference Ducks Unlimited 2012 for more info on wetland types

■ Field Visit

A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands along the UPRR Rail Alternative alignment. The field visit focused on the area along the southern end of the UPRR Rail Alternative alignment, in Segment UB, from the Canadian National/Metra Electric crossing to 130th Street, as shown in Figure 4-3. Wetland resources were evaluated at a reconnaissance level of detail; no formal wetland delineations were conducted. During the site visit, notes regarding potential wetland hydrology, soils, and vegetation were collected. Soils within four hand-dug test pits were evaluated for hydric characteristics. Test pits were dug at representative locations where there appeared to be differences in the vegetation, topography, or soils. Several test pits were dug in an attempt to identify variations in soils that could be useful in differentiating between wetland and non-wetland areas. Test pit locations (Figure 4-3) were in the vicinity of the 120th Street yard and shop. Appendix D contains photographs from the field visit.

The area in the vicinity of the 120th Street yard and shop is highly disturbed. The area is characterized by a young cottonwood forest with pockets of phragmites. At the time of the field visit, the cottonwoods were generally 6 inches in diameter. Based on historical aerial photos (Google Earth 1998, 2002, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012), the area to the southwest of the Northern Indiana Commuter Transportation District/Chicago South Shore & South Bend Railroad train tracks began to become forested around 2005/2007 (Google Earth 2012). Table 4-6 summarizes the plants identified throughout the area.





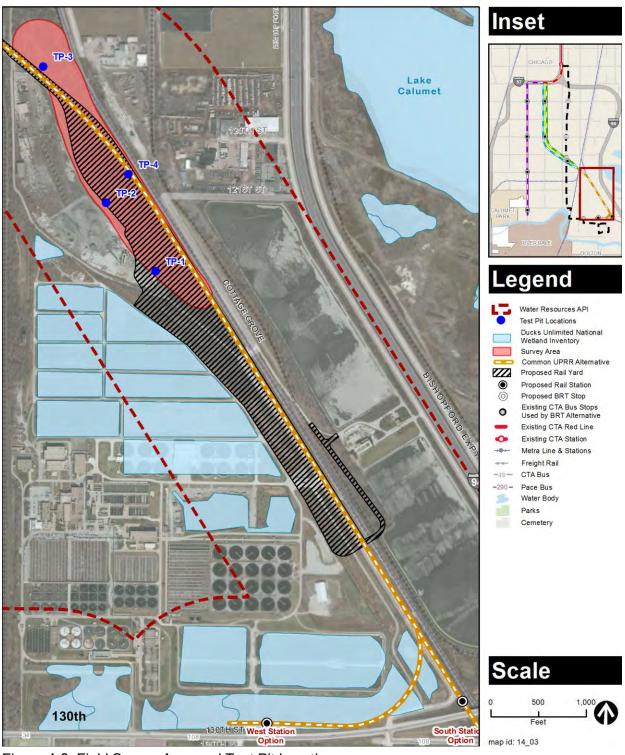


Figure 4-3: Field Survey Area and Test Pit Locations





Table 4-6: Plants Identified in the Union Pacific Railroad Rail Alternative Area of Potential Impact

Scientific Name	Common Name	Wetland Indicator Status
Acer negundo	boxelder	FACW-
Daucus carota	Queen Anne's lace	
Phragmites australis	common reed	FACW+
Populous deltoides	eastern cottonwood	FAC+
Prunus virginiana	chokecherry	FAC-
Rhamnus cathartica	common buckthorn	FACU
Rhus typhina	staghorn sumac	
Ulmus americana	American elm	FACW

Notes:

- FACW = Facultative Wetland (usually occurs in wetlands but occasionally found in non-wetland), FAC = Facultative (equally likely to occur in wetlands or non-wetlands), FACU = Facultative Upland (usually occurs in non-wetlands, but occasionally found on wetlands)
- A positive (+) or negative (-) sign more specifically defines the regional frequency of occurrence in wetlands.
- References: USDA 2012b, USDA 2012c, USDA 2012d, USDA 2012e, USDA 2012f, USDA 2012g, USDA 2012h, USDA 2012i, USDA 2012j

The soils appeared to be highly disturbed and likely include material imported from other locations. Railroad ties and potential slag were identified throughout the area. Four test pits were hand dug (using a shovel) to evaluate for hydric soil characteristics. Figure 4-2 shows the test pit locations. The evaluated soils appeared to be imported fill; the soil was heavily compacted shortly below the ground surface. Test pits TP-1, TP-2, and TP-3 showed similar dark, organic soils with unnatural objects, including slag. From 0 to 8 inches below grade, test pit TP-4 had organic soils; from 8 inches to the bottom of the text pit was sand with red features. Data collected from the test pits is presented in Appendix E and summarized in Table 4-7.

Table 4-7: August 2012 Field Visit Summary

Test Pit	Hydrophytic Vegetation Present?	Wetland Hydrology Present?	Hydric Soil Present?
TP-1	Yes	Unknown	No
TP-2	Yes	Unknown	No
TP-3	Yes	Unknown	Yes
TP-4	Yes	Unknown	No

The 2012 January–August period was the warmest and fourth driest on record in Illinois. During January–August 2012, statewide average precipitation was a total of 17.5 inches, 7.3 inches below normal. The statewide average temperature during January–August was 59.0°F, 4.2°F above normal (ISWS - Prairie Research Institute 2012). These unusually dry conditions may have contributed to the lack of evident signs of seepage, springs, or ponding visible during the field survey of the 120th Street yard and shop location; however, it is possible that the soil could be saturated to the surface during the spring. The area surveyed has flat topography; there were no obvious drainages and there were depressions where there was some standing water. The flat





topography, combined with the highly compacted soils, likely holds water at the surface for the required two weeks in the spring growing season, leading to the preponderance of wetland vegetation observed.

Both the South Station Option and West Station Option terminal locations include a drainage ditch (along the north side of 130th Street, south of the MWRD facility); phragmites were identified in the drainage ditch.

The soils and topography of the 120th Street yard and shop site, the South Station Option site, and the West Station Option site are all highly disturbed. Although the vegetation is predominantly hydrophytic, the results of this cursory field investigation were inconclusive. As a basis for impact analysis and to evaluate the maximum potential impact, approximately 14 acres in the vicinity of the 120th Street yard and shop, 7 acres associated with the South Station Option, and 6 acres associated with the West Station Option are considered potential wetlands. It is likely that there is a surface water connection between these wetland areas and the Little Calumet River, making these jurisdictional wetlands. It is more likely that a surface water connection exists from the proposed stations to the river than from the yard site to the river, but due to the highly disturbed topography a connection would require extensive research and fieldwork to confirm. The fieldwork would take place at the time of the permit application, concurrent with final design.

This analysis identifies maximum potential wetland impacts; formal wetland delineations and confirmation of impacts would be performed for the NEPA preferred alternative. Actual impacts would likely be fewer and/or smaller than the maximum impacts described in this report. As part of obtaining permits for work on the project, mitigation would be needed. Coordination with the local USACE district is recommended.

4.5.3 Halsted Rail Alternative

4.5.3.1 Segment HA

A data review obtained the following information about existing conditions within Segment HA of the Halsted Rail Alternative API:

Aerial Photographs

A review of the aerial photographs confirmed that the Halsted Rail Alternative API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API based on the review of aerial photographs.

IDNR EcoCAT

A review of the IDNR EcoCAT identified no wetlands in Segment HA of the Halsted Rail Alternative API (IDNR 2012). Appendix A contains the EcoCAT report.





NRCS Soil

The NRCS Web Soil Survey website defines no soil types within the Halsted Rail Alternative API as hydric soils (USDA 2012a, USDA 2012k). Sites containing soils classified as "not hydric" are unlikely to contain wetlands. Appendix B contains a summary of information from the NRCS Web Soil Survey website.

■ <u>NWI</u>

The NWI classifies no wetland areas within Segment HA of the Halsted Rail Alternative API.

■ Field Visit

A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands within the Halsted Rail Alternative API. Wetland resources were evaluated at a reconnaissance level of detail and no formal wetland delineations were conducted. The field reconnaissance found no evidence of potential wetland areas.

The USACE Wetland Delineation Manual defines areas as wetland if they meet all three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation). No areas along the Halsted Rail Alternative Segment HA would be considered a wetland according to this definition.

4.5.3.2 Segment HB

A data review obtained the following information about existing conditions within Segment HB of the Halsted Rail Alternative API:

Aerial Photographs

A review of the aerial photographs confirmed that the Halsted Rail Alternative API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API based on the review of aerial photographs.

IDNR EcoCAT

A review of the IDNR EcoCAT identified the Riverdale Marsh within the vicinity of the southern end of the Halsted Rail Alternative alignment (IDNR 2012). No other wetlands were identified in Segment HB of the Halsted Rail Alternative API. Appendix A contains the EcoCAT report.

■ NRCS Soil

The NRCS Web Soil Survey website defines no soil types within the Halsted Rail Alternative API as hydric soils (USDA 2012a, USDA 2012k). Sites containing soils classified as "not hydric"





are unlikely to contain wetlands. Appendix B contains a summary of information from the NRCS Web Soil Survey website.

■ <u>NWI</u>

The NWI classifies two wetland areas within the Halsted Rail Alternative API. Updated wetland coverage was confirmed using the Ducks Unlimited web database; the data is summarized in Table 4-8 (Ducks Unlimited 2012) and shown on Figure 4-2. Table 4-8 provides the wetland location, approximate distance from the alignment, wetland category, and wetland type. Wetland categories correspond to the classification nomenclature that best describes the habitat; definitions are included in Appendix C.

Table 4-8: National Wetland Inventory Areas within Halsted Rail Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Northwest of intersection of 125th Street and Halsted Avenue, in Cedar Park Cemetery	120 feet west	PUBGx	Freshwater Pond
Little Calumet River	100 feet south	R2UBH	Riverine

Notes:

See reference Ducks Unlimited 2012 for more information on wetland types

Field Visit

A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands within the Halsted Rail Alternative API. Wetland resources were evaluated at a reconnaissance level of detail and no formal wetland delineations were conducted. The field reconnaissance found no evidence of potential wetland areas.

The USACE *Wetland Delineation Manual* defines areas as wetland if they meet all three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation). No areas along the Halsted Rail Alternative Segment HB would be considered a wetland according to this definition.

4.6 Floodplains

There are no floodplains in the APIs; see map in Appendix F.





Section 5 Impacts and Mitigation

5.1 No Build Alternative

The No Build Alternative represents existing conditions for water resources in the project area.

5.1.1 Permanent Impacts and Mitigation - No Build Alternative

It is anticipated that there would be no permanent impacts on water resources as a result of the No Build Alternative.

5.1.2 Construction Impacts and Mitigation - No Build Alternative

It is anticipated that there would be no construction impacts on water resources as a result of the No Build Alternative.

5.2 Bus Rapid Transit Alternative

5.2.1 Permanent Impacts and Mitigation - Bus Rapid Transit Alternative

5.2.1.1 Drainage Impacts

The physical modifications associated with the BRT Alternative would result in impacts on the existing stormwater drainage infrastructure, particularly where park & ride facilities would be constructed. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. There would be no adverse permanent impacts on stormwater drainage associated with the BRT Alternative.

With the exception of the park & ride facilities at 102nd Street and 130th Street, proposed construction would take place on already impervious land, and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. The decrease in pervious area in the vicinity of the 102nd Street and 130th Street park & ride facilities could be mitigated by incorporating new stormwater management structures.

An additional potential mitigation measure to protect water resources is listed below.

- Establishing an erosion control plan prior to the initiation of construction. The erosion control plan could include the following:
 - Use of natural drainage, detention ponds, sediment ponds, or infiltration pits to allow runoff to collect and reduce or prevent erosion
 - Use of barriers to direct and slow the rate of runoff and to filter out large-sized sediments
 - Use of down-drains or chutes to carry runoff from the top of a slope to the bottom





5.2.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the BRT Alternative.

5.2.1.3 Water Quality Impacts

There would be no adverse permanent water quality impacts associated with the BRT Alternative. The BRT Alternative would supplement the existing #34 bus route along Michigan Avenue; the transit system would replace automobile trips and there would be an associated reduction in roadway pollutants. There would be a minimal change from existing conditions in the buildup of typical runoff contaminants that collect on streets (i.e., oil, grease, and metals).

The introduction of new impervious surfaces resulting from the construction of park & ride facilities associated with the BRT Alternative would have the potential to increase the concentration and accumulation of runoff contaminants. Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs in the API. Therefore, any potential increases in contaminated surface water runoff would have no adverse impact on groundwater quality.

Potential impacts on water resources stemming from both construction and operation could be mitigated with the following measures as appropriate:

- Project design that includes properly designed and maintained biological oil and grease removal systems in new storm drain systems to treat water before it leaves project construction areas
- Proper storage of hazardous materials to prevent contact with precipitation and runoff
- Development and maintenance of an effective monitoring and cleanup program for spills and leaks of hazardous materials
- Placement of equipment to be repaired or maintained in covered areas on a pad of absorbent material to contain leaks, spills, or small discharges
- Periodic and consistent removal of landscape and construction debris
- Removal of any significant chemical residue on the project sites through appropriate methods
- Use of non-toxic alternatives for any necessary applications of herbicides or fertilizers
- Installation of detention basins or other landscaping features to remove suspended solids by settlement
- Periodic monitoring of runoff water quality before discharge from the site and into the storm drainage system





5.2.1.4 Wetland Impacts

The BRT Alternative park & ride facility could affect between 1.5 and 9 acres of wetlands, dependent on a formal wetland delineation. Following compensatory mitigation, either through creation, restoration, enhancement, or preservation of wetlands, the BRT Alternative would have no adverse permanent impacts on wetlands in the API. Compensatory mitigation is regulated under the 2008 CWA Section 404 Final Compensatory Mitigation Rule and is intended to replace lost aquatic resource functions and area with the goal of "no net loss" of wetlands (USEPA 2008). Compensatory mitigation should take place on public or private land at or adjacent to the impact site or at another location generally within the same watershed where it is most likely to replace lost functions. There are several potential underutilized or vacant industrial land areas, with a connection to the Little Calumet River, that exist within 3 miles of the alignment; these land areas could be restored as compensatory mitigation.

5.2.2 Construction Impacts and Mitigation - Bus Rapid Transit Alternative5.2.2.1 Drainage Impacts

The physical modifications associated with the BRT Alternative would result in potential impacts on the existing stormwater drainage infrastructure, particularly where park & ride lots and structures would be constructed. These alterations would not greatly affect the direction or volume of drainage through the API. In areas where construction could result in the need to relocate certain drainage infrastructure, temporary lines would be installed during the construction period.

In addition to the mitigation measures recommended in Section 5.2.1.1, controlled use of water for irrigation and dust control is also recommended to avoid off-site runoff.

5.2.2.2 Groundwater Impacts

There would be a potential need for dewatering by removing groundwater from the construction site by pumping if groundwater were encountered during construction. Dewatering during construction could temporarily affect local shallow groundwater levels. Given the likelihood of encountering contaminated groundwater, compliance with federal, state, and local laws and regulations (as described in the *Hazardous Materials Technical Memorandum*) would be required during construction.

5.2.2.3 Water Quality Impacts

Water quality impacts could result from construction of the BRT Alternative. Construction would have the potential to increase erosion and sedimentation around proposed construction and staging areas. Grading associated with construction could result in a temporary increase in the amount of suspended solids in stormwater running off construction sites. In the case of a storm event, construction site runoff would result in sheet erosion of exposed soil. If not adequately controlled, contaminated runoff from these areas would have the potential to degrade surface water quality.





The impacts of construction of the BRT Alternative on water quality would be minor because the project area is already highly urbanized. In order to ensure that surface water runoff would not have adverse impacts on water quality, human health, or safety, appropriate measures would be taken to control runoff during implementation. Some examples of these mitigation measures include establishing an erosion control plan, ensuring the proper storage and handling of hazardous materials including paints, solvents, fuels, and hydraulic fluids, and periodic monitoring of the water quality of runoff leaving the site. Section 5.2.1.3 summarizes proposed mitigation measures.

5.2.2.4 Wetland Impacts

Compensatory mitigation would be needed for construction related, temporary impacts on wetlands. Construction staging areas would be sited outside of wetlands as much as possible, but if there were any temporary impacts, those areas would be reconstructed as wetlands following construction.

5.3 Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.1 Permanent Impacts and Mitigation - Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.1.1 Segment UA

5.3.1.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative ROW Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not significantly increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease in the following areas under the ROW Option: along I-57, through the northwest corner of Wendell Smith Park and across the UPRR ROW to the west of Wendell Smith Park, around stations, and at the park & ride facilities and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent stormwater drainage impacts associated with the UPRR Rail Alternative ROW Option.

The Roseland Pump Station is east of the UPRR Rail Alternative ROW Option at 104th Street. The Roseland Pump Station is a major water distribution facility supplying water to the City of Chicago and surrounding suburbs. There are underground pipes and structures running west from the pump station. Other major underground pipes and structures include the 10-foot-diameter Stewart Avenue water tunnel, the 10-foot-diameter sewer underneath Wentworth





Avenue near 114th Street, and the 17.5-foot, horseshoe-shaped MWRD Calumet Intercepting Sewer tunnel. Stormwater drainage and water structures would need to be designed to accommodate the pump station and other underground utilities.

Section 5.2.1.1 summarizes proposed mitigation measures.

5.3.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative ROW Option.

5.3.1.1.3 Water Quality Impacts

The operation of the Red Line under the ROW Option would replace automobile trips; there would be an associated reduction in runoff contaminants that collect on streets (i.e., oil, grease, and metals). For this reason, the ROW Option is anticipated to have a minor but positive water quality impact.

The introduction of new impervious surfaces would have the potential to increase the concentration and accumulation of runoff contaminants. Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs in the API. Therefore, any potential increases in contaminated surface water runoff would have no adverse impact on groundwater quality.

After mitigation, there would be no adverse permanent water quality impacts associated with the UPRR Rail Alternative ROW Option. Section 5.2.1.3 summarizes proposed mitigation measures.

5.3.1.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no permanent impacts on wetlands.

5.3.1.2 Segment UB

5.3.1.2.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative ROW Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease in the following areas under the ROW Option: around stations, at the park & ride facilities, and from north of Kensington Park where the UPRR Rail Alternative splits from the existing UPRR tracks through the southern end of the UPRR Rail Alternative, including both terminal options. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.





After mitigation, there would be no adverse permanent stormwater drainage impacts associated with the UPRR Rail Alternative ROW Option. Section 5.2.1.1 summarizes proposed mitigation measures.

5.3.1.2.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative ROW Option.

5.3.1.2.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.3.1.2.4 Wetland Impacts

The UPRR Rail Alternative ROW Option South Station Option and West Station Option facilities could affect approximately 7 and 6 acres of wetlands, respectively. Following compensatory mitigation these options would have no adverse permanent impacts on wetlands in the API. Section 5.2.1.4 discusses compensatory mitigation.

5.3.2 Construction Impacts and Mitigation - Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.2.1 Segment UA

5.3.2.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative ROW Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. In areas where construction could result in the need to relocate certain drainage infrastructure, temporary lines would be installed during the construction period. Care would need to be taken during construction in the vicinity of the Roseland Pump Station at 104th Street, as well as the other underground utilities called out in Section 5.3.1.1.1, in order to not damage existing structures. Proposed mitigation measures are summarized in Section 5.2.1.1 and 5.2.2.1.

5.3.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.3.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.3.2.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no construction impacts on wetlands.

5.3.2.2 Segment UB

5.3.2.2.1 Drainage Impacts

See Section 5.3.2.1.1.





5.3.2.2.2 Groundwater Impacts

See Section 5.2.2.2.

5.3.2.2.3 Water Quality Impacts

See Section 5.2.2.3.

5.3.2.2.4 Wetland Impacts

See Section 5.2.2.4.

5.3.3 120th Street Yard and Shop

5.3.3.1 Permanent Impacts and Mitigation

5.3.3.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative 120th Street yard and shop would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

The proposed construction would take place on pervious area; the decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent stormwater drainage impacts associated with the UPRR Rail Alternative 120th Street yard and shop. Section 5.2.1.1 summarizes proposed mitigation measures.

5.3.3.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative 120th Street yard and shop.

5.3.3.1.3 Water Quality Impacts

The introduction of new impervious surfaces would have the potential to increase the concentration and accumulation of runoff contaminants. After mitigation, there would be no adverse permanent water quality impacts associated with the 120th Street yard and shop. Section 5.2.1.3 summarizes proposed mitigation measures.

5.3.3.1.4 Wetland Impacts

Development of the 120th Street yard and shop facility could affect approximately 14 acres of wetlands. Following compensatory mitigation, the 120th Street yard and shop would have no adverse permanent impacts on wetlands in the API. Compensatory mitigation is discussed in Section 5.2.1.4.

5.3.3.2 Construction Impacts and Mitigation

5.3.3.2.1 Drainage Impacts

See Section 5.3.2.1.1.





5.3.3.2.2 Groundwater Impacts

See Section 5.2.2.2.

5.3.3.2.3 Water Quality Impacts

See Section 5.2.2.3.

5.3.3.2.4 Wetland Impacts

See Section 5.2.2.4.

5.4 Union Pacific Railroad Rail Alternative - East Option

5.4.1 Permanent Impacts and Mitigation - Union Pacific Railroad Rail Alternative - East Option

5.4.1.1 Segment UA

5.4.1.1.1 Drainage Impacts

Impacts associated with the UPRR Rail Alternative East Option would be similar to those discussed in Section 5.3.1.1.1. The UPRR Rail Alternative East Option alignment would be closer to the Roseland Pump Station than the ROW Option alignment; consequently, it would be more complex from a drainage standpoint. Stormwater drainage and water structures would need to be designed to accommodate the pump station as well as the other underground utilities called out in Section 5.3.1.1.1. Section 5.2.1.1 summarizes proposed mitigation measures.

5.4.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative East Option.

5.4.1.1.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.4.1.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no permanent impacts on wetlands.

5.4.1.2 Segment UB

See Section 5.3.1.2.

5.4.2 Construction Impacts and Mitigation - Union Pacific Railroad Rail Alternative - East Option

5.4.2.1 Segment UA

5.4.2.1.1 Drainage Impacts

See Section 5.3.2.1.1. Additional care would need to be taken in the vicinity of the Roseland Pump Station at 104th Street and near the other underground utilities called out in Section 5.3.1.1.1. Mitigation measures are summarized in Section 5.2.1.1 and 5.2.2.1.





5.4.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.4.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.4.2.1.4 Wetland Impacts

Because there are no wetlands in Segment UA along the UPRR Rail Alternative, there would be no construction impacts on wetlands.

5.4.2.2 Segment UB

See Section 5.3.2.2.

5.4.3 120th Street Yard and Shop

See Section 5.3.3.

5.5 Union Pacific Railroad Rail Alternative - West Option

5.5.1 Permanent Impacts and Mitigation - Union Pacific Railroad Rail Alternative - West Option

5.5.1.1 Segment UA

5.5.1.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative West Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease in the following areas under the West Option: along I-57, along Fernwood Parkway, around stations, and at the park & ride facilities and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent impacts on stormwater drainage associated with the UPRR Rail Alternative West Option. Section 5.2.1.1 summarizes proposed mitigation measures. Among the build alternatives, the UPRR Rail Alternative West Option would have the least impact on the Roseland Pump Station.

5.5.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative West Option.





5.5.1.1.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.5.1.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no permanent impacts on wetlands.

5.5.1.2 Segment UB

See Section 5.3.1.2.

5.5.2 Construction Impacts and Mitigation - Union Pacific Railroad Rail Alternative - West Option

5.5.2.1 Segment UA

5.5.2.1.1 Drainage Impacts

See Section 5.3.2.1.1.

5.5.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.5.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.5.2.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no construction impacts on wetlands.

5.5.2.2 Segment UB

See Section 5.3.2.2.

5.5.3 120th Street Yard and Shop

See Section 5.3.3.

5.6 Halsted Rail Alternative

5.6.1 Permanent Impacts and Mitigation - Halsted Rail Alternative

5.6.1.1 Segment HA

5.6.1.1.1 Drainage Impacts

The physical modifications associated with the Halsted Rail Alternative would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.





Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease along I-57 and around stations, park & ride facilities, and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation there would be no adverse permanent stormwater drainage impacts associated with the Halsted Rail Alternative. Section 5.2.1.1 summarizes proposed mitigation measures.

5.6.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the Halsted Rail Alternative.

5.6.1.1.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.6.1.1.4 Wetland Impacts

Because there are no wetlands in Segment HA of the Halsted Rail Alternative, there would be no permanent impacts on wetlands.

5.6.1.2 Segment HB

5.6.1.2.1 Drainage Impacts

The physical modifications associated with the Halsted Rail Alternative would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease along I-57 and around stations, park & ride facilities, and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, the Halsted Rail Alternative would have no adverse permanent impacts on stormwater drainage. Section 5.2.1.1 summarizes proposed mitigation measures.

5.6.1.2.2 Groundwater Impacts

The Halsted Rail Alternative would have no adverse permanent impacts on groundwater.

5.6.1.2.3 Water Quality Impacts

See Section 5.3.1.1.3.





5.6.1.2.4 Wetland Impacts

Because there are no wetlands in Segment HB of the Halsted Rail Alternative, there would be no permanent impacts on wetlands.

5.6.2 Construction Impacts and Mitigation - Halsted Rail Alternative

5.6.2.1 Segment HA

5.6.2.1.1 Drainage Impacts

See Section 5.3.2.1.1.

5.6.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.6.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.6.2.1.4 Wetland Impacts

Because there are no wetlands in Segment HA of the Halsted Rail Alternative, there would be no construction impacts on wetlands.

5.6.2.2 Segment HB

5.6.2.2.1 Drainage Impacts

See Section 5.3.2.1.1.

5.6.2.2.2 Groundwater Impacts

See Section 5.2.2.2.

5.6.2.2.3 Water Quality Impacts

See Section 5.2.2.3.

5.6.2.2.4 Wetland Impacts

Because there are no wetlands in Segment HB of the Halsted Rail Alternative, there would be no construction impacts on wetlands.

5.6.3 119th Street Yard and Shop

5.6.3.1 Permanent Impacts and Mitigation

5.6.3.1.1 Drainage Impacts

The physical modifications associated with the Halsted Rail Alternative 119th Street yard and shop would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the





storm drain system. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, the development of the 119th Street yard and shop would have no adverse permanent impacts on stormwater drainage. Section 5.2.1.1 summarizes proposed mitigation measures.

5.6.3.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the 119th Street yard and shop.

5.6.3.1.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.6.3.1.4 Wetland Impacts

Because there are no wetlands at the 119th Street yard and shop site, there would be no permanent impacts on wetlands.

5.6.3.2 Construction Impacts and Mitigation

5.6.3.2.1 Drainage Impacts

See Section 5.3.2.1.1.

5.6.3.2.2 Groundwater Impacts

See Section 5.2.2.2.

5.6.3.2.3 Water Quality Impacts

See Section 5.2.2.3.

5.6.3.2.4 Wetland Impacts

Because there are no wetlands at the 119th Street yard and shop site, there would be no construction impacts on wetlands.





Section 6 Impacts Remaining After Mitigation

6.1 No Build Alternative

After mitigation, there would be no effects on water resources.

6.2 Bus Rapid Transit Alternative

After mitigation, there would be no effects on water resources.

6.3 Union Pacific Railroad Rail Alternative - Right-of-Way Option

After mitigation, there would be no effects on water resources.

6.4 Union Pacific Railroad Rail Alternative - East Option

After mitigation, there would be no effects on water resources.

6.5 Union Pacific Railroad Rail Alternative - West Option

After mitigation, there would be no effects on water resources.

6.6 Halsted Rail Alternative

After mitigation, there would be no effects on water resources.





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Appendix A EcoCAT Report







1304095

09/12/2012

Applicant: CDM Smith IDNR Project #:
Contact: Claudia Lea Date:

Address: 125 S Wacker Drive

Suite 600

Chicago, IL 60606

Project: CTA Red Line Extension Project Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street

Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 3 37N, 14E, 9 37N, 14E, 15 37N, 14E, 22



IL Department of Natural Resources Contact

Impact Assessment Section 217-785-5500 Division of Ecosystems & Environment

Disclaimer

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IDNR Project Number: 1304095

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Applicant:CDM SmithIDNR Project #:1304098Contact:Claudia LeaDate:09/12/2012

Address: 125 S Wacker Drive

Suite 600

Chicago, IL 60606

Project: CTA Red Line Extension

Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 3 37N, 14E, 8 37N, 14E, 9

37N, 14E, 10



IL Department of Natural Resources Contact

Impact Assessment Section 217-785-5500 Division of Ecosystems & Environment

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IDNR Project Number: 1304098

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Applicant:CDM SmithIDNR Project #:1304099Contact:Claudia LeaDate:09/12/2012

Address: 125 S Wacker Drive

Suite 600

Chicago, IL 60606

Project: CTA Red Line Extension

Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street

Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Riverdale Marsh INAI Site

Black-Crowned Night Heron (Nycticorax nycticorax)

Little Blue Heron (Egretta caerulea)

Yellow-Crowned Night Heron (Nyctanassa violacea)

Yellow-Headed Blackbird (Xanthocephalus xanthocephalus)

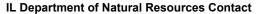
Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 8 37N, 14E, 16 37N, 14E, 16 37N, 14E, 20 37N, 14E, 21 37N, 14E, 22 37N, 14E, 28 37N, 14E, 32 37N, 14E, 32



Impact Assessment Section

217-785-5500

Division of Ecosystems & Environment



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Applicant:CDM SmithIDNR Project #:1304096Contact:Claudia LeaDate:09/12/2012

Address: 125 S Wacker Drive

Suite 600

Chicago, IL 60606

Project: CTA Red Line Extension

Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street

Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lake Calumet INAI Site

Blanding'S Turtle (Emydoidea blandingii)

Common Moorhen (Gallinula chloropus)

Little Blue Heron (Egretta caerulea)

Peregrine Falcon (Falco peregrinus)

Yellow-Crowned Night Heron (Nyctanassa violacea)

Yellow-Headed Blackbird (Xanthocephalus xanthocephalus)

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 15 37N, 14E, 22 37N, 14E, 26 37N, 14E, 27 37N, 14E, 28 37N, 14E, 33 37N, 14E, 34 37N, 14E, 35

IL Department of Natural Resources Contact

Impact Assessment Section

217-785-5500

Division of Ecosystems & Environment

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Applicant:CDM SmithIDNR Project #:1304295Contact:Claudia LeaDate:09/18/2012

Address: 125 S Wacker Drive

Suite 600

Chicago, IL 60606

Project: CTA Red Line Extension Project Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street

Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Riverdale Marsh INAI Site
Black-Crowned Night Heron (Nycticorax nycticorax)

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 28 37N, 14E, 29 37N, 14E, 32 37N, 14E, 33



IL Department of Natural Resources Contact

Impact Assessment Section 217-785-5500 Division of Ecosystems & Environment

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IDNR Project Number: 1304295

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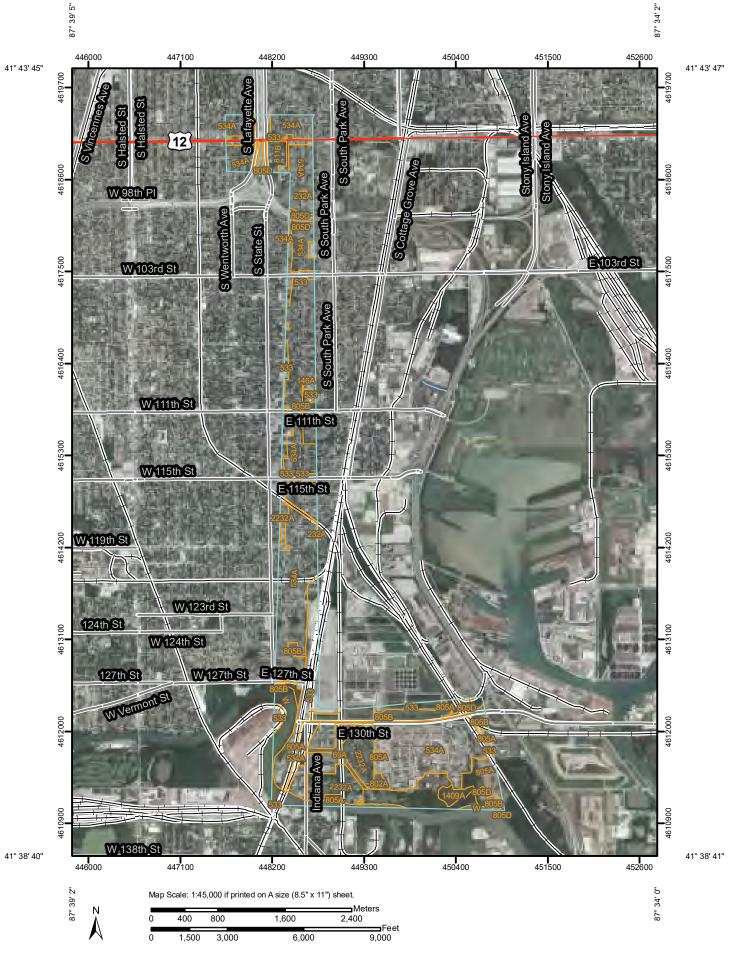
Privacy

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Appendix B Natural Resources Conservation Service Web Soil Survey Summary





MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

■ Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

.. Gravelly Spot

Landfill

∧ Lava Flow

علد Marsh or swamp

Mine or Quarry

Miscellaneous Water

Rock Outcrop

Perennial Water

•

+ Saline Spot

"." Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Spoil Area

Stony Spot

Wet Spot

Other

Special Line Features

20

Gully

Short Steep Slope

Very Stony Spot

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads

MAP INFORMATION

Map Scale: 1:45,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cook County, Illinois Survey Area Data: Version 6, Nov 2, 2011

Date(s) aerial images were photographed: 7/30/2007; 8/3/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cook County, Illinois (IL031)				
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
69A	Milford silty clay loam, 0 to 2 percent slopes	17.7	1.1%	
146A	Elliott silt loam, 0 to 2 percent slopes	1.8	0.1%	
232A	Ashkum silty clay loam, 0 to 2 percent slopes	2.7	0.2%	
533	Urban land	264.9	16.3%	
534A	Urban land-Orthents, clayey, complex, nearly level	834.7	51.2%	
802A	Orthents, loamy, nearly level	6.7	0.4%	
802B	Orthents, loamy, undulating	5.0	0.3%	
805A	Orthents, clayey, nearly level	151.0	9.3%	
805B	Orthents, clayey, undulating	109.3	6.7%	
805D	Orthents, clayey, rolling	31.6	1.9%	
811B	Alfic Udarents, clayey, 2 to 6 percent slopes	19.6	1.2%	
1409A	Aquents, clayey, undrained, nearly level	14.0	0.9%	
2049A	Orthents, loamy-Urban land-Watseka complex, 0 to 2 percent slopes	0.1	0.0%	
2232A	Orthents, clayey-Urban land-Ashkum complex, 0 to 2 percent slopes	99.4	6.1%	
W	Water	71.2	4.4%	
Totals for Area of Interest		1,629.8	100.0%	



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

■ Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

.. Gravelly Spot

Landfill

∧ Lava Flow

علد Marsh or swamp

Mine or Quarry

Miscellaneous Water

Rock Outcrop

Perennial Water

+ Saline Spot

"." Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Spoil Area

Stony Spot

Wet Spot

Other

Special Line Features

20

Gully

Short Steep Slope

Very Stony Spot

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads

MAP INFORMATION

Map Scale: 1:40,900 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cook County, Illinois Survey Area Data: Version 6, Nov 2, 2011

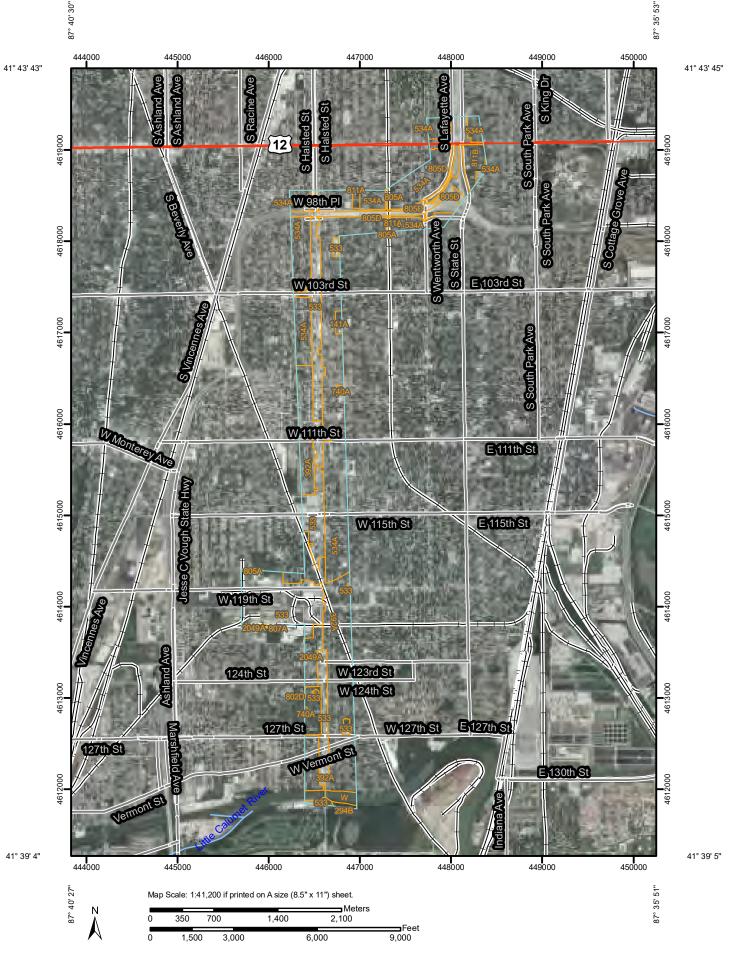
Date(s) aerial images were photographed: 7/30/2007; 8/3/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Map-Cook County, Illinois RLE UPRR Alternative

Map Unit Legend

Cook County, Illinois (IL031)					
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI		
69A	Milford silty clay loam, 0 to 2 percent slopes	7.7	0.6%		
125A	Selma loam, 0 to 2 percent slopes	2.1	0.2%		
232A	Ashkum silty clay loam, 0 to 2 percent slopes	4.6	0.3%		
522B	Orthents, clayey, refuse substratum, undulating	0.1	0.0%		
533	Urban land	432.1	31.4%		
534A	Urban land-Orthents, clayey, complex, nearly level	590.1	42.9%		
802A	Orthents, loamy, nearly level	90.6	6.6%		
802B	Orthents, loamy, undulating	5.0	0.4%		
805A	Orthents, clayey, nearly level	14.4	1.0%		
805B	Orthents, clayey, undulating	111.7	8.1%		
805D	Orthents, clayey, rolling	55.8	4.1%		
811A	Alfic Udarents, clayey, 0 to 2 percent slopes	5.4	0.4%		
811B	Alfic Udarents, clayey, 2 to 6 percent slopes	11.4	0.8%		
2232A	Orthents, clayey-Urban land-Ashkum complex, 0 to 2 percent slopes	43.4	3.2%		
Totals for Area of Inte	rest	1,374.3	100.0%		



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay SpotClosed Depression

.. Gravelly Spot

Landfill

∧ Lava Flow

علد Marsh or swamp

Mine or Quarry

Miscellaneous Water

Rock Outcrop

Perennial Water

.

+ Saline Spot

"." Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Spoil Area

Stony Spot

Wet Spot

Other

Special Line Features

Դુ G

Gully

Short Steep Slope

Very Stony Spot

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads

MAP INFORMATION

Map Scale: 1:41,200 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cook County, Illinois Survey Area Data: Version 6, Nov 2, 2011

Date(s) aerial images were photographed: 7/30/2007; 8/3/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

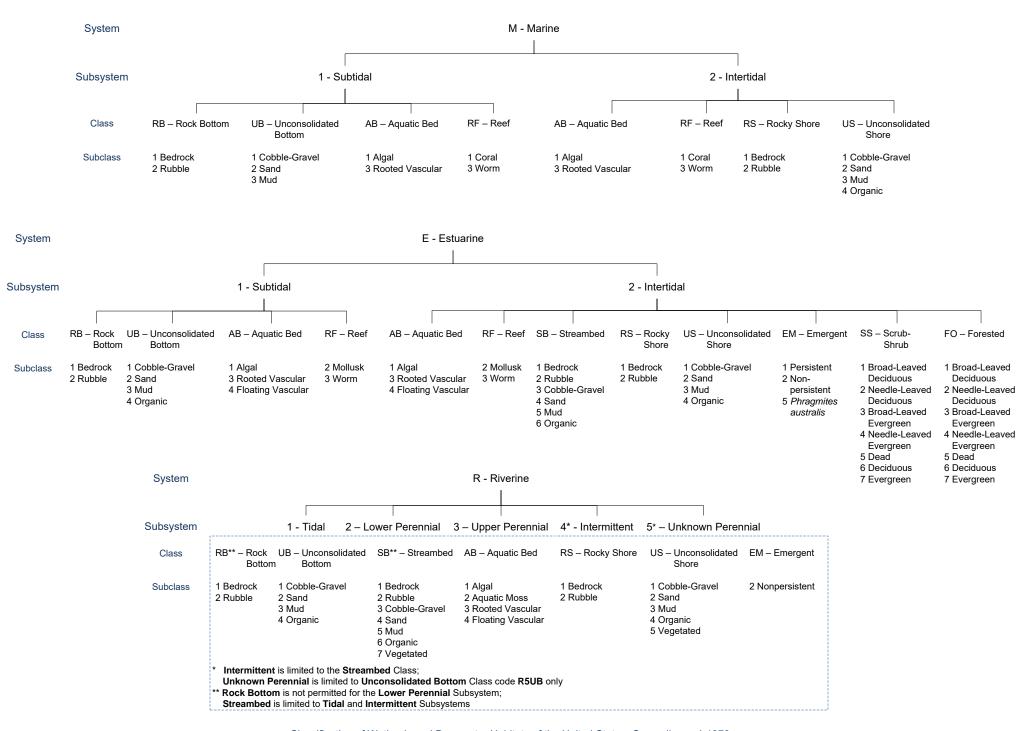
Cook County, Illinois (IL031)				
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI 0.3%	
141A	Wesley fine sandy loam, 0 to 2 percent slopes	4.2		
293A	Andres silt loam, 0 to 2 percent slopes	0.6	0.0%	
294B	Symerton silt loam, 2 to 5 percent slopes	2.9	0.2%	
392A	Urban land-Orthents, loamy, complex, nearly level	273.7	21.9%	
533	Urban land	348.4	27.8%	
534A	Urban land-Orthents, clayey, complex, nearly level	480.8	38.4%	
740A	Darroch silt loam, 0 to 2 percent slopes	23.2	1.9%	
802D	Orthents, loamy, rolling	0.8	0.1%	
805A	Orthents, clayey, nearly level	2.2	0.2%	
805D	Orthents, clayey, rolling	41.6	3.3%	
807A	Orthents, loamy-skeletal, nearly level	0.1	0.0%	
Alfic Udarents, clayey, 0 to 2 percent slopes		8.0	0.6%	
Alfic Udarents, clayey, 2 to 6 percent slopes		21.6	1.7%	
2049A	Orthents, loamy-Urban land-Watseka complex, 0 to 2 percent slopes	27.5	2.2%	
W	Water	16.3	1.3%	
Totals for Area of Inter	est	1,251.9	100.0%	



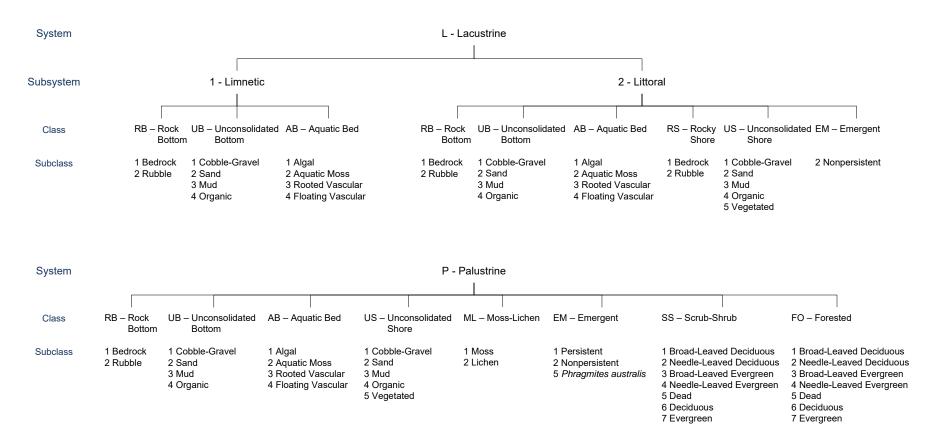
Appendix C Wetlands and Deepwater Habitats Classification



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



s	pecial modifiers may be a Water Regime	applied at the class or lower level in the	hierarchy. The farmed mod		the ecological sys		Soil
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A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a A cid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n M ineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 M ixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impo unded	4 Polyhaline	0 Fresh		
Saturated			r Artificial	5 M eso haline			
F Semipermanently Flooded			s Spoil	6 Oligo haline			
G Intermittently Exposed			x Excavated	0 Fresh			
H Permanently Flooded							
J Intermittently Flooded							
K Artificially Flooded							



Appendix D Photographs from August 13, 2012 Field Visit



Potential wetland area with phragmites and cottonwoods near test pit TP-1, facing east





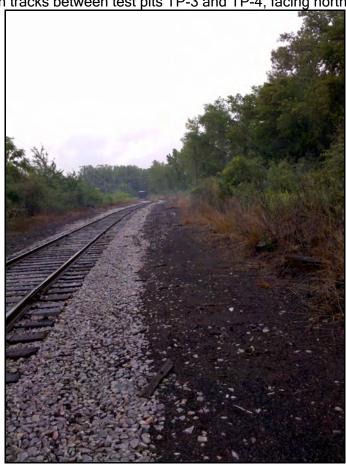
Along existing train tracks near test pit TP-2, facing northwest



Vegetation near TP-3, facing northwest



Train tracks between test pits TP-3 and TP-4, facing northwest



Phragmites near intersection of 130th Street and Cottage Grove Avenue, facing northwest



Scientific name: *Daucus carota*Common name: Queen Anne's lace





Scientific Name: *Phragmites australis* Common Name: common reed





Scientific name: *Populous deltoides* Common name: eastern cottonwood



Scientific name: *Prunus virginiana* Common name: chokecherry



Scientific name: *Rhamnus cathartica* Common name: common buckthorn

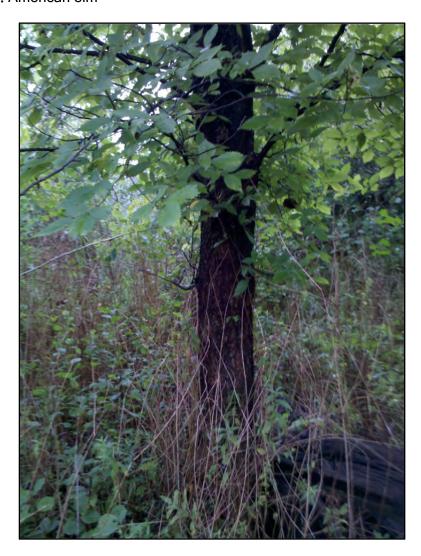


Scientific name: *Rhus typhina* Common name: staghorn sumac





Scientific name: *Ulmus americana* Common name: American elm





Appendix E Soil Sample Summary



Sampling Point	TP-1		
Location	UPRR Rail Alternative		
City	Chicago		
County	Cook		
State	IL		
Sampling Date	August 13, 2012		
Is vegetation significantly disturbed?	Yes		
Is soil significantly disturbed?	Yes		
Is hydrology disturbed?	Yes		
Is hydrophytic vegetation present?	Yes		
Is hydric soil present?	Indeterminate/disturbed		
Is wetland hydrology present?	Unknown/dry season		

Type Indicator Status

Populous deltoids (eastern cottonwood)

FAC+
Phragmites australis (phragmites)

FACW+
Daucus carota (Queen Anne's Lace)

-Prunus virginiana (Chokecherry)

FAC-

<u>Legend</u>: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative; FACU - Facultative Upland; UPL - Obligate Upland

(+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-12" -- 2.5Y 2.5/1 (black)

uniformly same color to 12" below grade

50% small gravel, some fines including silts

Hydrology

No surface water present

No water table present

No saturation present

Sampling Point	TP-2		
Location	UPRR Rail Alternative		
City	Chicago		
County	Cook		
State	IL		
Sampling Date	August 13, 2012		
Is vegetation significantly disturbed?	Yes		
Is soil significantly disturbed?	Yes		
Is hydrology disturbed?	Yes		
Is hydrophytic vegetation present?	Yes		
Is hydric soil present?	Indeterminate/disturbed		
Is wetland hydrology present?	Unknown/dry season		

<u>Type</u> <u>Indicator Status</u>

Populous deltoids (eastern cottonwood) FAC+
Daucus carota (Queen Anne's Lace) -Ulmus americana (American Elm) FACW

<u>Legend</u>: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative;

FACU - Facultative Upland; UPL - Obligate Upland

(+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-2" -- 10 YR 2/1 (black) organic

2"-7" -- 5 Y 3/1 (very dark gray) gravelly fill

7"-9" -- 5 Y 2.5/2 (black)

Hydrology

No surface water present

No water table present

No saturation present

Sampling Point	TP-3		
Location	UPRR Rail Alternative		
City	Chicago		
County	Cook		
State	IL		
Sampling Date	August 13, 2012		
Is vegetation significantly disturbed?	Yes		
Is soil significantly disturbed?	Yes		
Is hydrology disturbed?	Yes		
Is hydrophytic vegetation present?	Yes		
Is hydric soil present?	Indeterminate/disturbed		
Is wetland hydrology present?	Unknown/dry season		

<u>Type</u>	Indicator Status_
Populous deltoids (eastern cottonwood)	FAC+
Daucus carota (Queen Anne's Lace)	
Rhus typhina (Staghorn sumac)	

<u>Legend</u>: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative; FACU - Facultative Upland; UPL - Obligate Upland (+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-3" -- organic

3"-12" -- 5 Y 4/1 (dark gray) compacted clay/silt; potentially fill; potentially hydric

Hydrology

No surface water present

No water table present

No saturation present

Sampling Point	TP-4		
Location	UPRR Rail Alternative		
City	Chicago		
County	Cook		
State	IL		
Sampling Date	August 13, 2012		
Is vegetation significantly disturbed?	Yes		
Is soil significantly disturbed?	Yes		
Is hydrology disturbed?	Yes		
Is hydrophytic vegetation present?	Yes		
Is hydric soil present?	Indeterminate/disturbed		
Is wetland hydrology present?	Unknown/dry season		

<u>Type</u>	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+
Daucus carota (Queen Anne's Lace)	
Rhus typhina (Staghorn sumac)	

<u>Legend</u>: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative; FACU - Facultative Upland; UPL - Obligate Upland (+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-8" -- 10 YR 2/1 organic

8"-12" -- 10 YR 7/3 with red features (7.5 YR 5/8)

Hydrology

No surface water present

No water table present

No saturation present



Appendix F FEMA FIRM Summary



Map Number 17031C0655J

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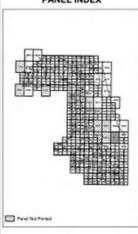
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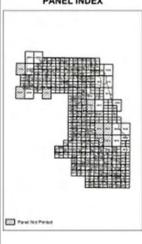
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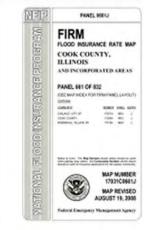
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PANEL INDEX





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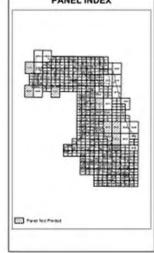
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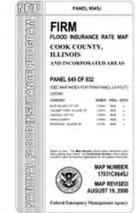
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Appendix G 2014-2015 Red Line Extension Project Update





2014-2015 Red Line Extension Project Update

From 2012-2014, CTA evaluated benefits and impacts of four alternatives: the No Build Alternative, the Bus Rapid Transit Alternative (along Michigan Avenue), the Union Pacific Railroad (UPRR) Rail Alternative, and the Halsted Alternative. CTA evaluated three options of the UPRR Rail Alternative: Right-of-Way Option, East Option, and West Option. CTA also evaluated two options of the UPRR Rail Alternative 130th Street station: a South Station Option and a West Station Option. Based on the project description provided in Section 2 of this technical memorandum, CTA analyzed the impacts of these alternatives and station options. The benefits and impacts are included in the technical memoranda prepared in 2012-2014.

In August 2014, based on the technical analysis and public input, CTA announced the NEPA Preferred Alternative—the UPRR Rail Alternative. Additional conceptual engineering was conducted on the UPRR Rail Alternative to refine the East and West Option alignments. In addition, CTA is considering only the South Station Option of the 130th Street Station.

In late 2014 and early 2015, CTA conducted additional engineering and revised assumptions on the East and West Options to refine the alignments. The refinement of the East and West Options consisted of the following items:

- For the segment of the alignment along I-57, CTA shifted the proposed alignment from the median of I-57 to the north side of I-57 within the existing expressway right-of-way. The construction would be less complex, safer for construction workers, and have a shorter duration. The shift would also allow for fewer impacts to Wendell Smith Park for the East Option, and would allow for no permanent impacts to Wendell Smith Park for the West Option.
- CTA modified the curve speeds as the alignment heads south from I-57 along the UPRR tracks. The curve speed for both the East and West Options would be 35 mph.
- CTA shifted the East Option alignment near 103rd Street station to minimize impacts to Block Park and the Roseland Pumping Station.
- CTA modified the curves south of 103rd Street for both the East and West Options to 55 mph to maximize the train speed.
- CTA refined the layout of the 120th Street yard and shop to optimize yard operations. The refined layout of the yard would accommodate 340 train cars.

The refinement of the East and West Option alignments minimizes potential impacts to parks while providing flexibility for future design phases. The Draft Environmental Impact Statement contains the benefits and impacts of the refined East and West Option alignments and supersedes information presented in other chapters of this technical memorandum



Water Resources

In August 2015, CTA completed a wetland delineation of the areas identified as containing potential wetlands and applied the general procedures detailed in the 1987 USACE *Wetland Delineation Manual* and the 2010 *Regional Supplement-Midwest Region*.

Based on the results of the wetland delineation, CTA identified 15 wetland areas totaling 15.34 acres of potentially affected wetlands at the site of the 130th Street station and the 120th Street yard and shop. All wetland areas throughout this area are of low floristic quality and wetland function.

The wetland delineation report is included with this appendix, and contains detailed information about the fieldwork and findings.

WETLAND DELINEATION REPORT

CTA RED LINE EXTENSION – LAKE CALUMET CHICAGO, COOK COUNTY, ILLINOIS

PREPARED FOR:

CDM Smith 14432 SE Eastgate Way, Suite 100 Bellevue, WA 98007

SEPTEMBER 16, 2015

Revised October 1, 2015

INTRODUCTION

A wetland delineation of the 78.9-acre permanent project envelope for the southern portion of the Chicago Transit Authority's Red Line Extension, near Lake Calumet was conducted on August 13 and 19, 2015. The site is located west of Interstate 94 (Bishop Ford Expressway), north of 130th Street, along the east side of the Metropolitan Water Reclamation District of Greater Chicago's (MWRD) Calumet Waste Water Treatment plant within the City of Chicago, Cook County, Illinois (Exhibit 1). The site is further located in Sections 22, 26, and 27, Township 37 North, Range 14 East. The project permanent envelope includes Cottage Grove Avenue, parts of the MWRD property, railroad lines, and other disturbed urban-industrial landscapes. The property has been disturbed by various grading, dumping, and filling activities over the past decades.

EXISTING DATA

The United States Geological Survey (USGS) topographic map indicates open water at the locations of the MWRD sewage lagoons and sludge drying beds (Exhibit 2), but does not indicate any wetlands or blue line streams within the defined project permanent envelope. The National Wetland Inventory (NWI) map similarly depicts the sewage lagoons and sludge drying beds, but also indicates the presence of wetlands within the project permanent envelope (Exhibit 3) that are designated PF01/EMCd (palustrine, forested, broad-leaved deciduous/emergent seasonally flooded, partially drained/ditched). The Flood Insurance Rate Map indicates no mapped floodplain or floodway within the project permanent envelope (Exhibit 4). The USGS Hydrologic Atlas indicates no flood of record waters within the project permanent envelope (Exhibit 5). The Cook County Soil Survey (Exhibit 6) shows six (6) different soil series of orthents, or urban land within the project permanent envelope.

WETLAND DELINEATION

Wetlands within the project permanent envelope were delineated by Vincent Mosca and Jeffrey Mengler, PWS of Hey and Associates, Inc. using procedures outlined in the 1987 Corps of Engineers' (Corps) Wetland Delineation Manual and the 2010 Regional Supplement: Midwest Region. The entire property was inspected, with areas supporting wetland plant species prioritized for investigation. If inspection revealed that wetland plant species comprised more than 50 percent of the plant cover, the suspected wetland was further examined for field indicators of hydric soil and hydrology. The Corps-accepted field indicators of hydric soil include: gleyed and low chroma matrix and mottle colors, and iron and manganese concretions. Necessary hydric soil indicators were field verified in the wetland area if possible. In most cases in this

Hey and Associates, Inc.

project permanent envelope, the gravel and fill precluded investigation with hand tools, and the disturbed profiles would not have been illuminating. The Corps-approved field indicators of hydrology include: visual observation or photographic evidence of soil inundation or saturation during the growing season, oxidized channels associated with living roots and rhizomes, water marks, drift lines, waterborne sediment deposits, waterstained leaves, surface scoured areas and drainage patterns. Wetland hydrologic criteria were met in the areas delineated as wetland.

Lists of observed plant species in the wetland areas were compiled and data were gathered to complete Corps jurisdictional dataforms. A native vegetative quality rating was calculated for each wetland using the Floristic Quality Assessment (FQA) of Swink and Wilhelm as published in *Plants of the Chicago Region*, 1994. The FQA method assigns to plant species a rating that reflects the fundamental conservatism that the species exhibits for natural habitats. A native species that exhibits specific adaptations to a narrow spectrum of the environment is given a high rating. Conversely, a ubiquitous species that exhibits adaptations to a broad spectrum of environmental variables is given a low rating. Utilizing this method, a Floristic Quality Index (FQI) is derived for a given area. The FQI is an indication of native vegetative quality for an area: generally 1-19 indicates low vegetative quality, 20-35 indicates high vegetative quality and above 35 indicates "Natural Area" quality.

RESULTS

Fifteen (15) wetlands totaling 15.34 acres within the project permanent envelope were delineated on the property (Exhibit 7). The wetland boundaries shown on an aerial photograph in Exhibit 7 were recorded with sub-meter accuracy GPS unit in the field on August 13 and 19, 2015. Lists of the observed plant species for the wetland areas are given in Exhibit 8. The Corps' jurisdictional dataforms for upland and wetland areas are included as Exhibit 9. Georeferenced representative color photographs of the upland and wetland areas are provided in Exhibit 10.

Following is a table that summarizes the delineated wetlands. Wetland acreages were calculated based upon the sub-meter accuracy GPS data imported into a Geographical Information System (GIS).

Table 1. Summary of Wetlands within Project Limits.

Wetland	Area within Project Limits (acres)	Total Wetland Area (acres)	FQI ¹	Native Mean C ²	HQAR ³	Wetland Type	Dominant Vegetation
1 & 2	0.19	0.38	3.89	1.38	No	Drainage swale	Common reed (Phragmites australis)
3	0.83	0.83	6.36	4.5	No ⁴	Marsh	Common reed and purple loosestrife (Lythrum salicaria)
4	0.07	1.85	6.43	2.43	No	Drainage swale	Common reed
5	2.73	2.73	4.95	1.75	No	Drainage swale	Common reed
6	2.26	2.26	11.13	2.43	No	Drainage swale & degraded wet prairie	Common reed
7	1.63	1.63	13.68	2.79	No	Drainage swale & degraded wet prairie	Common reed
8	1.61	1.77	6.43	2.43	No	Degraded marsh	Common reed
9	1.09	1.09	2.04	0.83	No	Drainage swale/marsh	Common reed
10	0.07	0.07	6.43	2.43	No	Drainage ditch	Common reed
11	0.05	n/a	3.00	1.50	No	Drainage ditch	Common reed
12	3.56	3.56	3.00	1.50	No	Degraded marsh	Common reed
13	0.53	0.66	2.86	1.17	No	Wooded	Box Elder (Acer negundo), Common reed (Phragmites australis)
14	0.20	0.88	4.00	1.33	No	Drainage swale	Common reed
15	0.52	n/a	2.00	1.00	No	Drainage swale	Common reed
TOTAL	15.34	17.71					

1 The Floristic Quality Index (FQI) is an indication of native vegetative quality for an area: generally 1-19 indicates low vegetative quality, 20-35 indicates high vegetative quality and above 35 indicates "Natural Area" quality.

Wetlands 1 and 2 are both part of the same drainage swale along the east-west portion of South Cottage Grove Avenue, just north of 135th Street. It is dominated by common reed and defined on the south by the 135th Street embankment, on the north and west by the Cottage Grove Avenue entrance off 135th Street, and on the east by a railroad access road. It is of very low floristic quality and wetland function, and has debris and trash scattered throughout it.

Wetland 3 is on the north side of the east-west portion of South Cottage Grove Avenue, and is connected to Wetland areas 5 and 9. It is dominated by common reed. It is defined by a gravel road and fill on all sides. This was one of the few areas that had standing water during the August 2015 assessment. It is of

² The Native Mean C is an indication of native vegetative quality for an area. Areas with value of 3.5 or greater are considered high quality.

³ The Chicago District U.S. Army Corps of Engineers has designated various Waters of the United States to be high-quality aquatic resources (HQARs). This designation is based on the definitions found within the Regional Permit Program that became effective April 1, 2007.

⁴ While this area has a Native Mean C of greater than 3.5, it was based on the presence of only two native species. The remainder of the vegetation was comprised of non-native species and would not be considered high quality in any ecological assessment.

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low quality and function. It should be noted that the mean C value is 4.5, which suggests a high quality area, but this mean C value is based on the only 2 native species observed – the other 4 species were all invasive non-native species.

Wetland 4 is another drainage swale that runs from the entrance to the MWRD Calumet Wastewater Treatment Plant (WWTP) west along 135th Street. It is entirely dominated by common reed. The north boundary is defined by a mowed embankment up to the WWTP facility fence, and the southern boundary is defined by 135th Street and shoulder. The mowed area was composed of typical upland turf and weed species and not hydrophytic species, indicating that the edge of mowing corresponded with the edge of wetland. Wetland 4 appears to receive drainage from 135th Street via several stormsewers that create the undulating southern boundary.

Wetland 5 is a drainage swale that runs along the west side of South Cottage Grove Avenue from Wetland 3 north to the entrance and gatehouse for the Calumet WWTP. It is dominated by common reed, with patches of sandbar willow (*Salix interior*) and cottonwood trees (*Populus deltoides*). The eastern boundary is defined by Cottage Grove Avenue and the western boundary is a chain-link fence and mowed turf grass within the MRWDGC property.

Wetland 6 is a wet prairie drainage swale along a Indiana Harbor Belt Railroad line that does not appear to have frequent use. It is generally bounded by the railroad ballast on the west side and higher ground dominated by common buckthorn (*Rhamnus cathartica*) on the east side. Dominant vegetation was common reed, though pockets of native plant species were observed.

Similarly, Wetland 7 is a drainage swale on the west side of the same Indiana Harbor Belt Railroad line through the site. It is also bounded by the railroad ballast and higher ground covered in common buckthorn. It is of moderate floristic quality when calculated to include the scattered native wet prairie species observed, but is largely dominated by the invasive common reed.

Wetland 8 is an area of degraded marsh inside the MWRD Calumet WWTP perimeter fence, located just southeast of the gatehouse and entrance. It is surrounded by areas of fill/gravel that are much higher in elevation than the ground in the wetland area. The embankments around this wetland pocket are very steep and eroded, often at a 1:1 slope or steeper. The vegetation was dominated by common reed. It is an area of very low quality.

Wetland 9 is connected to Wetland 3 and ultimately Wetland 5. At the southern end of Wetland 5, these 3 wetland areas form a u-shaped marsh swale around a gravel fill pad that is 3-4 feet higher in elevation. This

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area is bounded by the MWRD Calumet WWTP entrance road and Cottage Grove Avenue. The vegetation was dominated by common reed, and it is of low quality.

Wetland 10 is a small drainage ditch that runs from the 135th Street bridge over the Indiana Harbor Belt Railroad/Metra South Shore rail lines, to Cottage Grove Avenue. It is generally lined by cottonwoods and dead green ash (*Fraxinus pennsylvanica*) with common reed dominant in the ditch. The ditch was also littered with old tires and other refuse.

Wetland 11 is a small part of a wet area between the gravel railroad access road, and the Metra South Shore rail line. Most of the wetland is outside of the project limits and is dominated by common reed.

Wetland 12 is a marsh area located just north of the MWRD Calumet WWTP gatehouse. It is bounded by gravel access roads on the east and west sides, and the entrance road on the south. On the north side the wetland gives way to higher ground dominated by common buckthorn and a variety of upland weeds. The marsh is dominated by common reed.

Wetland 13 is a small wetland drainage swale located between the Metra South Shore Electric railroad line and the Indiana Harbor Belt Railroad freight line. It is dominated by common reed and is bounded by railroad ballast.

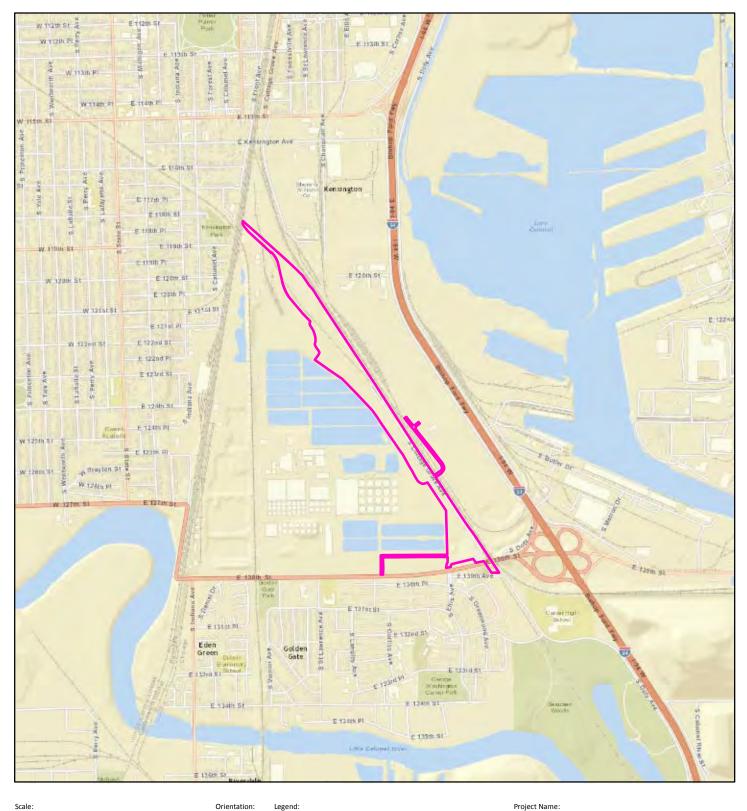
Wetland 14 is a swale located on the east side of the Indiana Harbor Belt Railroad/Metra South Shore line, but west of the MWRD fence around some sludge drying beds and other facilities. It is partially wooded by box elder and cottonwood but in open areas remains dominated by common reed.

Wetland 15 refers to a narrow drainage swale dominated by common reed located along a MWRD gravel access road in the northwest part of the project permanent envelope. It is of very low quality.

There are no High Quality Aquatic Resources on the subject property or mapped on adjacent properties. All wetlands observed were dominated by the invasive common reed, often in dense monotypic stands. The surrounding land is primarily developed urban or industrial landscapes.

SUMMARY AND CONCLUSIONS

The wetland delineation revealed 15 wetland areas totaling 15.34 acres within the project permanent envelope as depicted on Exhibit 7. All wetlands were of low quality and dominated by the invasive common reed. Most of the wetland boundaries are defined by fill and other manmade features. A jurisdictional determination will need to be requested from the U.S. Army Corps of Engineers to determine if the wetlands are under their Clean Water Act jurisdiction or if they are isolated wetlands of Cook County.



2,000 ■ Feet

Latest Revision: 10/1/2015

Legend:

Project Permanent Envelope

Project Number: 15-0218

Prepared by:

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

CTA Red Line Extension

Prepared for:

CDM Smith

Location Information:

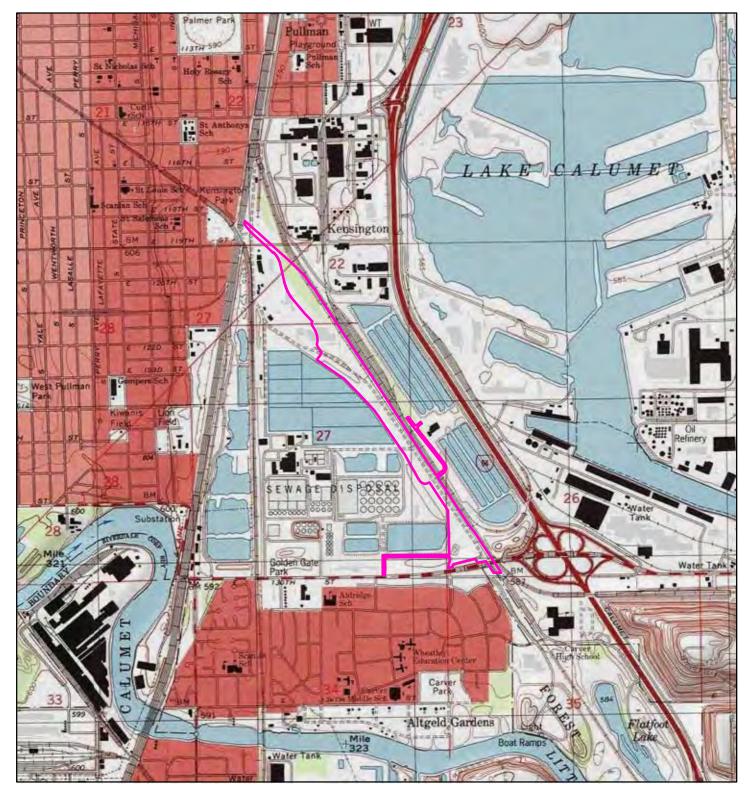
T.37N.-R.14E., Sections 22, 26 & 27

Exhibit Title:

Exhibit:

Project Location

1



0 2,000 Feet

Project Permanent Envelope

Project Number: 15-0218

Latest Revision: 10/1/2015

Prepared by:

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

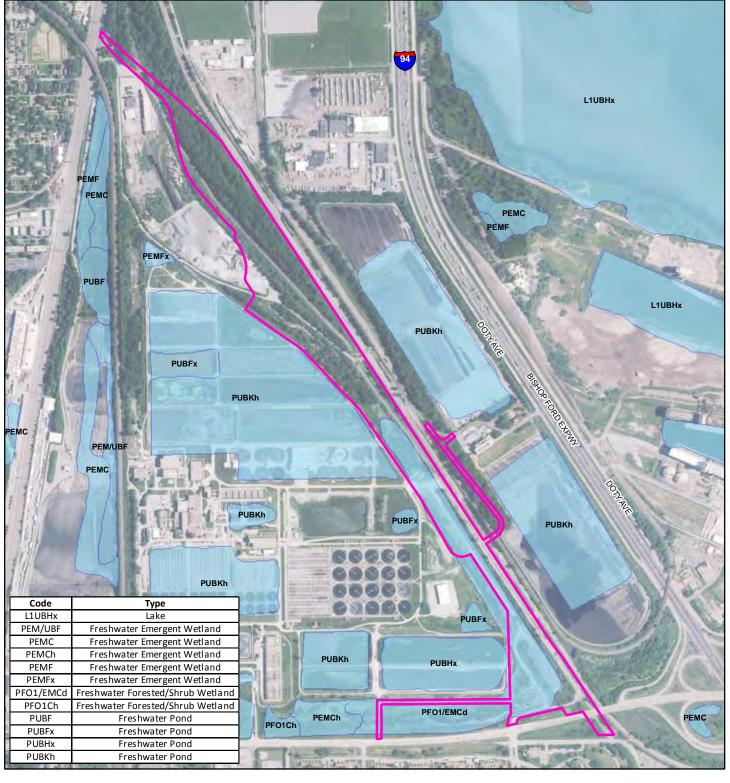
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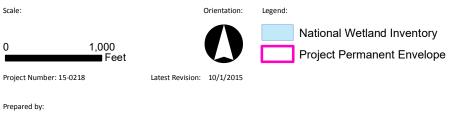
Lake Calumet Quadrangle

Exhibit Title:

Exhibit:

U.S.G.S. Topographic Map





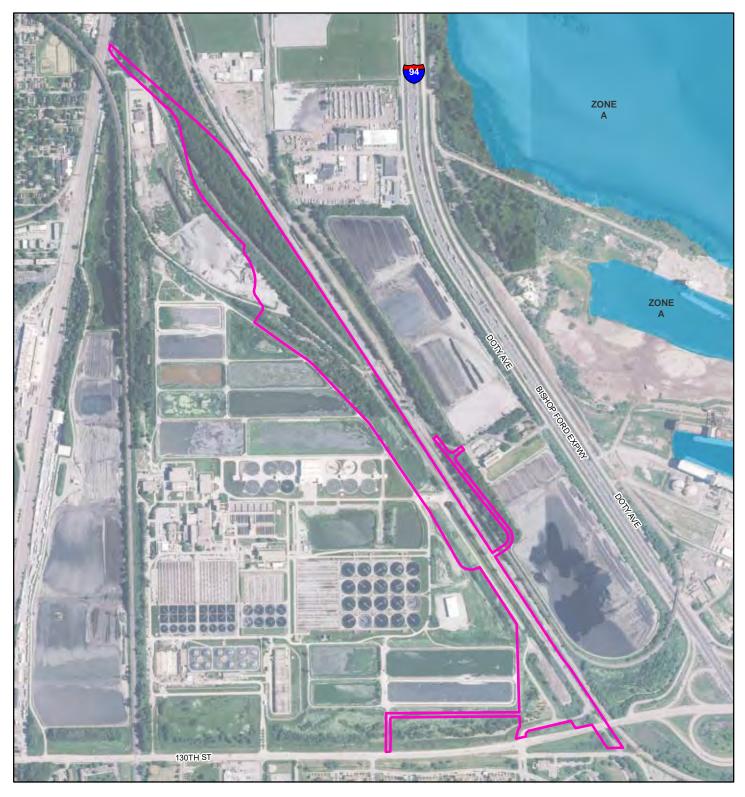
Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture

National Wetland Inventory

CTA Red Line Extension

Prepared for:
CDM Smith

NWI Date: 1981





0 1,000 Feet

100 Year Flood Zone
Project Permanent Envelope

Legend:

Project Number: 15-0218

Latest Revision: 10/1/2015

Prepared by:

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Prepared for:

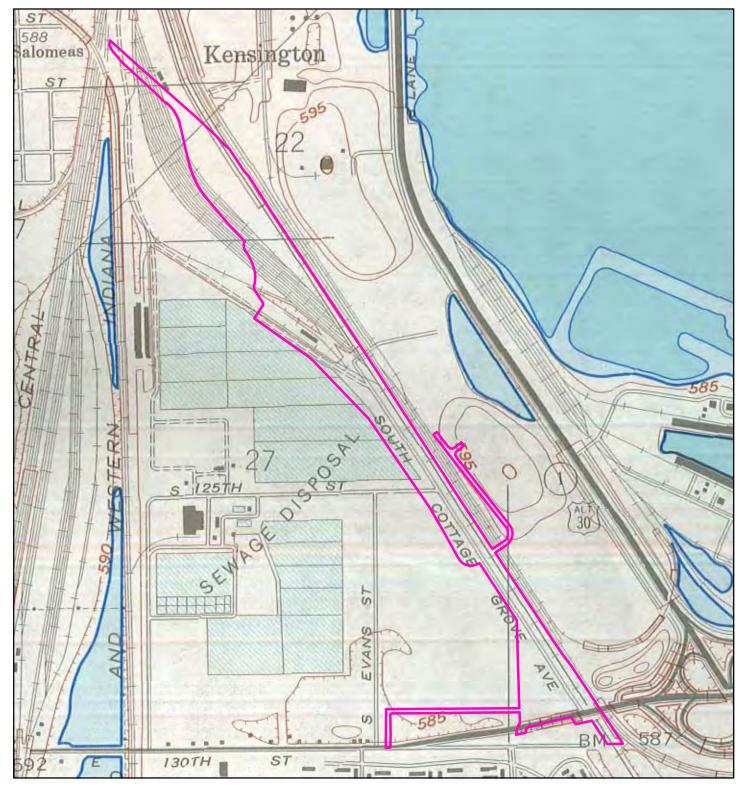
CDM Smith

Panel #:

17031C0661J

Exhibit Title

Exhibit:



Legend: Project Permanent Envelope 1,000 Feet Project Number: 15-0218 Latest Revision: 10/1/2015

Prepared by:

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

CTA Red Line Extension

Prepared for:

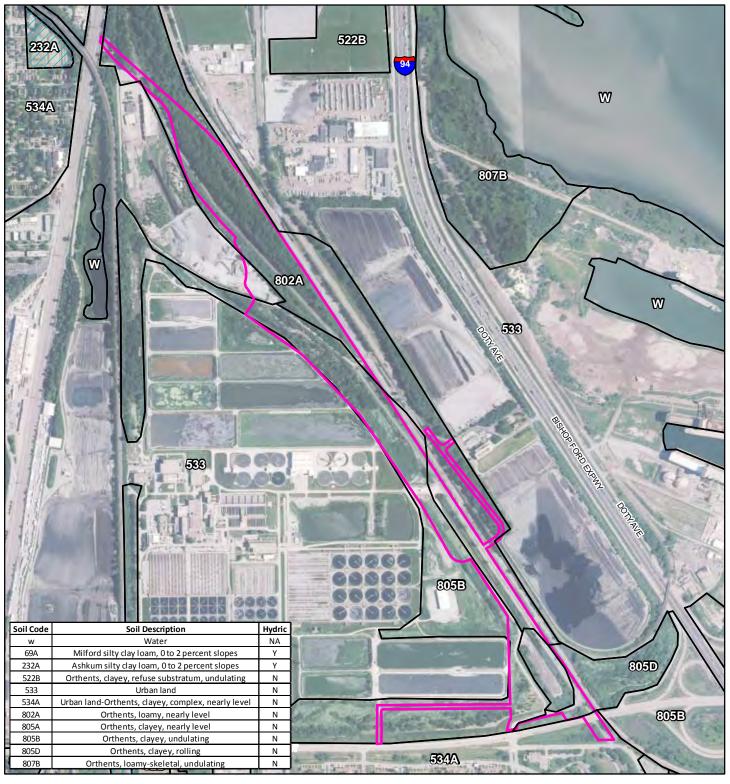
CDM Smith

Hydro Atlas Date:

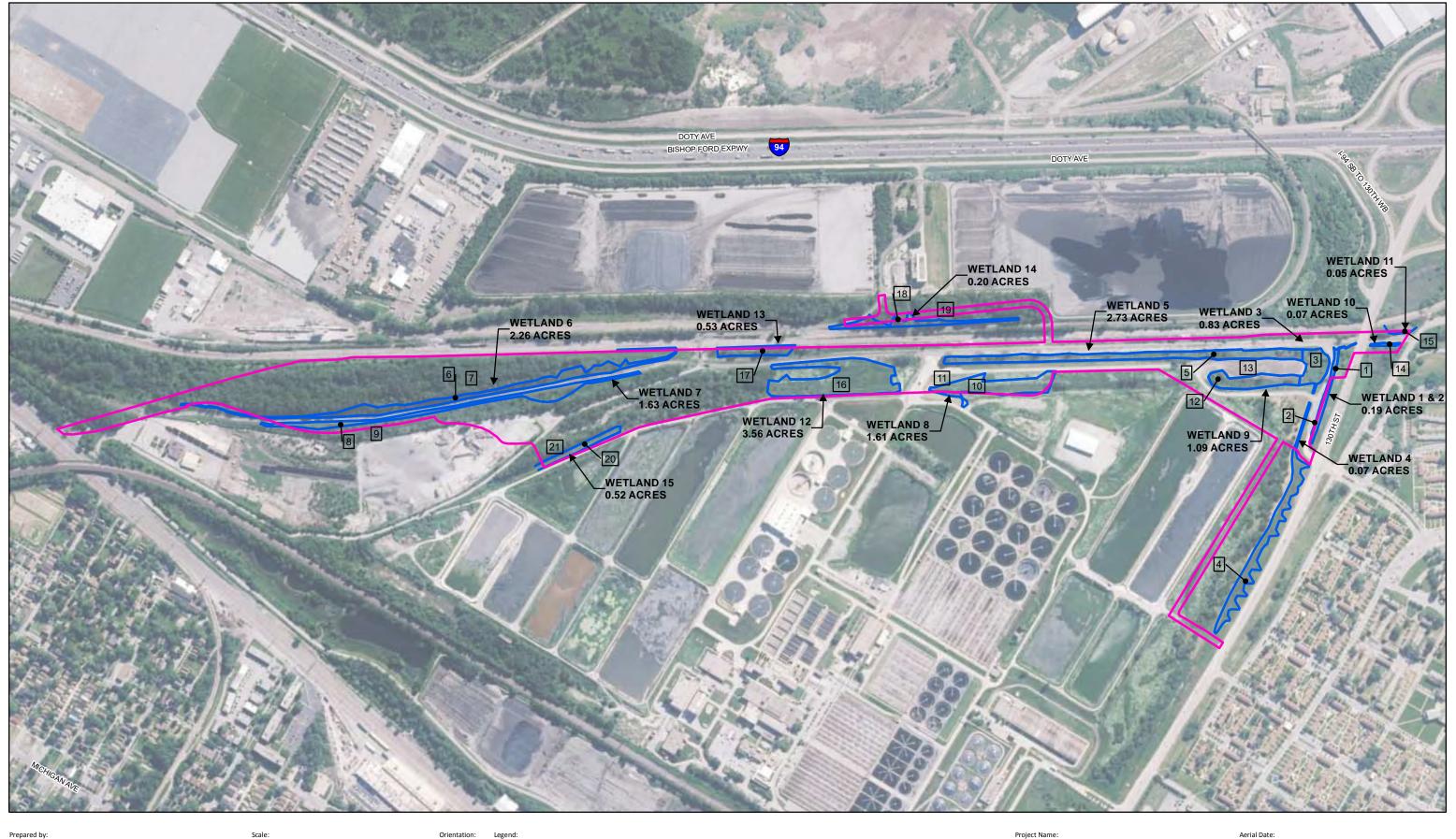
1966

Exhibit:

U.S.G.S Hydrologic Atlas







Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture



Latest Revision: 10/1/2015

Surveyed Wetland Boundary (Labled wetland acreages for area within Project Permanent Envelope only) Project Permanent Envelope

CTA Red Line Extension

Prepared For:

Aerial Date:

Exhibit Title: CDM Smith

2014

Wetland Boundary

The following floristic inventories, prepared by Hey and Associates, Inc., follow the nomenclature given in the National Wetland Plant List: (Lichvar, R. W., M. Butterwick, N.C. Melvin, and W. N. Kirchner 2014); The National Wetland Plant List 2014 Update of Wetland Ratings. (Phytoneuron 2014-41:1-42); and bio data/nomenclature follows Kartesz, J. T., 2013 Floristic Synthesis of North America. Version 1.0 Biota of North American Program. It also provides local synonymies based on Swink and Wilhelm's 1994 Plants of the Chicago Region.

Each species is listed with its database acronym and coefficient of conservatism (0 = weedy, 10 = conservative), and followed by its corresponding National Wetland Category (OBL = obligate wetland species, FACW = facultative wetland, FAC - facultative species, FACU = facultative upland, UPL = upland species), habit, duration, and nativity. Native taxa are those species believed to have been present in the Chicago region prior to European settlement.

The conservatism metric information above the species list provides analysis of the vegetative quality of the site. It shows the total number of species present (species richness), the mean coefficient of conservatism (Mean C), the floristic quality index (FQAI), and mean wetness; calculated separately for native species only and then including the adventive species (W/Adventives). The Mean C datum indicates the average coefficient of conservatism. The FQAI is derived by multiplying the Mean C by the square root of the number of species. If the FQAI of an area registers in the middle 30's or higher, one can be relatively certain that there is sufficient native character to be of rather profound environmental importance in terms of a regional natural area perspective. The wet indicator value indicates the mean or average wet indicator category for all species present, natives only and then with adventives – numbers less than 0 indicate hydrophytic vegetation, while numbers greater than 0 correspond to the upland vegetation categories. The table also provides the number of species in each physiognomic or habit class, native versus adventive along with their percentage of the total inventory.

Source: Herman, B., Sliwinski, R. and S. Whitaker. 2013. Chicago Region FQA (Floristic Quality Assessment) Calculator. U.S. Army Corps of Engineers, Chicago, IL. Version September 29, 2014

Project Number: 15-0218 Project Name:

CTA Red Line Extension

Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture

Exhibit Title: Exhibit:

SITE: Wetland 1 & 2 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-

BASED METRICS

IVILITATES	
MEAN C (NATIVE SPECIES)	1.38
,	
MEAN C	
(ALL SPECIES)	0.85
,	0.83
MEAN C	
(NATIVE TREES)	1.50
MEAN C	
(NATIVE SHRUBS)	1.00
MEAN C	
(NATIVE	
HERBACEOUS)	1.00
FQAI	
(NATIVE SPECIES)	3.89
FQAI	
(ALL SPECIES)	3.05
ADJUSTED FQAI	10.79
% C VALUE 0	0.46
% C VALUE 1-3	0.54
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

13
8
0.38
-0.23
-0.50
0.77
0.62
0.00
0.00
0.92

	SPECIES NAME							
SPECIES	(NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
acesai	Acer saccharinum	Acer saccharinum	Silver Maple	0	FACW	Tree	Perennial	Native
artvul	Artemisia vulgaris	ARTEMISIA VULGARIS	Common Mugwort	0	UPL	Forb	Perennial	Adventive
consep	Calystegia sepium	Convolvulus sepium	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
diplac	Dipsacus laciniatus	DIPSACUS LACINIATUS	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
frapen	Fraxinus pennsylvanica	Fraxinus pennsylvanica subintegerrima	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
salint	Salix interior	Salix interior	Sandbar Willow	1	FACW	Shrub	Perennial	Native
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
ulmame	Ulmus americana	Ulmus americana	American Elm	3	FACW	Tree	Perennial	Native
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 3 - CTA Red Line Extension

LOCALE: Lake Calumet BY: J Mengler, V Mosca DATE: 8/13/2015

CONSERVATISM-

BASED METRICS

4.50
1.50
2.00
2.00
7.00
n/a
6.36
0.30
3.67
25.98
0.67
0.17
0.00
0.17

ADDITIONAL

METRICS	
SPECIES RICHNESS (ALL)	6
SPECIES RICHNESS (NATIVE)	2
% NON-NATIVE	0.67
WET INDICATOR (ALL)	-0.67
WET INDICATOR (NATIVE)	-0.50
% HYDROPHYTE (MIDWEST)	0.83
% NATIVE PERENNIAL	0.33
% NATIVE ANNUAL % ANNUAL	0.00
% PERENNIAL	0.83

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
diplac	Dipsacus laciniatus	DIPSACUS LACINIATUS	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
ribame	Ribes americanum	Ribes americanum	Wild Black Currant	7	FACW	Shrub	Perennial	Native
		_ , , , , , , , ,	Narrow-Leaf Cat-					
typang	Typha angustifolia	Typha angustifolia	Tail	0	OBL	Forb	Perennial	Adventive

SITE: Wetland 4 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

METRICS	
MEAN C (NATIVE SPECIES)	2.43
MEAN C	
(ALL SPECIES)	1.00
MEAN C	
(NATIVE TREES)	n/a
MEAN C	
(NATIVE SHRUBS)	n/a
MEAN C	
(NATIVE	
HERBACEOUS)	2.67
FQAI	
(NATIVE SPECIES)	6.43
FQAI	
(ALL SPECIES)	4.12
ADJUSTED FQAI	15.58
% C VALUE 0	0.59
% C VALUE 1-3	0.24
% C VALUE 4-6	0.18
% C VALUE 7-10	0.00

SPECIES RICHNESS (ALL)	17
SPECIES RICHNESS (NATIVE)	7
% NON-NATIVE	0.59
WET INDICATOR (ALL)	-0.18
WET INDICATOR (NATIVE)	-0.43
% HYDROPHYTE (MIDWEST)	0.59
% NATIVE PERENNIAL	0.41
% NATIVE ANNUAL % ANNUAL	0.00
% PERENNIAL	0.82

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
arcmin	Arctium minus	ARCTIUM MINUS	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
ascinc	Asclepias incarnata	Asclepias incarnata	Swamp Milkweed	4	OBL	Forb	Perennial	Native
consep	Calystegia sepium	Convolvulus sepium	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
			Nodding Plumeless-					
carnut	Carduus nutans	CARDUUS NUTANS	Thistle	0	FACU	Forb	Biennial	Adventive
cirarv	Cirsium arvense	CIRSIUM ARVENSE	Canadian Thistle	0	FACU	Forb	Perennial	Adventive
diplac	Dipsacus laciniatus	DIPSACUS LACINIATUS	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
solgra	Euthamia graminifolia	Solidago graminifolia nuttallii	Flat-Top Goldentop	4	FACW	Forb	Perennial	Native
			Climbing Black-					
polsca	Fallopia scandens	Polygonum scandens	Bindweed	1	FAC	Vine	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
phyame	Phytolacca americana	Phytolacca americana	American Pokeweed	1	FACU	Forb	Perennial	Native
scipun	Schoenoplectus pungens	Scirpus pungens	Three-Square	5	OBL	Sedge	Perennial	Native
soldul	Solanum dulcamara	SOLANUM DULCAMARA	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
solsem	Solidago sempervirens	SOLIDAGO SEMPERVIRENS	Seaside Goldenrod	0	FACW	Forb	Perennial	Adventive
sonuli	Sonchus arvensis ssp. uliginosus	SONCHUS ULIGINOSUS	Field Sow-Thistle	0	FACU	Forb	Perennial	Adventive
typang	Typha angustifolia	Typha angustifolia	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive

SITE: Wetland 5 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-

BASED METRICS

	1
MEAN C (NATIVE SPECIES)	1.75
(NATIVE SPECIES)	1./5
MEAN C	
(ALL SPECIES)	1.08
MEAN C	
(NATIVE TREES)	2.00
MEAN C	
(NATIVE SHRUBS)	4.00
(NATIVE	
HERBACEOUS)	0.00
FQAI	
(NATIVE SPECIES)	4.95
FQAI	
(ALL SPECIES)	3.88
ADJUSTED FQAI	13.73
% C VALUE 0	0.62
% C VALUE 1-3	0.31
% C VALUE 4-6	0.00
% C VALUE 7-10	0.08

IVIETRICS	
SPECIES RICHNESS	
(ALL)	13
SPECIES RICHNESS	
(NATIVE)	8
% NON-NATIVE	0.38
WET INDICATOR	
(ALL)	-0.23
WET INDICATOR	
(NATIVE)	0.00
% HYDROPHYTE	
(MIDWEST)	0.69
% NATIVE	
PERENNIAL	0.38
% NATIVE ANNUAL	0.15
% ANNUAL	0.23
% PERENNIAL	0.69

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Ambrosia artemisiifolia						
ambart	Ambrosia artemisiifolia	elatior	Annual Ragweed	0	FACU	Forb	Annual	Native
ambtri	Ambrosia trifida	Ambrosia trifida	Great Ragweed	0	FAC	Forb	Annual	Native
branig	Brassica nigra	BRASSICA NIGRA	Black Mustard	0	UPL	Forb	Annual	Adventive
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
oenbie	Oenothera biennis	Oenothera biennis	Evening Primrose	0	FACU	Forb	Biennial	Native
	Parthenocissus	Parthenocissus						
parqui	quinquefolia	quinquefolia	Virginia-Creeper	2	FACU	Vine	Perennial	Native
	Phragmites australis							
phrausu	ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
ribame	Ribes americanum	Ribes americanum	Wild Black Currant	7	FACW	Shrub	Perennial	Native
salint	Salix interior	Salix interior	Sandbar Willow	1	FACW	Shrub	Perennial	Native
typang	Typha angustifolia	Typha angustifolia	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 6 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-

BASED METRICS

MEAN C	
(NATIVE SPECIES)	2.43
MEAN C	
(ALL SPECIES)	1.59
MEAN C	
(NATIVE TREES)	1.00
MEAN C	
(NATIVE SHRUBS)	1.00
MEAN C	
(NATIVE	
HERBACEOUS)	2.76
FQAI	
(NATIVE SPECIES)	11.13
FQAI	
(ALL SPECIES)	9.02
ADJUSTED FQAI	19.67
% C VALUE 0	0.50
% C VALUE 1-3	0.25
% C VALUE 4-6	0.22
% C VALUE 7-10	0.03

ADDITIONAL

METRICS SPECIES RICHNESS 32 SPECIES RICHNESS (NATIVE) 21 % NON-NATIVE WET INDICATOR 0.34 (ALL) -0.06 WET INDICATOR (NATIVE) -0.14 % HYDROPHYTE (MIDWEST) 0.66 % NATIVE PERENNIAL 0.53 % NATIVE ANNUAL % ANNUAL 0.06 0.09 % PERENNIAL 0.78

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Acer negundo var.						
aceneg	Acer negundo	violaceum	Box Elder	0	FAC	Tree	Perennial	Native
agralb	Agrostis gigantea	AGROSTIS ALBA	Red Top	0	FACW	Grass	Perennial	Adventive
acnalt	Amaranthus tuberculatus	Acnida altissima	Rough-Fruit Amaranth	0	OBL	Forb	Annual	Native
ambtri	Ambrosia trifida	Ambrosia trifida	Great Ragweed	0	FAC	Forb	Annual	Native
andger	Andropogon gerardii	Andropogon gerardii	Big Bluestem	5	FAC	Grass	Perennial	Native
arcmin	Arctium minus	ARCTIUM MINUS	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
artvul	Artemisia vulgaris	ARTEMISIA VULGARIS	Common Mugwort	0	UPL	Forb	Perennial	Adventive
ascinc	Asclepias incarnata	Asclepias incarnata	Swamp Milkweed	4	OBL	Forb	Perennial	Native
cirdis	Cirsium discolor	Cirsium discolor	Field Thistle	2	FACU	Forb	Biennial	Native
comcom	Commelina communis	COMMELINA COMMUNIS	Asiatic Dayflower	0	FACU	Forb	Annual	Adventive
cypstr	Cyperus strigosus	Cyperus strigosus	Straw-Color Flat Sedge	1	FACW	Sedge	Perennial	Native
daucar	Daucus carota	DAUCUS CAROTA	Queen Anne's Lace	0	UPL	Forb	Biennial	Adventive
eupalt	Eupatorium altissimum	Eupatorium altissimum	Tall Boneset	0	UPL	Forb	Perennial	Native
solgra	Euthamia graminifolia	Solidago graminifolia nuttallii	Flat-Top Goldentop	4	FACW	Forb	Perennial	Native
polsca	Fallopia scandens	Polygonum scandens	Climbing Black- Bindweed	1	FAC	Vine	Perennial	Native
gaubie	Gaura biennis	Gaura biennis	Biennial Beeblossom	2	FACU	Forb	Biennial	Native
helgro	Helianthus grosseserratus	Helianthus grosseserratus	Saw-Tooth Sunflower Spotted St. John's-	2	FACW	Forb	Perennial	Native
hyppun	Hypericum punctatum	Hypericum punctatum	Wort	4	FAC	Forb	Perennial	Native
liapyc	Liatris pycnostachya	Liatris pycnostachya	Priarie Blazing Star	8	FAC	Forb	Perennial	Native
	,,	, ,	Cut-Leaf Water-		ODI		Danamial	Nethro
lycame	Lycopus americanus	Lycopus americanus	Horehound	5 0	OBL	Forb	Perennial	Native
lytsal	Lythrum salicaria Phragmites australis ssp.	LYTHRUM SALICARIA	Purple Loosestrife	U	OBL	Forb	Perennial	Adventive
phrausu	australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
	2.250.000	agrinees adderans	Smooth Ground	·		3.033	· c.cai	
physub	Physalis subglabrata	Physalis subglabrata	Cherry	0	UPL	Forb	Perennial	Native
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	Shrub	Perennial	Adventive

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
	Sambucus nigra ssp.							
samcan	canadensis	Sambucus canadensis	Elderberry	1	FACW	Shrub	Perennial	Native
sapoff	Saponaria officinalis	SAPONARIA OFFICINALIS	Bouncing-Bett	0	FACU	Forb	Perennial	Adventive
andsco	Schizachyrium scoparium	Andropogon scoparius	Little Bluestem	5	FACU	Grass	Perennial	Native
soldul	Solanum dulcamara	SOLANUM DULCAMARA	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
typang	Typha angustifolia	Typha angustifolia	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
verhas	Verbena hastata	Verbena hastata	Blue Vervain	4	FACW	Forb	Perennial	Native

SITE: Wetland 7 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-

BASED METRICS

IVIETRICS	
MEAN C	
(NATIVE SPECIES)	2.79
MEAN C	
(ALL SPECIES)	2.03
MEAN C	
(NATIVE TREES)	n/a
MEAN C	
(NATIVE SHRUBS)	0.00
MEAN C	
(NATIVE	
HERBACEOUS)	2.79
FQAI	
(NATIVE SPECIES)	13.68
FQAI	
(ALL SPECIES)	11.66
ADJUSTED FQAI	23.81
% C VALUE 0	0.45
% C VALUE 1-3	0.18
% C VALUE 4-6	0.33
% C VALUE 7-10	0.03

IVIETRICS	
SPECIES RICHNESS	
(ALL)	33
SPECIES RICHNESS	
(NATIVE)	24
% NON-NATIVE	0.27
WET INDICATOR	
(ALL)	-0.18
WET INDICATOR	
(NATIVE)	-0.21
% HYDROPHYTE	
(MIDWEST)	0.67
% NATIVE	
PERENNIAL	0.52
% NATIVE ANNUAL	0.09
% ANNUAL	0.09
% PERENNIAL	0.76

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
achmil	Achillea millefolium	ACHILLEA MILLEFOLIUM	Common Yarrow	0	FACU	Forb	Perennial	Adventive
agralb	Agrostis gigantea	AGROSTIS ALBA	Red Top	0	FACW	Grass	Perennial	Adventive
andger	Andropogon gerardii	Andropogon gerardii	Big Bluestem	5	FAC	Grass	Perennial	Native
artvul	Artemisia vulgaris	ARTEMISIA VULGARIS	Common Mugwort	0	UPL	Forb	Perennial	Adventive
ascsyr	Asclepias syriaca	Asclepias syriaca	Common Milkweed	0	FACU	Forb	Perennial	Native
cirdis	Cirsium discolor	Cirsium discolor	Field Thistle	2	FACU	Forb	Biennial	Native
cypstr	Cyperus strigosus	Cyperus strigosus	Straw-Color Flat Sedge	1	FACW	Sedge	Perennial	Native
daucar	Daucus carota	DAUCUS CAROTA	Queen Anne's Lace	0	UPL	Forb	Biennial	Adventive
eriann	Erigeron annuus	Erigeron annuus	Eastern Daisy Fleabane	0	FACU	Forb	Biennial	Native
erican	Erigeron canadensis	Erigeron canadensis	Canadian Horseweed	0	FACU	Forb	Annual	Native
eupalt	Eupatorium altissimum	Eupatorium altissimum	Tall Boneset	0	UPL	Forb	Perennial	Native
eupper	Eupatorium perfoliatum	Eupatorium perfoliatum	Common Boneset	4	OBL	Forb	Perennial	Native
solgra	Euthamia graminifolia	Solidago graminifolia nuttallii	Flat-Top Goldentop	4	FACW	Forb	Perennial	Native
rhafra	Frangula alnus	RHAMNUS FRANGULA	Glossy Buckthorn	0	FACW	Shrub	Perennial	Adventive
helgro	Helianthus grosseserratus	Helianthus grosseserratus	Saw-Tooth Sunflower	2	FACW	Forb	Perennial	Native
hyppun	Hypericum punctatum	Hypericum punctatum	Spotted St. John's- Wort	4	FAC	Forb	Perennial	Native
jundud	Juncus dudleyi	Juncus dudleyi	Dudley's Rush	4	FACW	Forb	Perennial	Native
juntor	Juncus torreyi	Juncus torreyi	Torrey's Rush	4	FACW	Forb	Perennial	Native
laccan	Lactuca canadensis	Lactuca canadensis	Canadian Blue Lettuce	2	FACU	Forb	Biennial	Native
lycame	Lycopus americanus	Lycopus americanus	Cut-Leaf Water- Horehound	5	OBL	Forb	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
muhglo	Muhlenbergia glomerata	Muhlenbergia glomerata	Spiked Muhly	10	FACW	Grass	Perennial	Native
oenbie	Oenothera biennis	Oenothera biennis	Evening Primrose	0	FACU	Forb	Biennial	Native
pancap	Panicum capillare	Panicum capillare	Common Panic Grass	1	FAC	Grass	Annual	Native

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
pandic	Panicum dichotomiflorum	Panicum dichotomiflorum	Fall Panic Grass	0	FACW	Grass	Annual	Native
panvir	Panicum virgatum	Panicum virgatum	Switch Grass	5	FAC	Grass	Perennial	Native
pendig	Penstemon digitalis	Penstemon digitalis	Foxglove Beardtongue	4	FAC	Forb	Perennial	Native
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
scipen	Scirpus pendulus	Scirpus pendulus	Rufous Bulrush	4	OBL	Sedge	Perennial	Native
soldul	Solanum dulcamara	SOLANUM DULCAMARA	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solsem	Solidago sempervirens	SOLIDAGO SEMPERVIRENS	Seaside Goldenrod	0	FACW	Forb	Perennial	Adventive
traohi	Tradescantia ohiensis	Tradescantia ohiensis	Spiderwort	2	FACU	Forb	Perennial	Native
verhas	Verbena hastata	Verbena hastata	Blue Vervain	4	FACW	Forb	Perennial	Native

SITE: Wetland 8 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca

DATE: 8/19/2015

CONSERVATISM-

BASED METRICS

MEAN C	
(NATIVE SPECIES)	2.43
MEAN C	
(ALL SPECIES)	1.21
MEAN C	
(NATIVE TREES)	2.00
MEAN C	
(NATIVE SHRUBS)	1.00
MEAN C	
(NATIVE	
HERBACEOUS)	2.67
FQAI	
(NATIVE SPECIES)	6.43
FQAI	
(ALL SPECIES)	4.54
ADJUSTED FQAI	17.17
% C VALUE 0	0.57
% C VALUE 1-3	0.21
% C VALUE 4-6	0.21
% C VALUE 7-10	0.00

WETTER	
SPECIES RICHNESS	
(ALL)	14
SPECIES RICHNESS	
(NATIVE)	7
% NON-NATIVE	0.50
WET INDICATOR	
(ALL)	-0.21
WET INDICATOR	
(NATIVE)	-0.57
% HYDROPHYTE	
(MIDWEST)	0.79
% NATIVE	
PERENNIAL	0.36
% NATIVE ANNUAL	0.14
% ANNUAL	0.14
% PERENNIAL	0.79

CDECIEC	SPECIES NAME	CDECIEC	COMMON		MIDWEST			
SPECIES ACRONYM	(NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	WET INDICATOR	HABIT	DURATION	NATIVITY
ambtri	Ambrosia trifida	Ambrosia trifida	Great Ragweed	0	FAC	Forb	Annual	Native
cirarv	Cirsium arvense	CIRSIUM ARVENSE	Canadian Thistle	0	FACU	Forb	Perennial	Adventive
diplac	Dipsacus laciniatus	DIPSACUS LACINIATUS	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
echlob	Echinocystis lobata	Echinocystis lobata	Wild Cucumber	5	FACW	Vine	Annual	Native
			Climbing Black-					
polsca	Fallopia scandens	Polygonum scandens	Bindweed	1	FAC	Vine	Perennial	Native
jundud	Juncus dudleyi	Juncus dudleyi	Dudley's Rush	4	FACW	Forb	Perennial	Native
juntor	Juncus torreyi	Juncus torreyi	Torrey's Rush	4	FACW	Forb	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
	Phragmites australis ssp.							
phrausu	australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
salfra	Salix fragilis	SALIX FRAGILIS	Crack Willow	0	UPL	Tree	Perennial	Adventive
salint	Salix interior	Salix interior	Sandbar Willow	1	FACW	Shrub	Perennial	Native
soldul	Solanum dulcamara	SOLANUM DULCAMARA	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solsem	Solidago sempervirens	SOLIDAGO SEMPERVIRENS	Seaside Goldenrod	0	FACW	Forb	Perennial	Adventive

SITE: Wetland 9 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca

DATE: 8/19/2015

CONSERVATISM-

BASED METRICS

IVILITATES	
MEAN C	
(NATIVE SPECIES)	0.83
MEAN C	
(ALL SPECIES)	0.45
MEAN C	
(NATIVE TREES)	1.00
MEAN C	
(NATIVE SHRUBS)	n/a
MEAN C	
(NATIVE	
HERBACEOUS)	0.33
FQAI	
(NATIVE SPECIES)	2.04
FQAI	
(ALL SPECIES)	1.51
ADJUSTED FQAI	6.15
% C VALUE 0	0.73
% C VALUE 1-3	0.27
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

WILTRICS	
SPECIES RICHNESS	
(ALL)	11
SPECIES RICHNESS	
(NATIVE)	6
% NON-NATIVE	0.45
WET INDICATOR	
(ALL)	-0.18
WET INDICATOR	
(NATIVE)	0.00
% HYDROPHYTE	
(MIDWEST)	0.82
% NATIVE	
PERENNIAL	0.36
% NATIVE ANNUAL	0.18
% ANNUAL	0.18
% PERENNIAL	0.82

SPECIES	SPECIES NAME (NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
aceneg	Acer negundo	Acer negundo var. violaceum	Box Elder	0	FAC	Tree	Perennial	Native
ambtri	Ambrosia trifida	Ambrosia trifida	Great Ragweed	0	FAC	Forb	Annual	Native
consep	Calystegia sepium	Convolvulus sepium	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
erican	Erigeron canadensis	Erigeron canadensis	Canadian Horseweed	0	FACU	Forb	Annual	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
moralb	Morus alba	MORUS ALBA	White Mulberry	0	FAC	Tree	Perennial	Adventive
phaaru	Phalaris arundinacea	PHALARIS ARUNDINACEA	Reed Canary Grass	0	FACW	Grass	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
salfra	Salix fragilis	SALIX FRAGILIS	Crack Willow	0	UPL	Tree	Perennial	Adventive
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 10 - CTA Red Line Extension

LOCALE: Lake Calumet BY: J Mengler DATE: 8/13/2015

CONSERVATISM-

BASED

METRICS

WILTRICS	
MEAN C	
(NATIVE SPECIES)	1.50
MEAN C	
(ALL SPECIES)	0.75
MEAN C	
(NATIVE TREES)	1.50
MEAN C	
(NATIVE SHRUBS)	n/a
MEAN C	
(NATIVE	
HERBACEOUS)	1.00
FQAI	
(NATIVE SPECIES)	3.00
FQAI	
(ALL SPECIES)	2.12
ADJUSTED FQAI	10.61
% C VALUE 0	0.50
% C VALUE 1-3	0.50
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL

METRICS SPECIES RICHNESS (ALL) 8 SPECIES RICHNESS (NATIVE) 4 % NON-NATIVE WET INDICATOR 0.50 (ALL) -0.13 WET INDICATOR (NATIVE) -0.25 % HYDROPHYTE (MIDWEST) 0.63 % NATIVE PERENNIAL 0.50

0.00

0.88

% NATIVE ANNUAL % ANNUAL

% PERENNIAL

SPECIES	SPECIES NAME (NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
arcmin	Arctium minus	ARCTIUM MINUS	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
artvul	Artemisia vulgaris	ARTEMISIA VULGARIS	Common Mugwort	0	UPL	Forb	Perennial	Adventive
frapen	Fraxinus pennsylvanica	Fraxinus pennsylvanica subintegerrima	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 11 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-

BASED METRICS

IVIETRICS	
MEAN C (NATIVE SPECIES)	2.00
,	
MEAN C (ALL SPECIES)	1.00
, , , , , , , , , , , , , , , , , , , ,	1.00
MEAN C (NATIVE TREES)	2.00
MEAN C	
(NATIVE SHRUBS)	n/a
MEAN C	·
(NATIVE	
HERBACEOUS)	n/a
FQAI	
(NATIVE SPECIES)	2.83
FQAI	
(ALL SPECIES)	2.00
ADJUSTED FQAI	14.14
% C VALUE 0	0.50
% C VALUE 1-3	0.50
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

<u></u>	
SPECIES RICHNESS (ALL)	4
SPECIES RICHNESS (NATIVE)	2
(IVATIVE)	
% NON-NATIVE	0.50
WET INDICATOR (ALL)	-1.00
WET INDICATOR	
(NATIVE)	-0.50
% HYDROPHYTE (MIDWEST)	1.00
% NATIVE	
PERENNIAL	0.50
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	1.00

SPECIES	SPECIES NAME	SPECIES	COMMON		MIDWEST WET			
ACRONYM	(NWPL/	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 12 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-

BASED METRICS

1.50
0.67
1.50
0.00
1.00
3.00
2.00
10.00
0.56
0.44
0.00
0.00

IVIETRICS	
SPECIES RICHNESS (ALL)	9
SPECIES RICHNESS	
(NATIVE)	4
% NON-NATIVE	0.56
WET INDICATOR	
(ALL)	-0.11
WET INDICATOR	
(NATIVE)	-0.25
% HYDROPHYTE	
(MIDWEST)	0.67
% NATIVE	
PERENNIAL	0.44
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	0.89

	SPECIES NAME							
SPECIES	(NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
arcmin	Arctium minus	ARCTIUM MINUS	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
artvul	Artemisia vulgaris	ARTEMISIA VULGARIS	Common Mugwort	0	UPL	Forb	Perennial	Adventive
Frapen	Fraxinus pennsylvanica	Fraxinus pennsylvanica subintegerrima	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 13 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-

BASED METRICS

IVIETRICS	
MEAN C (NATIVE SPECIES)	1.17
()	1.1.
MEAN C	
(ALL SPECIES)	0.78
MEAN C	
(NATIVE TREES)	1.00
MEAN C	
(NATIVE SHRUBS)	1.00
MEAN C	
(NATIVE	
HERBACEOUS)	1.00
FQAI	
(NATIVE SPECIES)	2.86
FQAI	
(ALL SPECIES)	2.33
ADJUSTED FQAI	9.53
% C VALUE 0	0.44
% C VALUE 1-3	0.56
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

SPECIES RICHNESS (ALL)	9
SPECIES RICHNESS	
(NATIVE)	6
% NON-NATIVE	0.33
WET INDICATOR (ALL)	-0.67
WET INDICATOR	
(NATIVE)	-0.17
% HYDROPHYTE	
(MIDWEST)	0.89
% NATIVE	
PERENNIAL	0.67
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	1.00

	SPECIES NAME							
SPECIES	(NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Acer negundo var.						
aceneg	Acer negundo	violaceum	Box Elder	0	FAC	Tree	Perennial	Native
			Hedge False					
consep	Calystegia sepium	Convolvulus sepium	Bindweed	1	FAC	Forb	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
	Phragmites australis ssp.							
phrausu	australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
	Sambucus nigra ssp.							
samcan	canadensis	Sambucus canadensis	Black Elderberry	1	FACW	Shrub	Perennial	Native
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
typang	Typha angustifolia	Typha angustifolia	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 14 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-

BASED METRICS

IVIETRICS	
MEANIC	
MEAN C	
(NATIVE SPECIES)	1.33
MEAN C	
(ALL SPECIES)	0.86
MEAN C	
(NATIVE TREES)	1.67
MEAN C	
(NATIVE SHRUBS)	0.00
MEAN C	
(NATIVE	
HERBACEOUS)	1.00
FQAI	
(NATIVE SPECIES)	4.00
FQAI	1100
(ALL SPECIES)	3.21
ADJUSTED FQAI	10.69
% C VALUE 0	0.50
% C VALUE 1-3	0.50
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

IVILTRICS	
SPECIES RICHNESS (ALL)	14
SPECIES RICHNESS (NATIVE)	9
% NON-NATIVE	0.36
WET INDICATOR (ALL)	-0.29
WET INDICATOR (NATIVE)	-0.44
% HYDROPHYTE (MIDWEST)	0.79
% NATIVE PERENNIAL	0.57
% NATIVE ANNUAL % ANNUAL	0.07
% PERENNIAL	0.86

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET	HABIT	DURATION	NATIVITY
	A	Acer negundo var.	Day Eldan	0	546	T	Danama'al	NI-sti
aceneg	Acer negundo	violaceum	Box Elder	0	FAC	Tree	Perennial	Native
ambtri	Ambrosia trifida	Ambrosia trifida	Great Ragweed	0	FAC	Forb	Annual	Native
arcmin	Arctium minus	ARCTIUM MINUS	Lesser Burrdock Hedge False	0	FACU	Forb	Biennial	Adventive
consep	Calystegia sepium	egia sepium Convolvulus sepium		1	FAC	Forb	Perennial	Native
phaaru	Phalaris arundinacea	PHALARIS ARUNDINACEA	Reed Canary Grass	0	FACW	Grass	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
sonuli	Sonchus arvensis ssp. uliginosus	SONCHUS ULIGINOSUS	Field Sow-Thistle	0	FACU	Forb	Perennial	Adventive
typlat	Typha latifolia	Typha latifolia	Broad-Leaf Cat-Tail	1	OBL	Forb	Perennial	Native
ulmame	Ulmus americana	Ulmus americana	American Elm	3	FACW	Tree	Perennial	Native
urtpro	Urtica dioica ssp. gracilis	Urtica procera	Tall Nettle	2	FACW	Forb	Perennial	Native
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 15 - CTA Red Line Extension

LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-

BASED METRICS

IVIETRICS	
MEANIC	
MEAN C	
(NATIVE SPECIES)	1.00
MEAN C	
(ALL SPECIES)	0.50
MEAN C	
(NATIVE TREES)	0.00
MEAN C	
(NATIVE SHRUBS)	0.00
MEAN C	
(NATIVE	
HERBACEOUS)	1.00
FQAI	
(NATIVE SPECIES)	2.00
FQAI	
(ALL SPECIES)	1.41
ADJUSTED FQAI	7.07
% C VALUE 0	0.63
% C VALUE 1-3	0.38
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

<u></u>	
SPECIES RICHNESS (ALL)	8
CDECIES DIQUINESS	
SPECIES RICHNESS	
(NATIVE)	4
% NON-NATIVE	0.50
WET INDICATOR (ALL)	-0.63
WET INDICATOR	
(NATIVE)	0.00
% HYDROPHYTE	
(MIDWEST)	0.88
% NATIVE	
PERENNIAL	0.50
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	1.00

SPECIES	SPECIES NAME (NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
ACKONTIVI	WOTELIVEROCK	Acer negundo var.	IVAIVIL	CVALUE	INDICATOR	HADH	DONATION	NATIVITI
aceneg	Acer negundo	violaceum	Box Elder	0	FAC	Tree	Perennial	Native
			Hedge False					
consep	Calystegia sepium	Convolvulus sepium	Bindweed	1	FAC	Forb	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	Forb	Perennial	Native
typang	Typha angustifolia	Typha angustifolia	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	Vine	Perennial	Native

Project Number: 15-0218 Project Name:

CTA Red Line Extension

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Exhibit Title:

Exhibit:

#9

15-0218 CDM-Smith -- CTA Red Line Extension

WETLAND DETERMINATION DATA FORM - Midwest Region

City/0	County:	Cook	Sampling Date: 8/13/2015
	State:		
	Sec	ction, Towns	ship, Range: T34N R14E S26
ch	Loc	al relief (cor	ncave, convex, none): ditch
9	Long:	-87.5954	129 Datum:
olex, nearly		NW	// Classification: none
or this time o	f the year?	Y (I	If no, explain in remarks)
logy	significantly	disturbed?	Y Are "normal circumstances"
logy	naturally prol	blematic?	N present? Y
			(If needed, explain any answers in remarks.)
_	_	_	
	Is the sa	mpled area	within a wetland? Y
	If yes,	optional wet	tland site ID: Wetland 1
separate r	eport.)		
		time of ec	saces, and mostly urbaniand/fill for substrate
pe positio	n due to dry	time or se	ason, and mostly urbaniand/iii for substrate.
its.			
Absolute	Dominant	Indicator	Dominance Test Worksheet
% Cover	Species	Status	Number of Dominant Species that
	<u>Y</u>		are OBL, FACW, or FAC: 5 (A)
			Total Number of Dominant Species Across all Strata: 5 (B)
<u> </u>	IN	FACVV	
			Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)
45	= Total Cover		
)			Prevalence Index Worksheet
15	Y	FACW	Total % Cover of:
10	Υ	FAC	OBL species 0 x 1 = 0
5	N	FACW	FACW species 140 x 2 = 280
			FAC species 30 x 3 = 90
			FACU species 0 x 4 = 0
, <u>30</u>	= Total Cover		UPL species $0 \times 5 = 0$ Column totals $170 \times (A) \times 370 \times (B)$
)			
us.	V	FACW	
95	<u> </u>	FACW	Prevalence Index = B/A = 2.18
95	Y	FACW	
95	Y	FACW	Prevalence Index = B/A = 2.18
95	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators:
95	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation
95	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50%
95	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a
95	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide
	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation*
	Y Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
	Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be
	Y Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
95	Y Y	FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic vegetation
95		FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic
95		FACW	Prevalence Index = B/A = 2.18 Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation X Dominance test is >50% X Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic vegetation
	plex, nearly I plex, nearly I price this time of or this time of ology as separate reape position onts. Absolute % Cover 20 20 5 45 10 5	section Local	State: Illin Section, Towns tch

SOIL Sampling Point: 1

	scription: (Descr	ine to ti	ne depth ne	eaea	to docu	ıment tr	ie indica	tor or confirm	the absen	ce of indicators.)
∪epth	Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features							,		
(Inches)	Color (moist)	%	Color (mo	ist)	%	Type*	Loc**	Textur	re e	Remarks
*Type: C =	Concentration, D	= Deplet	tion, RM = R	educ	ed Matri	x, MS =	Masked	Sand Grains.	**Locati	on: PL = Pore Lining, M = Matrix
Hydric S	oil Indicators:							Indicators	for Proble	ematic Hydric Soils:
His	stisol (A1)			San	dy Glev	ed Matrix	(S4)	Coast	Prairie Red	dox (A16) (LRR K, L, R)
	stic Epipedon (A2)			-	dy Redo		(-)			') (LRR K, L)
	ack Histic (A3)			-	-	ıtrix (S6)			•	t or Peat (S3) (LRR K, L, R)
	, ,	4)		- '	•	, ,			-	
	drogen Sulfide (A			_	•	ky Miner	` '		•	Masses (F12) (LRR K, L, R)
	ratified Layers (A5)		-		ed Matri				rk Surface (TF12)
	cm Muck (A10)			-		atrix (F3)		Other	(explain in	remarks)
De	epleted Below Dark	k Surfac	e (A11)	Red	ox Dark	Surface	(F6)			
Th	ick Dark Surface (A12)		Dep	leted Da	ark Surfa	ce (F7)	*Indicate	ors of hydro	phytic vegetation and wetland
Sa	andy Mucky Minera	al (S1)		Red	ox Depr	essions	(F8)			e present, unless disturbed or
5 c	cm Mucky Peat or	Peat (S3	3)	_				,		problematic
Restrictive	Layer (if observe	eq).	•							
	gravel, ballast, fill	ou).						Hydric s	oil presen	17
Depth (inch		nined				•		,	o p. 000	··
						•				
Remarks:										
Area ma	apped as urban	land, a	and located	l aloi	ng road	d at bas	e of an	other road er	nbankme	nt. Probe refusal within 2-
	s due to gravel				Ü					
HYDROL										
'	ydrology Indicato									
Primary Inc	dicators (minimum	of one is	s required; c	heck	all that a	apply)		Seco	ondary Indic	cators (minimum of two required
X Surface	e Water (A1)				Aquatic	Fauna (B	13)		Surface S	Soil Cracks (B6)
High W	ater Table (A2)				True Aq	uatic Plar	nts (B14)	>	C Drainage	Patterns (B10)
Saturat	tion (A3)				Hydroge	n Sulfide	Odor (C	1)	Dry-Seas	on Water Table (C2)
	Marks (B1)									Burrows (C8)
	ent Deposits (B2)				(C3)	ı Kılızosp	neres on	Living Roots	— '	n Visible on Aerial Imagery (C9)
	eposits (B3)					e of Redu	iced Iron	(C4)	_	or Stressed Plants (D1)
					rieseiic	e oi Reul	aceu iioii		_	
	lat or Crust (B4)					ron Redu	iction in T	illed Soils		hic Position (D2)
	eposits (B5)				(C6)			_	FAC-Neu	tral Test (D5)
	tion Visible on Aeria	•	, , ,		Thin Mu	ck Surfac	e (C7)			
X Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9)										
<u></u> 224,00	01 : 11 (D0				Other (E	xplain in	Remarks	()		
	Stained Leaves (B9)								
)							107-4	
Water-S		Yes		No _	Х	Depth (i	inches):			land
Water-S Field Obse Surface wa Water table	ervations: ater present? e present?	Yes Yes		No	X	Depth (i	inches):		hydi	rology
Water-S Field Obse Surface wa Water table Saturation	ervations: ater present? e present? present?	Yes		-		. ' '	inches):	0	hydi	
Water-S Field Obse Surface wa Water table Saturation (includes ca	ervations: ater present? e present? present? apillary fringe)	Yes Yes Yes	X	No No	Х	Depth (i	inches): inches):		hydi pres	rology
Water-S Field Obse Surface wa Water table Saturation (includes ca	ervations: ater present? e present? present?	Yes Yes Yes	X	No No	Х	Depth (i	inches): inches):		hydi pres	rology
Water-S Field Obse Surface wa Water table Saturation (includes ca	ervations: ater present? e present? present? apillary fringe)	Yes Yes Yes	X	No No	Х	Depth (i	inches): inches):		hydi pres	rology
Water-S Field Obse Surface wa Water table Saturation (includes ca Describe re	ervations: ater present? e present? present? apillary fringe)	Yes Yes Yes	X	No No	Х	Depth (i	inches): inches):		hydi pres	rology
Water-S Field Obse Surface wa Water table Saturation (includes ca	ervations: ater present? e present? present? apillary fringe)	Yes Yes Yes	X	No No	Х	Depth (i	inches): inches):		hydi pres	rology
Water-S Field Obse Surface wa Water table Saturation (includes ca Describe re	ervations: ater present? e present? present? apillary fringe)	Yes Yes Yes	X I	No No g wel	X I, aerial	Depth (i	inches): inches):		hydi pres	rology

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Lake Calumet CTA Red Line Extension	City/County:	Cool	k Sampling Date: 8/13/2015
Applicant/Owner: CTA/MWRD	· —		nois Sampling Point: 2
Investigator(s): J Mengler, V Mosca		Section, Town	ship, Range: T37N, R14E, S26
Landform (hillslope, terrace, etc.): ditch		Local relief (co	ncave, convex, none): ditch
Slope (%): Lat: 41.6906323	Long:	-87.6205	5465 Datum:
Soil Map Unit Name: urban land-orthents clayey complex,			VI Classification: none
Are climatic/hydrologic conditions of the site typical for this			(If no, explain in remarks)
Are vegetation, soilY, or hydrology	significa	antly disturbed?	Y Are "normal circumstances"
	naturall		N present? Y
SUMMARY OF FINDINGS			(If needed, explain any answers in remarks.)
Hydrophytic vegetation present? Y			
Hydric soil present?	ls th	e sampled area	a within a wetland? Y
Wetland hydrology present? Y	If	yes, optional we	etland site ID: Wetland 2
Remarks: (Explain alternative procedures here or in a sep	arate report.)		
Delied primarily upon vegetation and landagene	agaitian dua ta	day time of a	accon, and mostly urbaniand/fill for substrate
Relied primarily upon vegetation and landscape	position due to	o ary time of s	eason, and mostly urbaniand/iii for substrate.
VEGETATION Use scientific names of plants.			
Ab	solute Domina	ant Indicator	Dominance Test Worksheet
Tree Stratum (Plot size: 9 m) %	Cover Specie	es Status	Number of Dominant Species that
1			are OBL, FACW, or FAC: 1 (A)
2			Total Number of Dominant Species Across all Strata: 1 (B)
5			Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)
	0 = Total Co	over	
Sapling/Shrub stratum (Plot size: 4.6 m)			Prevalence Index Worksheet
1			Total % Cover of:
2			OBL species 0 x 1 = 0
3			FACW species 95 x 2 = 190
4			FAC species 0 x 3 = 0
5			FACU species 0 x 4 = 0
Horb stratum (Diet size: 1 m sg.)	0 = Total Co	over	UPL species 0 x 5 = 0 Column totals 95 (A) 190 (B)
Herb stratum (Plot size: 1 m sq) 1 Phragmites australis	95 Y	FACW	Column totals 95 (A) 190 (B) Prevalence Index = B/A = 2.00
2			1 Tevalefiee findex = B/A = 2.00
3			Hydrophytic Vegetation Indicators:
4			Rapid test for hydrophytic vegetation
5			X Dominance test is >50%
6			X Prevalence index is ≤3.0*
7			Morphological adaptations* (provide
8			supporting data in Remarks or on a
9			separate sheet)
10	05 T-1-1-0		Problematic hydrophytic vegetation*
Woody vine stratum (Plot size: 1 m sq)	95 = Total Co	over	(explain)
Woody vine stratum (Plot size: 1 m sq) 1			*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
2			Hydrophytic
	0 = Total Co	over	vegetation
			present? Y
Remarks: (Include photo numbers here or on a separate s	sheet)		

SOIL Sampling Point: 2

Profile Des	cription: (Descr	ibe to th	ne depth needed	l to docu	ument th	ne indica	tor or confirm t	he absenc	ce of indicators.)
Depth									
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	;	Remarks
*Type: C = 0	Concentration, D	= Deple	tion, RM = Reduc	ed Matri	ix, MS =	Masked	Sand Grains.	**Locatio	on: PL = Pore Lining, M = Matrix
Hydric Sc	il Indicators:						Indicators	for Proble	matic Hydric Soils:
His	tisol (A1)		Sai	ndv Glev	ed Matrix	(S4)	Coast F	Prairie Red	ox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo		(-)			(LRR K, L)
	ck Histic (A3)			-	itrix (S6)			, ,	or Peat (S3) (LRR K, L, R)
	, ,	4)			, ,			-	
	Irogen Sulfide (A			•	ky Miner	` '		-	Masses (F12) (LRR K, L, R)
	atified Layers (A5)			ed Matri				Surface (TF12)
	m Muck (A10)				atrix (F3)		Other (explain in r	remarks)
Dep	oleted Below Dark	k Surfac	e (A11) Re	dox Dark	Surface	(F6)			
Thic	ck Dark Surface (A12)	De	oleted Da	ark Surfa	ice (F7)	*Indicator	rs of hydroi	phytic vegetation and wetland
Sar	ndy Mucky Minera	ıl (S1)	Re	dox Depr	essions	(F8)			present, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	3)				,		roblematic
Restrictive	Layer (if observe	ed):				I			
	ravel, ballast, fill	ou,.					Hydric so	il present	?
Depth (inch		nined			•		,	p	·
	·				•				
Remarks:									
Area ma	pped as urban	land, a	and located ald	ng road	d at bas	se of an	other road em	bankmer	nt. Probe refusal within 2-
	due to gravel			Ü					
HYDROL									
	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		<u>Secor</u>	ndary Indica	ators (minimum of two required
X Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface So	oil Cracks (B6)
High Wa	ater Table (A2)			True Aq	uatic Plar	nts (B14)	X	Drainage I	Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	1)	Dry-Seaso	on Water Table (C2)
Water M	larks (B1)			Ovidized	l Phizoen	heres on	Living Roots	Crayfish B	surrows (C8)
X Sedimer	nt Deposits (B2)			(C3)	1 (111203p	incres on	Living Roots	 Saturation	Visible on Aerial Imagery (C9)
	posits (B3)			- ' '	e of Redu	iced Iron	(C4)	_	Stressed Plants (D1)
				-			· ′	_	
	at or Crust (B4)				ron Redu	iction in T	illed Soils	-	nic Position (D2)
	oosits (B5)			(C6)				FAC-Neut	ral Test (D5)
	on Visible on Aeria	•		Thin Mu	ck Surfac	e (C7)			
X Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)			
Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)		
Field Obser	rvations:								
Surface wat	er present?	Yes	No	Х	Depth (i	inches):	0-Jan	Wetla	
Water table	•	Yes	No	X	Depth (i	,		1	ology
Saturation p		Yes	X No		Depth (i	inches):	0	prese	ent? Y
•	pillary fringe)						!		
Describe red	corded data (strea	am gaug	je, monitoring we	ıı, aerıal	pnotos,	previous	inspections), if a	available:	
Remarks:									
Cotumotic	on within dital-	ohonn-	l linad by by-	onbyte-					
Saturatio	on within ditch	uiaiiie	i iiileu by fiyaf	opriytes	.				

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Lake Calumet CTA Red Line Extension	n City/	County:	Cook	Sampling Date:	8/13/2015
Applicant/Owner: CTA/MWRD		State	e: Illin	nois Sampling Point:	3
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range: T37N, R	14E, S26
Landform (hillslope, terrace, etc.):	ditch	ı	Local relief (co	ncave, convex, none):	ditch
Slope (%): Lat: 41.6604	163	Long:	-87.595	Datum:	
Soil Map Unit Name: urban land-orthents clayey co	mplex, nearly	level	NV	VI Classification:	none
Are climatic/hydrologic conditions of the site typical	for this time of	of the year?	Y ((If no, explain in remarks)	_
Are vegetation, soilY, or hyd	drology	significan	tly disturbed?	Y Are "normal circumstances"	ı
Are vegetation, soil, or hyd	drology	naturally p	problematic?	N present?	<u>Y</u>
SUMMARY OF FINDINGS				(If needed, explain any answ	wers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present?		Is the	sampled area	within a wetland? Y	
Wetland hydrology present? Y		If ye	es, optional we	tland site ID: Wetland 3	
Remarks: (Explain alternative procedures here or in	n a separate r	eport.)			
Relied primarily upon vegetation and lands	cane nositic	on due to d	dry time of se	eason, and mostly urbanland	I/fill for substrate.
		m due to t	ary tirrio or oc	sason, and mostly arbamana	/IIII IOI JUDGILUIG.
VEGETATION Use scientific names of pl	ants.			1	
Tree Objections (Diet eine)	Absolute			Dominance Test Workshe	et
Tree Stratum (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that are OBL, FACW, or FAC:	
2					1 (A)
3				Total Number of Dominant Species Across all Strata:	1 (B)
4				Percent of Dominant Species that	``
5				are OBL, FACW, or FAC:	100.00% (A/B)
	0	= Total Cov	ver		
Sapling/Shrub stratum (Plot size: 4.6 m	_)			Prevalence Index Worksho	eet
1				Total % Cover of:	
2				OBL species 10 x 1	
3				FACW species 95 x 2 FAC species 0 x 3	2 = <u>190</u> 3 = 0
5					4 = 0
<u> </u>	0	= Total Cov	 /er		5 = 0
Herb stratum (Plot size: 1 m sq)	•		Column totals 105 (A	
1 Phragmites australis	95	Y	FACW	Prevalence Index = B/A =	1.90
2 Lythrum salicaria	10	N	OBL		
3				Hydrophytic Vegetation In	
4				Rapid test for hydrophyl	-
5				X Dominance test is >50%	
6				X Prevalence index is ≤3.0	J*
7 8				Morphological adaptation	(1
9				supporting data in Rema	arks or on a
10				Problematic hydrophytic	vegetation*
<u> </u>	105	= Total Cov	ver	(explain)	, vegetation
Woody vine stratum (Plot size: 1 m sq)	•		*Indicators of hydric soil and wet	rland hydrology must be
1	<u> </u>			present, unless disturbed	
2				Hydrophytic	
	0	= Total Cov	er er	vegetation present?	
Remarks: (Include photo numbers here or on a sep	parate sheet)				-
Troniano. (moidad prioto nambero nero or or or or or or	diate ones,				

SOIL Sampling Point: 3

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirm	the absen	ce of indicators.)
Depth	. <u>Matrix</u>			lox Feat					,
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textur	re	Remarks
*Type: C = 0	Concentration, D	= Denlet	tion RM = Reduc	ed Matri	x MS =	Masked	Sand Grains	**Location	on: PL = Pore Lining, M = Matrix
	oil Indicators:	Верісі	ion, raw reduce	ca matri	λ, ΜΟ	Maskea			ematic Hydric Soils:
•			0	d Ola	1 1 1 - 4 - 4 - 4 - 4	. (04)			•
	tisol (A1)				ed Matrix	((54)			dox (A16) (LRR K, L, R)
— His	tic Epipedon (A2)		Sar	dy Redo	x (S5)			•) (LRR K, L)
Bla	ck Histic (A3)		Stri	oped Ma	trix (S6)		5 cm N	Mucky Peat	or Peat (S3) (LRR K, L, R)
Нус	drogen Sulfide (A	4)	_ Loa	my Mucl	ky Miner	al (F1)	Iron-M	langanese	Masses (F12) (LRR K, L, R)
Stra	atified Layers (A5)	Loa	my Gley	ed Matri	x (F2)	Very S	Shallow Dar	k Surface (TF12)
	m Muck (A10)				atrix (F3)			(explain in	
	oleted Below Dark	c Surface			Surface			` '	,
	ck Dark Surface (` ′		ark Surfa	` '			
									phytic vegetation and wetland
	ndy Mucky Minera	` ,		iox Depr	essions	(F8)	hydrolo		present, unless disturbed or
5 CI	m Mucky Peat or	Peat (St	3)					ı	oroblematic
Restrictive	Layer (if observe	ed):							
Type: g	ravel, ballast, fill				•		Hydric s	oil present	?
Depth (inch	es): not determ	nined							
Remarks:									
Area ma	pped as urban	land, a	and located bet	ween g	ravel p	arking l	lot and grave	I road. P	robe refusal within 2-4
inches d	ue to gravel ar	ıd fill.							
HYDROL	ncv .								
_	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Seco	ondary Indic	cators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface S	Soil Cracks (B6)
High Wa	ater Table (A2)			True Aq	uatic Plar	nts (B14)	>	C Drainage	Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	1)	Dry-Seas	on Water Table (C2)
	larks (B1)								Burrows (C8)
	nt Deposits (B2)			(C3)	Rnizosp	neres on	Living Roots	_ ′	n Visible on Aerial Imagery (C9)
					a af Dadi	محمدا اسمحه	(C4)	_	
	posits (B3)			Presenc	e oi Real	uced Iron	(C4)	_	r Stressed Plants (D1)
Algal Ma	at or Crust (B4)			Recent I	ron Redu	iction in T	illed Soils	Geomorp	hic Position (D2)
Iron Dep	oosits (B5)			(C6)				FAC-Neu	tral Test (D5)
Inundati	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ck Surfac	e (C7)			
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)			
X Water-S	stained Leaves (B9)	· · · —			Remarks)		
Field Obse		,		04101 (E	хрішіні	rtorriarito			
Surface wat		Yes	No	Χ	Depth (i	inches).		Wetl	and
Water table		Yes	No	X	Depth (i	,		hydr	ology
Saturation p	•	Yes	X No	-	Depth (i	,	0	1	ent? Y
	pillary fringe)					,		1	
Describe re	corded data (stream	am gauc	je, monitoring we	II, aerial	photos.	previous	inspections), if	available:	
	- (J G	5 40				//		
Remarks:									
Saturation	on within ditch/s	swale o	channel at lower	est poin	t in loca	al lands	cape.		
				•		_	•		

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Lake Calumet CTA Red Line	Extension	City/	County:	Cook	s Samplir	ng Date:	8/13/2015
Applicant/Owner: CTA/MWRD			State:	Illir	nois Samplin	g Point:	4
Investigator(s): J Mengler, V Mosca				ection, Towns	ship, Range:	T37N, R1	4E, S27
Landform (hillslope, terrace, etc.):	swale at too	e of slope	 Lo	ocal relief (co	ncave, convex, none):		swale
Slope (%):			Long:				
Soil Map Unit Name: orthents, clayey und	lulating		<u> </u>		VI Classification:	PF0	1/EMCd
Are climatic/hydrologic conditions of the		this time o	of the vear?		If no, explain in remar		
Are vegetation , soil Y			•	y disturbed?	V		
Are vegetation , soil					Are "normal circu	ımstances"	Y
SUMMARY OF FINDINGS	, 0, 0.				(If needed, expla	in anv answ	
Hydrophytic vegetation present?	Υ				, , ,	,	,
Hydric soil present?			Is the s	ampled area	within a wetland?	Υ	
Wetland hydrology present?	Y			-		/etland 4	
Remarks: (Explain alternative procedure	s horo or in a	congrato r		,			
Remarks. (Explain alternative procedure.	s liele oi iii a	separate i	ероп.)				
Relied primarily upon vegetation a	nd landscap	oe positio	n due to dr	y time of se	eason, and mostly ι	urbanland/	fill for substrate.
VEGETATION Use scientific nar	nee of nlant	te					
VEGETATION OSC SCICILITIC HAI	nes or plant		Daminant	lundia atau	Dominance Tes	t Workshee	ıt
Tree Stratum (Plot size: 9	m)	Absolute % Cover	Dominant Species	Indicator Status			
1	····		5,000.00		Number of Dominant are OBL, FACW,	•	1 (A)
2					Total Number of D		``
3					Species Across al		1 (B)
4					Percent of Dominant	Species that	
5					are OBL, FACW,	•	100.00% (A/B)
		0	= Total Cove	r			
Sapling/Shrub stratum (Plot size:	4.6 m				Prevalence Inde	x Workshe	et
1					Total % Cover of		
2					OBL species	20 x 1	
3			-		FACW species	100 x 2	
4					FAC species FACU species	$\frac{0}{0}$ x 3	
		0	= Total Cove	r	UPL species	0 x 5	
Herb stratum (Plot size:	1 m sq)		10101 0010	•	Column totals	120 (A)	
1 Phragmites australis		100	Υ	FACW	Prevalence Index		1.83
2 Lythrum salicaria		20	N	OBL			
3					Hydrophytic Ve	getation Inc	licators:
4					Rapid test fo	r hydrophyti	c vegetation
5					X Dominance t	est is >50%	
6					X Prevalence in	ndex is ≤3.0	*
7					Morphologica	al adaptatio	ns* (provide
8				·	supporting da		rks or on a
9					separate she	,	
10		120	= Total Cove	<u> </u>	Problematic (explain)	hydrophytic	vegetation*
Woody vine stratum (Plot size:	1 m sq)	120	- TOTAL COVE	ı	— ` ` '		
1	34)						and hydrology must be or problematic
				· ——	Hydrophytic		,
2							
'		0	= Total Cove	r	vegetation		
·		0	= Total Cove	r		Y	
· 	or on a separa		= Total Cove	r	vegetation		<u>-</u>

SOIL Sampling Point: 4

(Inches) Color (m			Redox Fea					
	oist) %	Color (mois	st) %	Type*	Loc**	Textu	ıre	Remarks
		+	_					
			_					
	\longrightarrow	1						
ype: C = Concentrati	ion D = Deple	etion RM = Re	duced Matr	rix MS =	Masked	Sand Grains	**Locati	ion: PL = Pore Lining, M = Ma
Hydric Soil Indicato		7.1011, 1.111	aacca maa	117, 1110	Macroa			ematic Hydric Soils:
•	15.		0 0 0		(0.4)			•
Histisol (A1)			Sandy Gley		x (54)			dox (A16) (LRR K, L, R)
Histic Epipedo	n (A2)		Sandy Red	ox (S5)				7) (LRR K, L)
Black Histic (A	. 3)		Stripped Ma	atrix (S6)		5 cm	Mucky Pea	t or Peat (S3) (LRR K, L, R)
Hydrogen Sulfi	ide (A4)		Loamy Mud	cky Miner	al (F1)	Iron-l	Manganese	Masses (F12) (LRR K, L, R)
Stratified Laye	rs (A5)		Loamy Gley	yed Matri	x (F2)	Very	Shallow Da	rk Surface (TF12)
2 cm Muck (A1			Depleted M				r (explain in	, ,
Depleted Below	,		Redox Darl				i (expidiii iii	remarko)
Thick Dark Sur			Depleted D			*Indica	tors of hydro	ophytic vegetation and wetlar
Sandy Mucky I	Mineral (S1)		Redox Dep	ressions	(F8)	hydro	logy must be	e present, unless disturbed o
5 cm Mucky Pe	eat or Peat (S	3)						problematic
estrictive Layer (if o	bserved):							
pe: gravel, ballas						Hydric	soil presen	t?
·	determined			_		•	•	
emarks:				_				
					iouna si	ewage lagod	ons.	
					iouria se	ewage lagoo	ons.	
					TOUTIU S	ewage lagoo	ons.	
etland Hydrology In					Tourid St			
etland Hydrology In		is required; ch	eck all that		Touriu Si			cators (minimum of two requi
etland Hydrology In	nimum of one	is required; ch					condary Indi	cators (minimum of two requi Soil Cracks (B6)
etland Hydrology In imary Indicators (min Surface Water (A1)	nimum of one	is required; ch	Aquatic	apply)	313)	Sec	condary Indi	Soil Cracks (B6)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A	nimum of one	is required; ch - -	Aquatic True Ac	apply) Fauna (B	313) nts (B14)	Sec	condary Indi Surface S X Drainage	Soil Cracks (B6) Patterns (B10)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3)	nimum of one	is required; ch - - -	Aquatic True Ac	apply) Fauna (B quatic Plar en Sulfide	813) nts (B14) e Odor (C1	<u>Sec</u> - -	condary India Surface S X Drainage Dry-Seas	Soil Cracks (B6) Patterns (B10) son Water Table (C2)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1)	nimum of one	is required; ch - - -	Aquatic True Ac Hydroge Oxidize	apply) Fauna (B quatic Plar en Sulfide	813) nts (B14) e Odor (C1	Sec	Surface S X Drainage Dry-Seas	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) Sediment Deposits (nimum of one	is required; ch - - -	Aquatic True Ac Hydrogo Oxidize (C3)	apply) Fauna (B quatic Plar en Sulfide d Rhizosp	313) nts (B14) Odor (C ² oheres on	Seconds:	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1)	nimum of one	is required; ch - - - -	Aquatic True Ac Hydrogo Oxidize (C3)	apply) Fauna (B quatic Plar en Sulfide	313) nts (B14) Odor (C ² oheres on	Seconds:	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) Sediment Deposits (A2) (B2)	is required; ch - - - - -	Aquatic True Ac Hydroge Oxidize (C3) Presence	apply) Fauna (Buunatic Planen Sulfide d Rhizosp	et13) et odor (Croheres on uced Iron	Seconds:	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) Sediment Deposits (Drift Deposits (B3)	A2) (B2)	is required; ch - - - - -	Aquatic True Ac Hydroge Oxidize (C3) Presence	apply) Fauna (Buunatic Planen Sulfide d Rhizosp	et13) et odor (Croheres on uced Iron	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 or Stressed Plants (D1)
High Water Table (A Saturation (A3) Water Marks (B1) Sediment Deposits (Drift Deposits (B3) Algal Mat or Crust (B	A2) (B2) (B4)	- - - -	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6)	apply) Fauna (Buunatic Planen Sulfide d Rhizosp	et13) et Odor (C ² otheres on uced Iron uction in T	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Shic Position (D2)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) (Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Inundation Visible or	A2) (B2) B4) n Aerial Imager	- - - - - - - -	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu	apply) Fauna (Budatic Planen Sulfide Rhizospuse of Redultron Reduuck Surface	at13) ats (B14) ats (B14) be Odor (C ² beheres on uced Iron uction in T	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Shic Position (D2)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) (Sediment Deposits (B3) Algal Mat or Crust (E Iron Deposits (B5) Inundation Visible or Sparsely Vegetated	A2) (B2) B4) n Aerial Imager Concave Surfa	- - - - - - - -	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Me	apply) Fauna (Equatic Planen Sulfiden de Rhizospece of Reduck Surfacen Well De	ata (D9)	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Shic Position (D2)
etland Hydrology In- imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) (Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Inundation Visible or Sparsely Vegetated Water-Stained Leav	A2) (B2) B4) n Aerial Imager Concave Surfa	- - - - - - - -	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Me	apply) Fauna (Budatic Planen Sulfide Rhizospuse of Redultron Reduuck Surface	ata (D9)	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Shic Position (D2)
etland Hydrology In- imary Indicators (min- Surface Water (A1) High Water Table (A- Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B- Iron Deposits (B5) Inundation Visible or Sparsely Vegetated Water-Stained Leavelld Observations:	(B2) A2) B4) n Aerial Imager Concave Surfaces (B9)	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (E	apply) Fauna (Buustic Planen Sulfide d Rhizospuse of Reduler Iron Reduler Lick Surfactor Well Disesplain in	ata (D9) Remarks	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Utral Test (D5)
etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) Sediment Deposits (Drift Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Inundation Visible or Sparsely Vegetated Water-Stained Leaveld Observations:	(B2) (B2) Aerial Imager Concave Surfaces (B9) Yes	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (F	apply) Fauna (Bequatic Planen Sulfiden de Rhizospece of Reduck Surface or Well De Explain in	ata (D9) Remarks inches):	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Sutral Test (D5)
etland Hydrology Intimary Indicators (minimary Indicators (minimary Indicators (minimary Indicators (minimary Indicators (minimary Indicators (A3) High Water Table (A3) Water Marks (B1) (Sediment Deposits (B3) Algal Mat or Crust (B3) Inundation Visible or Sparsely Vegetated Water-Stained Leavel (B4) eld Observations: Intertact water present?	(B2) (B2) A2i) A2i) A2i) A2i) A2i) A2i) A2ii A2ii	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (B	apply) Fauna (Equatic Planen Sulfiden de Rhizospece of Reduck Surface or Well De Explain in Depth (Depth (D	ata (D9) Remarks inches):	Secondary Second	condary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu Wet hydi	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Sutral Test (D5) Iland Irology
etland Hydrology Intimary Indicators (minimary Indi	(B2) (B2) A2i) A2i) A2i) A2i) A2i) A2i) A2ii A2ii	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (B	apply) Fauna (Equatic Planen Sulfiden de Rhizospece of Reduck Surface or Well De Explain in Depth (Depth (D	ata (D9) Remarks inches):	Secondary Second	condary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu Wet hydi	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Sutral Test (D5)
etland Hydrology In- imary Indicators (min- Surface Water (A1) High Water Table (A- Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B- Iron Deposits (B5) Inundation Visible or Sparsely Vegetated Water-Stained Leaveld Observations: urface water present? ater table present? aturation present? includes capillary fring	nimum of one A2) (B2) B4) n Aerial Imager Concave Surfaces (B9) ? Yes Yes Yes Yes	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (B	apply) Fauna (Butter Planer Sulfider de Rhizospece of Reduck Surfactor Well Discontinue Depth (Depth	ents (B14)	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomory FAC-Neu Wet hydi pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Sutral Test (D5) Iland Irology
etland Hydrology Intimary Indicators (minimary Indi	nimum of one A2) (B2) B4) n Aerial Imager Concave Surfaces (B9) ? Yes Yes Yes Yes	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (B	apply) Fauna (Butter Planer Sulfider de Rhizospece of Reduck Surfactor Well Discontinue Depth (Depth	ents (B14)	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomory FAC-Neu Wet hydi pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Sutral Test (D5) Iland Irology
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etland Hydrology In imary Indicators (min Surface Water (A1) High Water Table (A Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Inundation Visible or Sparsely Vegetated Water-Stained Leaveld Observations: Inface water present? atter table present? cludes capillary fring escribe recorded data	nimum of one A2) (B2) B4) n Aerial Imager Concave Surfaces (B9) ? Yes Yes Yes Yes	ry (B7)	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6) Thin Mu Gauge Other (B	apply) Fauna (Butter Planer Sulfider de Rhizospece of Reduck Surfactor Well Discontinue Depth (Depth	ents (B14)	Secondary Second	Sondary India Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomory FAC-Neu Wet hydi pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9 Or Stressed Plants (D1) Sohic Position (D2) Sutral Test (D5)

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling Date: 8/13/2015
Applicant/Owner: CTA/MWRD		State:	Illir	ois Sampling Point: 5
Investigator(s): J Mengler, V Mosca		Se	ection, Town	ship, Range: T37N, R14E, S26 & 27
Landform (hillslope, terrace, etc.):	ale	Lo	cal relief (co	ncave, convex, none): swale
Slope (%): Lat: 41.663596	3	Long:	-87.598	043 Datum:
Soil Map Unit Name: orthents, loamy, nearly level			NV	VI Classification: none
Are climatic/hydrologic conditions of the site typical for	r this time o	of the year?	Υ	If no, explain in remarks)
Are vegetation, soilY, or hydro	logy	significantly	disturbed?	Y Are "normal circumstances"
Are vegetation, soil, or hydro	logy	naturally pro	oblematic?	N present? Y
SUMMARY OF FINDINGS				(If needed, explain any answers in remarks.)
Hydrophytic vegetation present? Y				
Hydric soil present?		Is the s	ampled area	within a wetland? Y
Wetland hydrology present? Y		If yes	, optional we	tland site ID: Wetland 5
Remarks: (Explain alternative procedures here or in a	separate r	eport.)		
Relied primarily upon vegetation and landsca	no nositio	n due te dr	v time of so	pason, and mostly urbaniand/fill for substrate
Relied primarily upon vegetation and landsca	pe positio	in due to di	y tillie or se	eason, and mostly urbaniand/illi for substrate.
VEGETATION Use scientific names of plan	its.			
	Absolute		Indicator	Dominance Test Worksheet
Tree Stratum (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that
1 2		· 		are OBL, FACW, or FAC: 1 (A)
3		· 		Total Number of Dominant Species Across all Strata: 1 (B)
4	-			Percent of Dominant Species that
5		· 		are OBL, FACW, or FAC: 100.00% (A/B)
	0	= Total Cover		
Sapling/Shrub stratum (Plot size: 4.6 m)			Prevalence Index Worksheet
1				Total % Cover of:
2				OBL species 0 x 1 = 0
3		· 		FACW species 100 x 2 = 200 FAC species 0 x 3 = 0
5	-			FAC species 0 x 3 = 0 FACU species 0 x 4 = 0
	0	= Total Cover	. —	UPL species $0 \times 5 = 0$
Herb stratum (Plot size: 1 m sq)	i		Column totals 100 (A) 200 (B)
1 Phragmites australis	100	Y	FACW	Prevalence Index = B/A = 2.00
2				
3				Hydrophytic Vegetation Indicators:
4				Rapid test for hydrophytic vegetation
56		· 		X Dominance test is >50% X Prevalence index is ≤3.0*
7		· 		Frevalence index is 25.0
8	-			Morphological adaptations* (provide supporting data in Remarks or on a
9				separate sheet)
10				Problematic hydrophytic vegetation*
	100	= Total Cover		(explain)
Woody vine stratum (Plot size: 1 m sq)			*Indicators of hydric soil and wetland hydrology must be
1				present, unless disturbed or problematic Hydrophytic
2	0	= Total Cover	. —	vegetation
	U	10141 00761		present? Y
Remarks: (Include photo numbers here or on a separ	ate sheet)			

SOIL Sampling Point: 5

	<u>atrix</u>		dox Feat	<u>tures</u>				
(Inches) Color (moi	ist) %	Color (moist)	%	Type*	Loc**	Text	ure	Remarks
/pe: C = Concentration	n D = Donloi	tion DM = Dodu	and Matr	riv MS –	Mackad	Sand Grains	**Locat	ion: PL = Pore Lining, M = M
		tion, Kivi – Redu	Jeu Maii	ix, ivio –	Maskeu			
lydric Soil Indicators	S:	_						ematic Hydric Soils:
Histisol (A1)				ed Matrix	(S4)			dox (A16) (LRR K, L, R)
Histic Epipedon	(A2)	Sa	ndy Red	ox (S5)		Dark	Surface (S7	7) (LRR K, L)
Black Histic (A3))	Str	pped Ma	atrix (S6)		5 cm	Mucky Pea	t or Peat (S3) (LRR K, L, R)
Hydrogen Sulfid	e (A4)	Loa	amy Muc	ky Miner	al (F1)	Iron-	Manganese	Masses (F12) (LRR K, L, R
Stratified Layers				yed Matri				rk Surface (TF12)
2 cm Muck (A10					. ,			, ,
	•			latrix (F3)			r (explain in	remarks)
Depleted Below				k Surface				
Thick Dark Surfa	` ,	De	pleted D	ark Surfa	ice (F7)	*Indica	tors of hydro	ophytic vegetation and wetla
Sandy Mucky M	ineral (S1)	Re	dox Dep	ressions	(F8)			e present, unless disturbed of
5 cm Mucky Pea	at or Peat (S	3)				•	••	problematic
strictive Layer (if ob	sarvad):	•						
be: gravel, ballast						Hydric	soil presen	t?
	etermined			_		Hydric	Jon presen	
par (morico)	zierriiiriea			_				
Area mapped as ur	ban land, a	and located be	tween	roads				
	ban land, a	and located be	tween	roads				
YDROLOGY		and located be	tween	roads				
/DROLOGY etland Hydrology Ind	icators:							
/DROLOGY tland Hydrology Ind	icators:					<u>Se</u>	condary Indi	cators (minimum of two requ
DROLOGY	icators:		all that		13)	Sec		cators (minimum of two requ Soil Cracks (B6)
'DROLOGY tland Hydrology Indi mary Indicators (minir	icators: num of one i		all that	apply)	•	<u>Ser</u> -	Surface	
TDROLOGY etland Hydrology Indi mary Indicators (minir Surface Water (A1) High Water Table (A2)	icators: num of one i		all that Aquatic	<u>apply)</u> Fauna (B quatic Plar	nts (B14)	_	Surface S X Drainage	Soil Cracks (B6) Patterns (B10)
TDROLOGY Itland Hydrology Indimary Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3)	icators: num of one i		all that Aquatic True Ac	apply) Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C	- - 1)	Surface S X Drainage Dry-Seas	Soil Cracks (B6) Patterns (B10) son Water Table (C2)
TDROLOGY Itland Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	icators: num of one i		Aquatic True Ac Hydroge	apply) Fauna (B quatic Plar en Sulfide	nts (B14) Odor (C	_	Surface S X Drainage Dry-Seas Crayfish	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8)
TDROLOGY Itland Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B	icators: num of one i		Aquatic True Ac Hydroge Oxidizee (C3)	apply) Fauna (B quatic Plar en Sulfide d Rhizosp	nts (B14) Odor (Coheres on	1) Living Roots _ -	Surface S X Drainage Dry-Seas Crayfish Saturatio	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C
TDROLOGY Itland Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	icators: num of one i		Aquatic True Ac Hydroge Oxidizee (C3)	apply) Fauna (B quatic Plar en Sulfide	nts (B14) Odor (Coheres on	1) Living Roots _ -	Surface S X Drainage Dry-Seas Crayfish Saturatio	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8)
Partiand Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B	icators: num of one i		Aquatic True Ac Hydroge Oxidize (C3) Presence	apply) Fauna (B quatic Plar en Sulfide d Rhizosp	odor (Coheres on uced Iron	1) Living Roots _ -	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C
tortal Deposits (B3)	icators: num of one i		Aquatic True Ac Hydroge Oxidize (C3) Presence	apply) Fauna (B quatic Plar en Sulfide d Rhizosp	odor (Coheres on uced Iron	1)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (Cor Stressed Plants (D1)
Properties of the properties o	icators: num of one is 2)	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presence Recent (C6)	apply) Fauna (B quatic Plar en Sulfide d Rhizosp	odor (Coheres on uced Iron in T	1)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (Coor Stressed Plants (D1) Othic Position (D2)
POROLOGY Petland Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on A	icators: num of one is 2) Aerial Imager	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	odor (Conheres on uced Iron uction in Total (C7)	1)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted Geomorp	e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C5) or Stressed Plants (D1) ohic Position (D2)
POROLOGY Petland Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on A Sparsely Vegetated C	icators: num of one is 2) 2) Aerial Imager oncave Surfa	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu Gauge	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redi Iron Redu uck Surfac	odor (Coheres on uced Iron action in Total (C7) ata (D9)	Living Roots _ (C4) _ Tilled Soils _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (Capter Stressed Plants (D1) Othic Position (D2)
PDROLOGY etland Hydrology Indi imary Indicators (minin Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Inundation Visible on A Sparsely Vegetated C Water-Stained Leaves	icators: num of one is 2) 2) Aerial Imager oncave Surfa	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu Gauge	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	odor (Coheres on uced Iron action in Total (C7) ata (D9)	Living Roots _ (C4) _ Tilled Soils _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (Capter Stressed Plants (D1) Othic Position (D2)
POROLOGY Petland Hydrology Individed imary Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on A Sparsely Vegetated Company Water-Stained Leaves and Constructions:	icators: num of one is 2) Aerial Imager oncave Surfa s (B9)	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu Gauge (apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redi Iron Redu uck Surfac or Well Da Explain in	onts (B14) Odor (C wheres on uced Iron uction in T ee (C7) ata (D9) Remarks	Living Roots _ (C4) _ Tilled Soils _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Citor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
PDROLOGY etland Hydrology Indistract Mater (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on A Sparsely Vegetated C Water-Stained Leaves eld Observations: Inface water present?	icators: num of one is 2) Aerial Imager oncave Surfa s (B9) Yes	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu Gauge 6 Other (E	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	onts (B14) Odor (Conheres on puced Iron puction in Total (D9) Remarks Inches):	Living Roots _ (C4) _ Tilled Soils _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Net	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Citor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
PDROLOGY etland Hydrology Indi imary Indicators (minin Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Inundation Visible on Sparsely Vegetated C Water-Stained Leaves eld Observations: urface water present? ater table present?	icators: num of one is 2) Aerial Imager oncave Surfa s (B9) Yes Yes	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu Gauge (apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (Depth (onts (B14) Odor (Conheres on succed Iron succession Iron Iron Iron Iron Iron Iron Iron Ir	Living Roots _ (C4) _ Tilled Soils _)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu Wet hyd	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Citor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
PDROLOGY Petland Hydrology Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on A Sparsely Vegetated C Water-Stained Leaves and Observations: Inface water present? Intertable present?	icators: num of one is 2) Aerial Imager oncave Surfa s (B9) Yes Yes Yes	s required; check	Aquatic True Ac Hydroge Oxidize (C3) Presenc Recent (C6) Thin Mu Gauge 6 Other (E	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in	onts (B14) Odor (Conheres on succed Iron succession Iron Iron Iron Iron Iron Iron Iron Ir	Living Roots _ (C4) _ Tilled Soils _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp FAC-Neu Wet hyd	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Cor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
YDROLOGY etland Hydrology Indi imary Indicators (minir Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Inundation Visible on a Sparsely Vegetated C Water-Stained Leaves eld Observations: urface water present? aturation present? aturation present?	icators: num of one is 2) Aerial Imager oncave Surfa is (B9) Yes Yes Yes Yes	y (B7) ce (B8) No No No	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mt Gauge (X X	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (Depth (onts (B14) Odor (Conheres on puced Iron puce	Living Roots _ (C4) _ Tilled Soils _)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomory FAC-Neu Wet hyd pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Cor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
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PDROLOGY etland Hydrology Indi imary Indicators (minir Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Inundation Visible on A Sparsely Vegetated C Water-Stained Leaves eld Observations: urface water present? ater table present? aturation present?	icators: num of one is 2) Aerial Imager oncave Surfa is (B9) Yes Yes Yes Yes	y (B7) ce (B8) No No No	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mt Gauge (X X	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (Depth (onts (B14) Odor (Conheres on puced Iron puce	Living Roots _ (C4) _ Tilled Soils _)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomory FAC-Neu Wet hyd pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
ritand Hydrology Indimary Indicators (mining Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on a Sparsely Vegetated Compared Water-Stained Leaves and Observations: If ace water present? Iteration present.	icators: num of one is 2) Aerial Imager oncave Surfa is (B9) Yes Yes Yes Yes	y (B7) ce (B8) No No No	Aquatic True Ac Hydroge Oxidize (C3) Present (C6) Thin Mt Gauge (X X	apply) Fauna (B quatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Da Explain in Depth (Depth (onts (B14) Odor (Conheres on puced Iron puce	Living Roots _ (C4) _ Tilled Soils _)	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomory FAC-Neu Wet hyd pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Cor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling Date: 8/13/2	2015	
Applicant/Owner: CTA/MWRD		State:		nois Sampling Point: 6		
Investigator(s): J Mengler, V Mosca		Se	ction, Towns	ship, Range: T37N, R14E, S27		
Landform (hillslope, terrace, etc.):	ale	Loc	cal relief (co	ncave, convex, none): swale		
Slope (%): Lat: 41.669077	7	Long:	-87.601	Datum:		
Soil Map Unit Name: orthents, loamy, nearly level			NWI Classification: none			
Are climatic/hydrologic conditions of the site typical fo	or this time c	of the year?	<u>Y</u> ((If no, explain in remarks)		
Are vegetation, soilY, or hydrol	logy	significantly	disturbed?	Y Are "normal circumstances"		
Are vegetation, soil, or hydrol	logy	naturally pro	blematic?	N present?	Υ	
SUMMARY OF FINDINGS				(If needed, explain any answers in rem	narks.)	
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the sa	mpled area	within a wetland?		
Wetland hydrology present? Y		If yes,	optional we	tland site ID: Wetland 6		
Remarks: (Explain alternative procedures here or in a	separate r	eport.)				
			· there are a		- Is almaka	
Relied primarily upon vegetation and landsca	pe positio	n due to ary	time or se	eason, and mostly urbaniand/fill for su	ubstrate.	
VEGETATION Use scientific names of plan	nts.					
	Absolute	Dominant	Indicator	Dominance Test Worksheet		
<u>Tree Stratum</u> (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that		
1				are OBL, FACW, or FAC: 1	(A)	
2				Total Number of Dominant		
3				Species Across all Strata: 1	(B)	
4				Percent of Dominant Species that	~ (A/D)	
5	0	- Total Cover		are OBL, FACW, or FAC: 100.009	<u>%</u> (A/B)	
Sapling/Shrub stratum (Plot size: 4.6 m	\	= Total Cover		Prevalence Index Worksheet		
1)			Total % Cover of:		
'				OBL species 20 x 1 = 20	า	
3				FACW species 84 x 2 = 168		
4				FAC species 0 x 3 = 0		
5				FACU species 0 x 4 = 0		
	0	= Total Cover		UPL species 0 x 5 = 0	_	
Herb stratum (Plot size: 1 m sq)			Column totals 104 (A) 188	8 (B)	
1 Phragmites australis	80	Y	FACW	Prevalence Index = B/A = 1.81		
2 Lythrum salicaria	10	N	OBL			
3 Typha angustifolia	10	N	OBL	Hydrophytic Vegetation Indicators:	•	
4 Helianthus grosseserratus	2 2	N	FACW	Rapid test for hydrophytic vegetati X Dominance test is >50%	ion	
5 Verbena hastata		N	FACW	X Dominance test is >50% X Prevalence index is ≤3.0*		
7				Trevalence index is 20.0		
8				Morphological adaptations* (provious supporting data in Remarks or on		
9				supporting data in Remarks or on separate sheet)	а	
10				Problematic hydrophytic vegetation	ın*	
	104	= Total Cover		(explain)		
Woody vine stratum (Plot size: 1 m sq)			*Indicators of hydric soil and wetland hydrolog	nav must be	
1				present, unless disturbed or problema		
2				Hydrophytic		
	0	= Total Cover		vegetation present?		
Demonstrate (Include whate numbers here or on a congr	to choot)			present:		
Remarks: (Include photo numbers here or on a separ	ate sneet,					

	<u>x</u>		edox Feat					
(Inches) Color (moist)	%	Color (moist	%	Type*	Loc**	Text	ure	Remarks
una: C = Canaantration [) - Donlot	l tion DM = Dod	used Meta	iv MC -	Maakad	Cand Crains	**! coot	ion: DI — Doro Lining M — M
ype: C = Concentration, [J = Deplet	lion, Rivi = Reu	ucea Mati	IX, IVIS =	Masked			ion: PL = Pore Lining, M = M
Hydric Soil Indicators:								ematic Hydric Soils:
Histisol (A1)		s	andy Gley	ed Matrix	x (S4)	Coas	st Prairie Re	dox (A16) (LRR K, L, R)
Histic Epipedon (A	2)	S	andy Red	ox (S5)		Dark	Surface (S7	7) (LRR K, L)
Black Histic (A3)		s	tripped Ma	atrix (S6)		5 cm	Mucky Pea	t or Peat (S3) (LRR K, L, R)
Hydrogen Sulfide (Δ4)		oamy Muc	, ,			-	Masses (F12) (LRR K, L, R)
Stratified Layers (A			camy Gley					rk Surface (TF12)
	(3)				, ,			, ,
2 cm Muck (A10)			epleted M	•	•	Othe	er (explain in	remarks)
Depleted Below Da	ark Surface	e (A11)R	edox Dark	Surface	e (F6)			
Thick Dark Surface	e (A12)	D	epleted D	ark Surfa	ace (F7)	*Indics	ators of hydro	ophytic vegetation and wetlar
Sandy Mucky Mine	eral (S1)	R	edox Dep	ressions	(F8)			e present, unless disturbed o
5 cm Mucky Peat of		3)				yu.u		problematic
 ·		-,			T			F
estrictive Layer (if obser								
pe: gravel, ballast, fil				_		Hydric	soil presen	t?
epth (inches): not deter	rmined			_				
Araa maannad aa urba	م امصما م	ط لمعامموا لممد	otoon .		م المالم	. d		
Area mapped as urba	ın land, a	and located b	etween i	road an	d railroa	ıd.		
	ın land, a	and located b	etween i	road an	d railroa	ad.		
YDROLOGY		and located b	etween ı	road an	d railroa	ad.		
YDROLOGY etland Hydrology Indica	itors:				d railroa		condary Indi	cators (minimum of two requi
YDROLOGY etland Hydrology Indica imary Indicators (minimul	itors:		ck all that	apply)			•	cators (minimum of two requi
YDROLOGY etland Hydrology Indica mary Indicators (minimus Surface Water (A1)	itors:		ck all that	apply) Fauna (B	313)		Surface S	Soil Cracks (B6)
YDROLOGY etland Hydrology Indica mary Indicators (minimus Surface Water (A1) High Water Table (A2)	itors:		ck all that Aquatic	<u>apply)</u> Fauna (B quatic Plai	313) nts (B14)	<u>Sec</u>	Surface S X Drainage	Soil Cracks (B6) Patterns (B10)
YDROLOGY etland Hydrology Indica mary Indicators (minimus Surface Water (A1)	itors:		ck all that Aquatic	<u>apply)</u> Fauna (B quatic Plai	313)	<u>Sec</u>	Surface S X Drainage	Soil Cracks (B6)
POROLOGY Etland Hydrology Indica mary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3)	itors:		ck all that Aquatic True Aq Hydroge	apply) Fauna (B quatic Plar en Sulfide	313) nts (B14) • Odor (C	<u>Sec</u>	Surface S X Drainage Dry-Seas	Soil Cracks (B6) Patterns (B10)
Properties of the state of the	itors:		ck all that Aquatic True Aq Hydroge	apply) Fauna (B quatic Plar en Sulfide	313) nts (B14) • Odor (C	<u>Se</u> -	Surface S X Drainage Dry-Seas Crayfish	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8)
etland Hydrology Indicatimary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	itors:		ck all that Aquatic True Aq Hydroge Oxidized (C3)	apply) Fauna (B quatic Plai en Sulfide d Rhizosp	313) nts (B14) Odor (C	Sed - - I) _ Living Roots _	Surface S X Drainage Dry-Seas Crayfish Saturatio	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9
YDROLOGY etland Hydrology Indicationary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	itors:		Aquatic True Aq Hydroge Oxidizee (C3) Presence	apply) Fauna (B quatic Plai en Sulfide d Rhizosp	et13) hts (B14) e Odor (C' heres on	Ser - - !) - Living Roots _ - (C4) _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (CS) On Stressed Plants (D1)
POROLOGY Setland Hydrology Indication of the imary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	itors:		Aquatic True Aq Hydroge Oxidizer (C3) Presence	apply) Fauna (B quatic Plai en Sulfide d Rhizosp	et13) hts (B14) e Odor (C' heres on	Sed - - I) _ Living Roots _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (C9) Or Stressed Plants (D1) Othic Position (D2)
YDROLOGY etland Hydrology Indica imary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	itors: m of one is	s required; che 	Aquatic True Aq Hydroge Oxidizee (C3) Presence Recent (C6)	apply) Fauna (B juatic Plai en Sulfide d Rhizosp ce of Red Iron Redu	et13) et Odor (Croheres on uced Iron uction in T	Ser - - !) - Living Roots _ - (C4) _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (CS On Stressed Plants (D1)
YDROLOGY etland Hydrology Indica imary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer	itors: m of one is	s required; che	Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu	apply) Fauna (B quatic Plan en Sulfide d Rhizosp ce of Redu lron Redu uck Surfac	at13) ants (B14) ants (B14) be Odor (C ² beheres on uced Iron uction in T	Ser - - !) - Living Roots _ - (C4) _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (C9) Or Stressed Plants (D1) Othic Position (D2)
YDROLOGY etland Hydrology Indica imary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	itors: m of one is	s required; che	Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu	apply) Fauna (B juatic Plai en Sulfide d Rhizosp ce of Red Iron Redu	at13) ants (B14) ants (B14) be Odor (C ² beheres on uced Iron uction in T	Ser - - !) - Living Roots _ - (C4) _	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (C9) Or Stressed Plants (D1) Othic Position (D2)
YDROLOGY etland Hydrology Indica imary Indicators (minimus Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer	ntors: m of one is rial Imagery cave Surfac	s required; che	Ck all that Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge (6)	apply) Fauna (Biguatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Di	at13) ants (B14) ants (B14) be Odor (C ² beheres on uced Iron uction in T	Second Se	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (C9) Or Stressed Plants (D1) Othic Position (D2)
YDROLOGY Yetland Hydrology Indicatimary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Concumulation Water-Stained Leaves (E	ntors: m of one is rial Imagery cave Surfac	s required; che	Ck all that Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge (6)	apply) Fauna (Biguatic Plan en Sulfide d Rhizosp ce of Redu Iron Redu uck Surfac or Well Di	ata (D9)	Second Se	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted G Geomorp	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (C9) Or Stressed Plants (D1) Othic Position (D2)
YDROLOGY etland Hydrology Indicatimary Indicators (minimus) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Cond Water-Stained Leaves (Eeld Observations:	ntors: m of one is rial Imagery cave Surfac	s required; che	Ck all that Aquatic True Aq Hydroge Oxidized (C3) Presend Recent (C6) Thin Mu Gauge (6)	apply) Fauna (B quatic Plai en Sulfide d Rhizosp ce of Redi lron Redu uck Surfac or Well Di explain in	ata (D9)	Second Se	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomorp FAC-Neu	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) On Visible on Aerial Imagery (C9) Or Stressed Plants (D1) Othic Position (D2)
YDROLOGY etland Hydrology Indica imary Indicators (minimur Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Cone Water-Stained Leaves (E eld Observations: urface water present? ater table present?	ntors: m of one is rial Imagery cave Surface 39) Yes Yes	s required; che	Ck all that Aquatic True Aq Hydroge Oxidizer (C3) Present (C6) Thin Mu Gauge of Other (E	apply) Fauna (Biguatic Planen Sulfider d Rhizospice of Reduck Surface or Well Diezplain in Depth (Depth (ata (D9) Remarks inches):	Second Se	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomory FAC-Neu	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)
PDROLOGY etland Hydrology Indica imary Indicators (minimur Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Cone Water-Stained Leaves (Beld Observations: urface water present? aturation present?	rial Imagery cave Surface 39)	s required; che	Ck all that Aquatic True Aq Hydroge Oxidized (C3) Presence Recent (C6) Thin Mu Gauge C	apply) Fauna (Biguatic Planen Sulfider d Rhizospice of Reduck Surface or Well Diezplain in Depth (Depth (ata (D9) Remarks inches):	Second Se	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomory FAC-Neu Wet hydi	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)
PDROLOGY etland Hydrology Indicatimary Indicators (minimumous Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Conductor Water-Stained Leaves (Explicit Constants) Inface water present? Inface water present? Intertable present? Intertable present?	ntors: m of one is rial Imagery cave Surface 39) Yes Yes	s required; che	Ck all that Aquatic True Aq Hydroge Oxidized (C3) Presence Recent (C6) Thin Mu Gauge C	apply) Fauna (Biguatic Planen Sulfider d Rhizospice of Reduck Surface or Well Diezplain in Depth (Depth (ata (D9) Remarks inches):	Ser Living Roots _ (C4) _ iilled Soils _ -	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomory FAC-Neu Wet hydi	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)
High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Cond	rial Imagery cave Surface 39) Yes Yes Yes	y (B7) ce (B8) No No	Ck all that Aquatic True Aq Hydroge Oxidizer (C3) Present (C6) Thin Mu Gauge of Other (E	apply) Fauna (B quatic Plai en Sulfide d Rhizosp ce of Red lron Redu uck Surfac or Well Di explain in Depth (Depth (ents (B14)	Sei	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomorp FAC-Neu Wet hydi pres	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)
YDROLOGY Yetland Hydrology Indicatimary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Condewater-Stained Leaves (Beld Observations: Uniface water present? Vater table present?	rial Imagery cave Surface 39) Yes Yes Yes	y (B7) ce (B8) No No	Ck all that Aquatic True Aq Hydroge Oxidizer (C3) Present (C6) Thin Mu Gauge of Other (E	apply) Fauna (B quatic Plai en Sulfide d Rhizosp ce of Red lron Redu uck Surfac or Well Di explain in Depth (Depth (ents (B14)	Sei	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomorp FAC-Neu Wet hydi pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Coor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)
PDROLOGY etland Hydrology Indicatimary Indicators (minimus) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aer Sparsely Vegetated Cond Water-Stained Leaves (Eeld Observations: urface water present? ater table present? acturation present?	rial Imagery cave Surface 39) Yes Yes Yes	y (B7) ce (B8) No No	Ck all that Aquatic True Aq Hydroge Oxidizer (C3) Present (C6) Thin Mu Gauge of Other (E	apply) Fauna (B quatic Plai en Sulfide d Rhizosp ce of Red lron Redu uck Surfac or Well Di explain in Depth (Depth (ents (B14)	Sei	Surface S X Drainage Dry-Seas Crayfish Saturatio Stunted of Geomorp FAC-Neu Wet hydi pres	Soil Cracks (B6) Patterns (B10) Son Water Table (C2) Burrows (C8) Or Visible on Aerial Imagery (Coor Stressed Plants (D1) Ohic Position (D2) Utral Test (D5)

Project/Site Lake Calumet CTA Red Line Extension	n City/	/County:	Cook	Sampling Date:	8/13/2015
Applicant/Owner: CTA/MWRD		State:	Illin	nois Sampling Point:	7
Investigator(s): J Mengler, V Mosca		Sec	ction, Towns	ship, Range: T37N, R	14E, S27
Landform (hillslope, terrace, etc.):	swale	Loc	cal relief (co	ncave, convex, none):	swale
Slope (%): Lat: 41.6690	J77	Long:	-87.601	542 Datum:	
Soil Map Unit Name: orthents, loamy, nearly level			NWI Classification: none		
Are climatic/hydrologic conditions of the site typical	for this time of	of the year?	<u>Y</u> ((If no, explain in remarks)	
Are vegetation, soilY, or hyd	drology	significantly	disturbed?	Y Are "normal circumstances"	ı
Are vegetation, soil, or hyd	Irology	naturally prol	blematic?	N present?	Y
SUMMARY OF FINDINGS		, 		(If needed, explain any answ	wers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present?	I	Is the sa	mpled area	a within a wetland? N	_
Wetland hydrology present?	ļ	If yes,	optional we	tland site ID:	
Remarks: (Explain alternative procedures here or in	n a separate r	report.)			<u></u>
			time of se		Util for cubotrato
Relied primarily upon vegetation and lands	cape position	n due to ury	time or se	eason, and mostly urbaniand	/fill for Substrate.
VEGETATION Use scientific names of pl	ants.				
	Absolute		Indicator	Dominance Test Workshe	et
<u>Tree Stratum</u> (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that	
1				are OBL, FACW, or FAC:	1 (A)
2				Total Number of Dominant	2 (D)
3				Species Across all Strata:	(B)
5			-	Percent of Dominant Species that	
5		= Total Cover		are OBL, FACW, or FAC:	50.00% (A/B)
Sapling/Shrub stratum (Plot size: 4.6 m)	- Total 00.5.		Prevalence Index Worksho	
1 Rhamnus cathartica	/ 	Υ	FAC	Total % Cover of:	
2				OBL species 0 x 1	1 =0
3				· —	2 = 0
4	<u> </u>	· 		FAC species 100 x 3	3 = 300
5		·		· —	4 = 0
	100	= Total Cover		· —	5 = 0
Herb stratum (Plot size: 1 m sq	_)	.,		Column totals 100 (A	
1 2	80	<u>Y</u>		Prevalence Index = B/A =	3.00
3	10	N		Hydrophytic Vegetation In	disators
3	2	N		Rapid test for hydrophyt	
5		N N		Dominance test is >50%	•
6				X Prevalence index is ≤3.0	
7				<u> </u>	
8		,		Morphological adaptation supporting data in Remarks	(1
9				separate sheet)	A
10				Problematic hydrophytic	vegetation*
[104	= Total Cover		(explain)	-
Woody vine stratum (Plot size: 1 m sq	_)			*Indicators of hydric soil and wet	
1				present, unless disturbed	d or problematic
2		T 1-1 Onum		Hydrophytic vegetation	
	0	= Total Cover		present? Y	
Remarks: (Include photo numbers here or on a sep	parate sheet)				
	,				

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirm	the abser	nce of indicators.)
Depth	Matrix			dox Feat					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks
*Type: C = (Concentration, D	= Denle	ion RM = Reduc	ed Matri	v MS =	Masked	Sand Grains	**Locat	ion: PL = Pore Lining, M = Matrix
	oil Indicators:	– Беріс	iion, raw – raeduc	eu main	X, IVIO –	Maskeu			ematic Hydric Soils:
_			Sor	dy Clay	ad Matrix	(84)			•
	tisol (A1)			ndy Gley		((34)			dox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo				•	7) (LRR K, L)
	ck Histic (A3)			pped Ma	, ,			-	t or Peat (S3) (LRR K, L, R)
	Irogen Sulfide (A			my Muc	•			-	Masses (F12) (LRR K, L, R)
	atified Layers (A5)		my Gley					rk Surface (TF12)
	m Muck (A10)			oleted Ma			Other	(explain in	remarks)
	oleted Below Dark		· · · · · · · · · · · · · · · · · · ·	dox Dark					
Thic	ck Dark Surface (A12)	Dep	oleted Da	ark Surfa	ice (F7)	*Indicate	ors of hydr	ophytic vegetation and wetland
Sar	ndy Mucky Minera	al (S1)	Red	dox Depr	essions	(F8)			e present, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	3)						problematic
Restrictive	Layer (if observe	ed):							
Type: gi	ravel, ballast, fill				_		Hydric s	oil presen	t?
Depth (inch	es): not determ	nined			•				
	pped as urban	land, a	and 2-3 feet hiç	gher in	elevatic	n than	adjacent wet	land swa	les.
HYDROL									
-	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Seco	ondary Indi	cators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface	Soil Cracks (B6)
High Wa	ater Table (A2)				uatic Plar		_		Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	1)	Dry-Seas	son Water Table (C2)
Water M	larks (B1)			Oxidized	l Rhizosp	heres on	Living Roots	Crayfish	Burrows (C8)
Sedimer	nt Deposits (B2)			(C3)	-			Saturation	on Visible on Aerial Imagery (C9)
Drift Dep	oosits (B3)			Presenc	e of Redu	uced Iron	(C4)	Stunted	or Stressed Plants (D1)
Algal Ma	at or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils	Geomor	ohic Position (D2)
Iron Dep	osits (B5)			(C6)				FAC-Net	utral Test (D5)
Inundation	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ck Surfac	e (C7)	_		
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)			
Water-S	tained Leaves (B9)	· · · <u></u>			Remarks	.)		
Field Obser	•				•		•		
Surface wat		Yes	No	Χ	Depth (i	inches):		Wet	land
Water table	•	Yes	No	X	Depth (,		-	rology
Saturation p		Yes	No	Х	Depth (inches):	0	pre	sent? N
•	pillary fringe)			II	نا ما ما		Imama - 41 - 12 M	i augusti si i	
Describe red	corded data (strea	am gaug	je, monitoring we	ıı, aerıal	pnotos,	previous	inspections), if	available:	
Remarks:									
-									
2-3 feet	higher in eleva	tion tha	an adjacent we	tland sv	wales w	ith no e	evidence of h	ydrology	

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling Date: 8/13/2015			
Applicant/Owner: CTA/MWRD		State:		nois Sampling Point: 8			
Investigator(s): J Mengler, V Mosca		Sec	ction, Towns	ship, Range: T37N, R14E, S22 & 27			
Landform (hillslope, terrace, etc.):	ale	Loc	al relief (co	ncave, convex, none): swale			
Slope (%): Lat: 41.672876	;	Long:	-87.6070	044 Datum:			
Soil Map Unit Name: orthents, loamy, nearly level		<u> </u>	NWI Classification: none				
Are climatic/hydrologic conditions of the site typical for	r this time o	of the year?		(If no, explain in remarks)			
		significantly of		Y Are "normal circumstances"			
		naturally prob		N present? Y			
SUMMARY OF FINDINGS	·			(If needed, explain any answers in remarks.)			
Hydrophytic vegetation present? Y							
Hydric soil present?		Is the sa	mpled area	within a wetland?			
Wetland hydrology present? Y		If yes,	optional wef	tland site ID: Wetland 7			
Remarks: (Explain alternative procedures here or in a	separate r	eport.)					
Relied primarily upon vegetation and landsca	pe positio	n due to dry	time of se	eason, and mostly urbanland/fill for substrate.			
VEGETATION Use scientific names of plan	ts.						
	Absolute	Dominant	Indicator	Dominance Test Worksheet			
<u>Tree Stratum</u> (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that			
1				are OBL, FACW, or FAC: 1 (A)			
2				Total Number of Dominant			
3				Species Across all Strata: 1 (B)			
4				Percent of Dominant Species that			
5	0	T-tol Cover		are OBL, FACW, or FAC: 100.00% (A/B)			
Sapling/Shrub stratum (Plot size: 4.6 m)	\	= Total Cover		Prevalence Index Worksheet			
1	'			Total % Cover of:			
2				OBL species 10 x 1 = 10			
3				FACW species 94 x 2 = 188			
4				FAC species 0 x 3 = 0			
5				FACU species 0 x 4 = 0			
	0	= Total Cover		UPL species 0 x 5 = 0			
Herb stratum (Plot size: 1 m sq))			Column totals 104 (A) 198 (B)			
1 Phragmites australis	80	<u> </u>	FACW	Prevalence Index = B/A = 1.90			
2 Lythrum salicaria	10	<u>N</u>	OBL				
3 Solidago graminifolia	10	N	FACW	Hydrophytic Vegetation Indicators:			
4 Helianthus grosseserratus	2	N	FACW	Rapid test for hydrophytic vegetation			
5 Verbena hastata 6	2	N	FACW	X Dominance test is >50% X Prevalence index is ≤3.0*			
7		. ——		Trevalence index is 20.0			
8				Morphological adaptations* (provide			
9		-		supporting data in Remarks or on a separate sheet)			
10				Problematic hydrophytic vegetation*			
	104	= Total Cover		(explain)			
Woody vine stratum (Plot size: 1 m sq))			*Indicators of hydric soil and wetland hydrology must be			
1		- 		present, unless disturbed or problematic			
2				Hydrophytic			
	0	= Total Cover	_	vegetation present?			
Democks (Include whote numbers here or on a congr	=ta about)			hieseiit: 1			
Remarks: (Include photo numbers here or on a separa	ate sneer)						

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirm the a	absence of indicators.)
Depth	Matrix			dox Feat				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
*Type: C = 0	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x, MS =	Masked	Sand Grains. **	Location: PL = Pore Lining, M = Matrix
Hydric So	il Indicators:						Indicators for I	Problematic Hydric Soils:
Hist	isol (A1)		Sar	dy Gleye	ed Matrix	(S4)	Coast Prair	ie Redox (A16) (LRR K, L, R)
— Hist	ic Epipedon (A2)		—— Sar	idy Redo	ox (S5)		Dark Surfac	ce (S7) (LRR K, L)
	ck Histic (A3)			-	ıtrix (S6)			y Peat or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A	1)		•	ky Miner			inese Masses (F12) (LRR K, L, R)
	-							, ,, ,
	itified Layers (A5)			ed Matri			w Dark Surface (TF12)
	n Muck (A10)				atrix (F3)		Other (expl	ain in remarks)
	leted Below Dark				Surface			
Thick Dark Surface (A12) Depleted Dark Surface (F7) *Indicators of hydrophytic vegetation and wetlands								hydrophytic vegetation and wetland
San	dy Mucky Minera	ıl (S1)	Red	dox Depr	essions	(F8)		ust be present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	3)					problematic
Restrictive	Layer (if observ	ed):						
	avel, ballast, fill	,					Hydric soil pr	esent?
Depth (inche	es): not determ	nined			•			
Remarks:								
Remarks.								
A ****	anad aa urbaa	land a	and located ba		اممعانم	and are	wal aantraatar wa	d
Area ma	pped as urban	iana, a	and located bei	ween r	aliroad	and gra	avel contractor ya	ra.
LIVEROL	201/							
HYDROLO								
-	drology Indicato							
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Secondar	y Indicators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)	Sui	rface Soil Cracks (B6)
High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)	X Dra	ainage Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	I) Dry	/-Season Water Table (C2)
X Water M	arks (B1)			Oxidized	l Rhizoso	heres on	Living Roots Cra	ayfish Burrows (C8)
X Sedimer	t Deposits (B2)			(C3)	i i tilizoop	110103 011	· —	turation Visible on Aerial Imagery (C9)
	oosits (B3)			•	e of Redu	iced Iron		inted or Stressed Plants (D1)
	t or Crust (B4)			•			· · · —	omorphic Position (D2)
					ron Redu	iction in T	IIICa Collo	
	osits (B5)			(C6)			FA	C-Neutral Test (D5)
	on Visible on Aeria			Thin Mu	ck Surfac	e (C7)		
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)		
X Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)	
Field Obser	vations:							
Surface wat	•	Yes	No	X	Depth (i	,		Wetland
Water table	•	Yes	No No	X	Depth (i	,		hydrology
Saturation p		Yes	X No		Depth (i	inches):	0	present? Y
	pillary fringe)	om co	o monitorina	II ocrisi	nhotos	nrovious	inapportions) if access	able
Describe red	corded data (strea	am gaug	je, monitoring we	ıı, aerial	priotos,	previous	inspections), if avail	aule.
Remarks:								
Saturation	n within drains	ade swa	ale along railro	ad				

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling	Date: 8/13/2015	
Applicant/Owner: CTA/MWRD		State	: Illin	ois Sampling	Sampling Point: 9	
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N, R14E, S27	
Landform (hillslope, terrace, etc.):	ale		ocal relief (cor	ncave, convex, none):	swale	
Slope (%): Lat: 41.66907	7	Long:	-87.6015	542 Datum:		
Soil Map Unit Name: orthents, loamy, nearly level				/I Classification:	none	
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?		If no, explain in remarks		
Are vegetation , soil Y , or hydro	ology	significantl	ly disturbed?	Y Are "normal circum		
Are vegetation , soil , or hydro			roblematic?	N present?	istances Y	
SUMMARY OF FINDINGS		, ,		 '	any answers in remarks.)	
Hydrophytic vegetation present? Y				, , , , ,		,
Hydric soil present?		Is the s	sampled area	within a wetland?	N	
Wetland hydrology present?			s, optional wet	-		
	a aanarata r		o, optional tro	Maria ono 15.		
Remarks: (Explain alternative procedures here or in	a separate r	eport.)				
Relied primarily upon vegetation and landsca	ape positio	n due to d	ry time of se	eason, and mostly url	banland/fill for substra	ate.
VEGETATION Use scientific names of plan	nte					
Ose scientific flames of plan		Daninant	la dia atau	Dominance Test V		
Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status			
1		5,755.55		Number of Dominant Sp are OBL, FACW, or		()
2				Total Number of Dor		,
3				Species Across all S		5)
4				Percent of Dominant Sp	ecies that	
5				are OBL, FACW, or		VB)
	0	= Total Cove	er			
Sapling/Shrub stratum (Plot size: 4.6 m	.)			Prevalence Index	Worksheet	
1 Rhamnus cathartica	100	Y	FAC	Total % Cover of:		
2				OBL species	0 x 1 = 0	
3		· 		FACW species	0 x 2 = 0	
5				FAC species FACU species	$ \begin{array}{ccccccccccccccccccccccccccccccccc$	
3	100	= Total Cove		UPL species	$0 \times 4 = 0$ 0 x 5 = 0	
Herb stratum (Plot size: 1 m sq)	·	,1		100 (A) 300 (B)	3)
1	.′ 80	Υ		Prevalence Index =		,
2	10	N				
3	10	N		Hydrophytic Vege	tation Indicators:	
4	2	N		Rapid test for h	nydrophytic vegetation	
5	2	N		Dominance tes	t is >50%	
6				X Prevalence ind	ex is ≤3.0*	
7				Morphological a	adaptations* (provide	
8					a in Remarks or on a	
9				separate sheet		
10	104	= Total Cove		Problematic hy (explain)	drophytic vegetation*	
Woody vine stratum (Plot size: 1 m sq)	- Total Cove	2 1	— ` · · ·		
1	.′			-	oil and wetland hydrology must ss disturbed or problematic	it be
2				Hydrophytic	<u> </u>	
	0	= Total Cove	er	vegetation	.,	
				present?	<u>Y</u>	
Remarks: (Include photo numbers here or on a sepa	rate sheet)					

SOIL	Sampling Point:	_
500	Sambing Point:	u

Profile Desc	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirm	the absen	ice of indicators.)
Depth	Matrix		Red	dox Feat	<u>ures</u>				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textur	re e	Remarks
*Type: C = C	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x, MS =	Masked	Sand Grains.	**Locati	ion: PL = Pore Lining, M = Matrix
	il Indicators:	•			,				ematic Hydric Soils:
	isol (A1)		Sar	dv Gleve	ed Matrix	(S4)			dox (A16) (LRR K, L, R)
	ic Epipedon (A2)			idy Redo		. (0 .)			7) (LRR K, L)
	ck Histic (A3)			-	itrix (S6)			•	t or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A	1)		•	ky Minera	al (E1)		-	Masses (F12) (LRR K, L, R)
	itified Layers (A5			•	ed Matri			•	rk Surface (TF12)
		,							
	n Muck (A10)	. Curfoo			atrix (F3)		Other	(explain in	remarks)
	oleted Below Dark				Surface				
	ck Dark Surface (,			ark Surfa				ophytic vegetation and wetland
	dy Mucky Minera	, ,		ox Debr	essions	(F8)	hydrolo		e present, unless disturbed or
	n Mucky Peat or		3)						problematic
	Layer (if observe	ed):							
, <u> </u>	avel, ballast, fill						Hydric s	oil presen	t?
Depth (inche	es): not determ	iinea			•				
Area ma	pped as urban	land, a	and 2-3 feet hig	jher in (elevatio	n than	adjacent wet	land swal	les.
HYDROLO	OGY								
Wetland Hy	drology Indicate	rs:							
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Seco	ndary Indi	cators (minimum of two required)
Surface '	Water (A1)			Aquatic	Fauna (B	13)		Surface S	Soil Cracks (B6)
	ter Table (A2)			•	uatic Plar			_	Patterns (B10)
Saturation					n Sulfide				son Water Table (C2)
_	arks (B1)							_	Burrows (C8)
	t Deposits (B2)			(C3)	ı Kılızosp	neres on	Living Roots	– '	n Visible on Aerial Imagery (C9)
	oosits (B3)				e of Redu	iced Iron	(C4)	_	or Stressed Plants (D1)
	t or Crust (B4)							_	phic Position (D2)
	osits (B5)			(C6)	ron Redu	iction in I	illed Soils		utral Test (D5)
	osits (B3) on Visible on Aeria	llmagen		• *	ck Surfac	o (C7)			iliai Test (D3)
	Vegetated Conca			•					
─ '	•				or Well Da		`		
	tained Leaves (B9)		Otner (E	xplain in	Remarks)	_	
Field Obser Surface water		Yes	No	Х	Depth (i	nchoc):		Wet	land
Water table	•	Yes	No	X	Depth (i	,			rology
Saturation p	•	Yes	No	X	Depth (i	,	0	-	sent? N
	pillary fringe)				· · `				
Describe red	corded data (stream	am gaug	je, monitoring we	II, aerial	photos,	previous	inspections), if	available:	
Remarks:									
2-3 feet l	nigher in eleva	tion tha	an adjacent we	tland sv	wales w	ith no e	evidence of h	ydrology	

Applicant/Owner: CTA/MWRD State: Illinois Investigator(s): J Mengler, V Mosca Section, Township, Range	Sampling Point: 10
	T27N D14E C27
	e. 13/N, K14E, 32/
Landform (hillslope, terrace, etc.): swale Local relief (concave, con-	vex, none): swale
Slope (%): Lat: 41.65712 Long:87.600738	Datum:
Soil Map Unit Name: orthents, loamy, nearly level NWI Classific	ation: none
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain	in in remarks)
Are vegetation, soilY , or hydrology significantly disturbed? Y_Are "r	normal circumstances"
Are vegetation, soil, or hydrology naturally problematic? N prese	
SUMMARY OF FINDINGS (If nee	eded, explain any answers in remarks.)
Hydrophytic vegetation present? Y	
Hydric soil present? Is the sampled area within a w	vetland? Y
Wetland hydrology present? Y If yes, optional wetland site ID	D: Wetland 8
Remarks: (Explain alternative procedures here or in a separate report.)	
Relied primarily upon vegetation and landscape position due to dry time of season, an	d moetly urbanland/fill for substrate
Relied primarily upon vegetation and landscape position due to dry time or season, an	d mostly dibamand/iii for substrate.
VEGETATION Use scientific names of plants.	
Absolute Dominant indicator = 5111	nance Test Worksheet
	f Dominant Species that
	BL, FACW, or FAC: 1 (A)
Total r	Number of Dominant es Across all Strata: 1 (B)
	f Dominant Species that
	BL, FACW, or FAC: 100.00% (A/B)
0 = Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m) Preva	elence Index Worksheet
	% Cover of:
	species 0 x 1 = 0
	V species 100 x 2 = 200 species 0 x 3 = 0
	species $0 \times 3 = 0$ Uspecies $0 \times 4 = 0$
	species 0 x 5 = 0
	nn totals 100 (A) 200 (B)
1 Phragmites australis 100 Y FACW Preva	ellence Index = B/A = 2.00
2	
	ophytic Vegetation Indicators:
	apid test for hydrophytic vegetation
	ominance test is >50% revalence index is ≤3.0*
7	revalence index is 25.0
M	lorphological adaptations* (provide upporting data in Remarks or on a
	eparate sheet)
10P	roblematic hydrophytic vegetation*
	explain)
Woody vine stratum (Plot size: 1 m sq) *India	cators of hydric soil and wetland hydrology must be
	present, unless disturbed or problematic
	ydrophytic egetation
0 = 10(a) 0000	resent? Y
Remarks: (Include photo numbers here or on a separate sheet)	

	Matrix	ibe to ti		dox Feat		ie indica	itor or confirm the a	absence of indicators.)
Depth (Inches)	Color (moist)	%	Color (moist)	<u>ж геац</u> %	Type*	Loc**	Texture	Remarks
(mones)	Odior (moist)	70	00101 (1110131)	70	Турс	Loc	Texture	Remarks
*Tumo: C = (Concentration D	- Donlo	tion DM = Doduc	ad Matr	iv MC =	Maakad	Cond Crains **	Location: DL - Doro Lining M - Matrix
	Concentration, D	= Deple	lion, Rivi = Reduc	eu Mau	ix, ivi5 =	Masked		Location: PL = Pore Lining, M = Matrix
•	oil Indicators:		_					Problematic Hydric Soils:
	tisol (A1)				ed Matrix	x (S4)		ie Redox (A16) (LRR K, L, R)
His	tic Epipedon (A2)		Sar	ndy Redo	ox (S5)		Dark Surfac	ce (S7) (LRR K, L)
Bla	ck Histic (A3)		Stri	pped Ma	atrix (S6)		5 cm Muck	y Peat or Peat (S3) (LRR K, L, R)
—— Hyd	drogen Sulfide (A	4)	Loa	ımy Muc	ky Miner	al (F1)	Iron-Manga	nese Masses (F12) (LRR K, L, R)
Stra	atified Layers (A5)	Loa	ımy Gley	ed Matri	x (F2)	Very Shallo	w Dark Surface (TF12)
	m Muck (A10)				atrix (F3)	. ,		ain in remarks)
	oleted Below Darl	k Surfac			Surface			,
	ck Dark Surface (ark Surfa			
								hydrophytic vegetation and wetland
	ndy Mucky Minera			зох Бері	ressions	(F8)	hydrology m	ust be present, unless disturbed or
5 cı	m Mucky Peat or	Peat (S	3)					problematic
Restrictive	Layer (if observ	ed):						
Type: g	ravel, ballast, fill				_		Hydric soil pr	resent?
Depth (inch	es): not determ	nined			_			
Area ma	pped as urban	land, a	and located be	tween (gravel r	oads.		
HYDROL	OGY							
Wetland Hy	drology Indicate	ors:						
Primary Indi	cators (minimum	of one is	s required; check	all that	apply)		Secondar	y Indicators (minimum of two required
-	Water (A1)		•		Fauna (B	313)	·	rface Soil Cracks (B6)
	ater Table (A2)			•	uatic Plar			ainage Patterns (B10)
Saturation				•		Odor (C		/-Season Water Table (C2)
				пушоде	en Sumae	Odoi (C		
	larks (B1)				d Rhizosp	heres on	Living Roots	ayfish Burrows (C8)
	nt Deposits (B2)			(C3)				turation Visible on Aerial Imagery (C9)
Drift De	posits (B3)			Presenc	e of Red	uced Iron	(C4) Stu	inted or Stressed Plants (D1)
Algal Ma	at or Crust (B4)			Recent	Iron Redu	uction in T	illed Soils Ge	omorphic Position (D2)
Iron Dep	osits (B5)			(C6)			FA	C-Neutral Test (D5)
Inundati	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ck Surfac	ce (C7)		
	Vegetated Conca			Gauge o	or Well Da	ata (D9)		
	tained Leaves (B9					Remarks)	
Field Obse	•	,		- 0 11101 (2	-xpiaiii iii	Ttomarko	,	
Surface wat		Yes	No	X	Depth (inches).		Wetland
Water table	•	Yes	No	$\frac{\chi}{X}$	Depth (hydrology
Saturation p	•	Yes	X No		Depth (,	0	present? Y
(includes ca	pillary fringe)				<u> </u>			
Describe re	corded data (stre	am gaug	ge, monitoring we	II, aerial	photos,	previous	inspections), if avail	able:
Remarks:								
. tomanto.								
Coturation	on within dealer	200 011	ala alana zaz-l	_				
Jaiurali	on within draina	age sw	ale along roads	э.				

Project/Site Lake Calumet CTA Red Line I	Extension	City/County:	Cool	k Sampling I	Date: 8/19/2015
Applicant/Owner: CTA/MWRD		_		nois Sampling F	Point: 11
Investigator(s): J Mengler, V Mosca			Section, Town	ship, Range:	T37N, R14E, S27
Landform (hillslope, terrace, etc.):	swale		Local relief (co	oncave, convex, none):	swale
Slope (%): Lat:	41.665712	Long:	-87.600	738 Datum:	
Soil Map Unit Name: orthents, loamy, near	ly level		N\	WI Classification:	none
Are climatic/hydrologic conditions of the si	te typical for this	time of the year	ar? Y	(If no, explain in remarks))
Are vegetation, soilY_	, or hydrology	signific	antly disturbed?	Y Are "normal circums	stances"
Are vegetation, soil	-		lly problematic?	N present?	Y
SUMMARY OF FINDINGS				(If needed, explain	any answers in remarks.)
Hydrophytic vegetation present?	Υ				
Hydric soil present?		ls th	he sampled area	a within a wetland?	N
Wetland hydrology present?	N	If	f yes, optional we	etland site ID:	
Remarks: (Explain alternative procedures	here or in a sep	arate report.)			
					1 1000 f
Relied primarily upon vegetation an	d landscape p	osition due to	o dry time of s	eason, and mostly urb	panland/fill for substrate.
VEGETATION Use scientific nam	es of plants.				
	Abs	solute Domin	ant Indicator	Dominance Test W	Vorksheet
<u>Tree Stratum</u> (Plot size: 9 n	<u>1</u>) % (Cover Speci	ies Status	Number of Dominant Spe	
1				are OBL, FACW, or	FAC: 0 (A)
2				Total Number of Dom	
3				Species Across all S	trata: 0 (B)
4				Percent of Dominant Spe	
5		0 = Total C		are OBL, FACW, or	FAC: 0.00% (A/B)
Sapling/Shrub stratum (Plot size:	4.6 m)	<u> </u>	,0vei	Prevalence Index \	Workshoot
1	, ,			Total % Cover of:	WOI KSHEEL
2				OBL species	0 x 1 = 0
3				FACW species	0 x 2 = 0
4				FAC species	0 x 3 = 0
5				FACU species	0 x 4 = 0
		0 = Total C	over	UPL species	0 x 5 = 0
Herb stratum (Plot size:	1 m sq)			Column totals	0 (A) 0 (B)
1 Ambrosia trifida			FAC	Prevalence Index =	B/A =
2 Artemisia vulgaris			UPL		
3 Melilotus albus			FACU	Hydrophytic Veget	
4 Arctium minus		— —	FACU		ydrophytic vegetation
5 Lotus corniculata			FACU	Dominance test	
6 7				Prevalence inde	ex is ≤3.0"
8					adaptations* (provide
9				supporting data separate sheet)	ı in Remarks or on a)
10				<u> </u>	drophytic vegetation*
		0 = Total C	Cover	(explain)	aropriyuc vegetation
Woody vine stratum (Plot size:	1 m sq)				oil and wetland hydrology must be
1				•	s disturbed or problematic
2				Hydrophytic	
		0 = Total C	over	vegetation present?	KI .
S. January (In chiefe whate numbers born or		1 4\		present:	N
Remarks: (Include photo numbers here or	on a separate s	neet)			

(Inches) Color (moist) Eype: C = Concentration, D = E Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (Septicity Layer (if observed)) per gravel, ballast, fill epth (inches):	Surface (A11)	educed Matri Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe	Remarks ation: PL = Pore Lining, M = M blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) rpe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) rpe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1) Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1) Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill pth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) rpe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) rpe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R
Hydric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1) Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	Surface (A11)	Sandy Gleye Sandy Redo Stripped Ma Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da	ed Matrix (S4) ox (S5) trix (S6) cy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Indicators for Prol Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	blematic Hydric Soils: Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R
Histisol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (\$5 cm Mucky Peat or Pe estrictive Layer (if observed) pe: gravel, ballast, fill epth (inches): not determine	2) S1)	Sandy Redo Stripped Ma Loamy Muck Loamy Gleyo Depleted Ma Redox Dark Depleted Da	trix (S5) trix (S6) xy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Coast Prairie R Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	Redox (A16) (LRR K, L, R) S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R)
Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (\$ 5 cm Mucky Peat or Pe strictive Layer (if observed) pe: gravel, ballast, fill pth (inches): not determine	2) S1)	Sandy Redo Stripped Ma Loamy Muck Loamy Gleyo Depleted Ma Redox Dark Depleted Da	trix (S5) trix (S6) xy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Dark Surface (5 cm Mucky Pe Iron-Manganes Very Shallow D	S7) (LRR K, L) eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R
Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (Second Second Seco	2) S1)	Stripped Ma Loamy Muck Loamy Gleyo Depleted Ma Redox Dark Depleted Da	trix (S6) xy Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	5 cm Mucky Pe Iron-Manganes Very Shallow D	eat or Peat (S3) (LRR K, L, R) se Masses (F12) (LRR K, L, R
Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe strictive Layer (if observed) Dec gravel, ballast, fill pth (inches): not determine	2) S1)	Loamy Muck Loamy Gleyon Depleted Ma Redox Dark Depleted Da	ky Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Iron-Manganes Very Shallow D	se Masses (F12) (LRR K, L, R
Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (\$ 5 cm Mucky Peat or Pe strictive Layer (if observed) De: gravel, ballast, fill pth (inches): not determine	2) S1)	Loamy Muck Loamy Gleyon Depleted Ma Redox Dark Depleted Da	ky Mineral (F1) ed Matrix (F2) atrix (F3) Surface (F6)	Iron-Manganes Very Shallow D	se Masses (F12) (LRR K, L, R
Stratified Layers (A5) 2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (\$ 5 cm Mucky Peat or Pe strictive Layer (if observed) De: gravel, ballast, fill pth (inches): not determine	2) S1)	Loamy Gley Depleted Ma Redox Dark Depleted Da	ed Matrix (F2) atrix (F3) Surface (F6)	Very Shallow D	, , ,
2 cm Muck (A10) Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (\$ 5 cm Mucky Peat or Pe strictive Layer (if observed) De: gravel, ballast, fill pth (inches):not determine	2) S1)	Depleted Ma Redox Dark Depleted Da	atrix (F3) Surface (F6)		
Depleted Below Dark S Thick Dark Surface (A1 Sandy Mucky Mineral (\$ 5 cm Mucky Peat or Pe strictive Layer (if observed) pe: gravel, ballast, fill pth (inches): not determine	2) S1)	Redox Dark Depleted Da	Surface (F6)	Other (explain	` ,
Thick Dark Surface (A1 Sandy Mucky Mineral (S 5 cm Mucky Peat or Pe strictive Layer (if observed) De: gravel, ballast, fill pth (inches): not determine	2) S1)	Depleted Da	, ,		in remarks)
Sandy Mucky Mineral (5 5 cm Mucky Peat or Pe strictive Layer (if observed) pe: gravel, ballast, fill pth (inches): not determine	S1)	•			
5 cm Mucky Peat or Pe strictive Layer (if observed) be: gravel, ballast, fill pth (inches): not determine		Redox Denr	ark Surface (F7)	*Indicators of hyd	drophytic vegetation and wetla
strictive Layer (if observed) pe: gravel, ballast, fill pth (inches): not determine	at (S3)	reduce Depr	essions (F8)		be present, unless disturbed of
strictive Layer (if observed) pe: gravel, ballast, fill pth (inches): not determine	()	•		,	problematic
pe: gravel, ballast, fill pth (inches): not determine	١.		1		·
epth (inches): not determine):			Hardela a all access	
· · · · · · · · · · · · · · · · · · ·				Hydric soil prese	ent?
emarks:	ea				
YDROLOGY					
etland Hydrology Indicators					
mary Indicators (minimum of	one is required; ch	neck all that a	apply)	Secondary In	dicators (minimum of two requ
Surface Water (A1)		Aquatic I	Fauna (B13)	Surface	e Soil Cracks (B6)
High Water Table (A2)		True Agu	uatic Plants (B14)	Draina	ge Patterns (B10)
Saturation (A3)			n Sulfide Odor (C1)		eason Water Table (C2)
		nydroge	ii Suilide Odol (C1)		
_Water Marks (B1)			Rhizospheres on Li	iving roots	sh Burrows (C8)
Sediment Deposits (B2)		(C3)		Saturat	tion Visible on Aerial Imagery (CS
Drift Deposits (B3)		Presence	e of Reduced Iron (0	C4) Stunted	d or Stressed Plants (D1)
Algal Mat or Crust (B4)		Recent I	ron Reduction in Till	led Soils Geomo	orphic Position (D2)
Iron Deposits (B5)		(C6)	TOTT TCCGGCGGT IIT TIII		leutral Test (D5)
Inundation Visible on Aerial In	nagery (B7)	 ' ' '	ck Surface (C7)		\= -/
Sparsely Vegetated Concave	ourrace (B8)		r Well Data (D9)		
Water-Stained Leaves (B9)		Other (E	xplain in Remarks)		
alal Olanamiatiana.					
			Depth (inches):		etland
urface water present?			Depth (inches):		/drology
urface water present? ater table present?	Yes N		Depth (inches):	0 pr	resent? N
urface water present? ater table present? aturation present?	Yes N	10 <u>X</u>			
urface water present? ater table present? aturation present? ucludes capillary fringe)	Yes N				
ater table present?	Yes N		photos, previous ir	nspections), if available	e:
urface water present? ater table present? aturation present? cludes capillary fringe)	Yes N		photos, previous ir	nspections), if available	e:
urface water present? ater table present? aturation present? cludes capillary fringe)	Yes N		photos, previous ir	nspections), if available	e:
rface water present? hater table present? turation present? cludes capillary fringe) scribe recorded data (stream	Yes N Yes N I gauge, monitoring	g well, aerial			

Project/Site Lake Calumet CTA Red Line E	Extension	City/County:	:	Cook	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD			State:	Illinois	Sampling Point:	12
Investigator(s): J Mengler, V Mosca			Section	n, Township, Ra	inge: T37N, R	14E, S26
Landform (hillslope, terrace, etc.):	swale		Local re	elief (concave, c	convex, none):	swale
Slope (%): Lat:	41.661704	Long:	:	-87.597341	Datum:	
Soil Map Unit Name: orthents, clayey, undu	ulating			NWI Class	ification: PF0	1/EMCd
Are climatic/hydrologic conditions of the sit	te typical for this	s time of the ye	ear?	(If no, ex	rplain in remarks)	
Are vegetation, soilY	, or hydrology	signifi	ficantly distu	urbed? Y Are	e "normal circumstances"	
Are vegetation, soil	, or hydrology	natura	ally problen			<u>Y</u>
SUMMARY OF FINDINGS				(If	needed, explain any answ	ers in remarks.)
Hydrophytic vegetation present?	Y					
Hydric soil present?		Is	the sample	led area within	a wetland? Y	
Wetland hydrology present?	<u>Y</u>		If yes, option	onal wetland site	e ID: Wetland 9	
Remarks: (Explain alternative procedures	here or in a sep	arate report.)				
Relied primarily upon vegetation and	d landscape i	oosition due	to dry tim	ne of season	and mostly urbaniand	fill for substrate
		JUSILION GGC	to dry time	IC OI SCASOII,	and mostly dibamana	TIII TOT GUDGITATO.
VEGETATION Use scientific name	es of plants.					
- Ci i (Distain)				licator	ominance Test Workshee	et .
Tree Stratum (Plot size: 9 m) %	Cover Spec	cies S		er of Dominant Species that	
2		———			e OBL, FACW, or FAC:	1 (A)
3		———			tal Number of Dominant becies Across all Strata:	1 (B)
4					nt of Dominant Species that	``
5					e OBL, FACW, or FAC:	100.00% (A/B)
		0 = Total	Cover			
Sapling/Shrub stratum (Plot size:	4.6 m)			Pro	evalence Index Workshe	et
1					tal % Cover of:	
2					BL species 0 x 1	
3		— —			Conceins 100 x 2	
4		———			AC species 0 x 3 ACU species 0 x 4	
		0 = Total	Cover		PL species 0 x 5	
Herb stratum (Plot size: 1	I m sq)		00.0.		olumn totals 100 (A)	
1 Phragmites australis	 ′	100 Y	Y F		evalence Index = B/A =	2.00
2				<u> </u>		
3				Ну	drophytic Vegetation Inc	dicators:
4					Rapid test for hydrophyti	•
5					_ Dominance test is >50%	
6		———		<u>x</u>	Prevalence index is ≤3.0)*
7					Morphological adaptatio	\1
				l		
8			— —		supporting data in Rema	arks or on a
9				_	_separate sheet)	
		100 = Total	Cover	<u> </u>		
9 10	I m sq)	100 = Total	Cover		separate sheet) Problematic hydrophytic (explain)	vegetation*
9 10		100 = Total	Cover	*1	separate sheet) Problematic hydrophytic	vegetation* and hydrology must be
9		100 = Total	Cover	*1	Problematic hydrophytic (explain) ndicators of hydric soil and wett present, unless disturbed Hydrophytic	vegetation* and hydrology must be
9 10 Woody vine stratum (Plot size: 1		100 = Total 0 = Total		*11	Problematic hydrophytic (explain) ndicators of hydric soil and wett present, unless disturbed Hydrophytic vegetation	vegetation* and hydrology must be
9 10 Woody vine stratum (Plot size: 1 1 2	l m sq)	0 = Total		*1	Problematic hydrophytic (explain) ndicators of hydric soil and wett present, unless disturbed Hydrophytic	vegetation* and hydrology must be
9 10 Woody vine stratum (Plot size: 1	l m sq)	0 = Total		*1	Problematic hydrophytic (explain) ndicators of hydric soil and wett present, unless disturbed Hydrophytic vegetation	vegetation* and hydrology must be

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirm the ab	sence of indicators.)
Depth	Matrix			dox Feat				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
*Type: C = 0	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x, MS =	Masked	Sand Grains. **Lo	ocation: PL = Pore Lining, M = Matrix
Hydric So	il Indicators:						Indicators for Pr	oblematic Hydric Soils:
Hist	isol (A1)		Sar	ndv Glev	ed Matrix	(S4)	Coast Prairie	Redox (A16) (LRR K, L, R)
	ic Epipedon (A2)			ndy Redo		(-)		(S7) (LRR K, L)
	ck Histic (A3)			-	itrix (S6)			Peat or Peat (S3) (LRR K, L, R)
	, ,	4)			, ,			, ,, , , , ,
	rogen Sulfide (A			•	ky Miner	. ,		ese Masses (F12) (LRR K, L, R)
	tified Layers (A5))			ed Matri			Dark Surface (TF12)
	n Muck (A10)				atrix (F3)		Other (explai	n in remarks)
Dep	leted Below Dark	k Surface	e (A11)Red	dox Dark	Surface	(F6)		
Thic	ck Dark Surface (A12)	Dep	oleted Da	ark Surfa	ce (F7)	*Indicators of h	ydrophytic vegetation and wetland
San	dy Mucky Minera	ıl (S1)	Red	dox Depr	essions	(F8)		st be present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	<u>—</u>				, 0,	problematic
Restrictive	Layer (if observe	eq).	•					•
	avel, ballast, fill	cuj.					Hydric soil pre	sent?
Depth (inche		nined					riyano con pro	
Remarks:								
Area ma	pped as urban	iand, a	and located be	ween g	gravei p	arking	oad and road.	
HYDROLO								
-	drology Indicato							
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		<u>Secondary</u>	Indicators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)	Surfa	ace Soil Cracks (B6)
High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)	X Drair	nage Patterns (B10)
X Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	 Dry-9	Season Water Table (C2)
	arks (B1)							fish Burrows (C8)
	t Deposits (B2)			(C3)	i Kilizosp	neres on	Living Roots	ration Visible on Aerial Imagery (C9)
	osits (B3)			•	a of Padı	uced Iron		ted or Stressed Plants (D1)
				rieselic	e oi Reul	aceu iron		· ·
	t or Crust (B4)				ron Redu	iction in T	ilica dolla	morphic Position (D2)
	osits (B5)			(C6)			FAC	Neutral Test (D5)
Inundatio	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ck Surfac	e (C7)		
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)		
X Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)	
Field Obser	vations:							
Surface wat	er present?	Yes	No	Х	Depth (i	inches):		Wetland
Water table	•	Yes	No	X	Depth (i	,		hydrology
Saturation p		Yes	X No		Depth (nches):	0	present? Y
	pillary fringe)							
Describe red	corded data (strea	am gaug	je, monitoring we	II, aerial	photos,	previous	inspections), if availal	ole:
Remarks:								
Saturation	n within drains	200 04"	alo alona hicha	ar arai ir	nd			
Jaiurall	n within draina	age swi	are arong myne	, groui	ia.			

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling	g Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illin	nois Sampling	Point:	13
Investigator(s): J Mengler, V Mosca			ection, Towns	ship, Range:	T37N, R1	4E, S26
Landform (hillslope, terrace, etc.): sw	ale		ocal relief (co	ncave, convex, none):		swale
Slope (%): Lat: 41.66170	4	Long:		_		
Soil Map Unit Name: orthents, loamy, nearly level		·		VI Classification:	n	one
Are climatic/hydrologic conditions of the site typical for	or this time of	of the year?		If no, explain in remarks		-
Are vegetation , soil Y , or hydro		•	y disturbed?	V		
Are vegetation , soil , or hydro		•		Are "normal circur N present?	nstances"	Y
SUMMARY OF FINDINGS				(If needed, explain	n anv answe	
Hydrophytic vegetation present?				(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Hydric soil present?		Is the s	ampled area	within a wetland?	N	
Wetland hydrology present?			•	tland site ID:	.,,	
			, optional we			
Remarks: (Explain alternative procedures here or in a	a separate r	report.)				
Relied primarily upon vegetation and landsca	ape positio	on due to dr	y time of se	eason, and mostly u	rbanland/f	ill for substrate.
VECETATION Lies scientific names of plan	-1-					
VEGETATION Use scientific names of plan	nts.			Danish and Table	14 /	
Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test		
1 (Flot size: 9 III)	% Cover	Species	Status	Number of Dominant S are OBL, FACW, o	•	2 (A)
2		-	· ——		•	(//)
3				Total Number of Do Species Across all		6 (B)
4	-			Percent of Dominant S	•	(,
5				are OBL, FACW, o	•	33.33% (A/B)
	0	= Total Cove	r		•	
Sapling/Shrub stratum (Plot size: 4.6 m)	•		Prevalence Index	Workshee	t
1				Total % Cover of:		
2				OBL species	10 x 1	= 10
3				FACW species	10 x 2	
4				FAC species	0 x 3	
5		T-4-1 0		FACU species	40 x 4	
Herb stretum (Diet size) 1 m eg	\	= Total Cove	Г	UPL species	0 x 5	
Herb stratum (Plot size: 1 m sq 1 Polygonum lapathifolium	10	Υ	FACW	Column totals Prevalence Index	60 (A)	190 (B) 3.17
2 Carduus nutans	10	Y	FACU	i revalence index	- 6/4 -	3.17
3 Medicago lupulina	10	Y	FACU	Hydrophytic Vege	etation Ind	cators:
4 Helianthus annuus	10	Υ	FACU	Rapid test for		
5 Acnida altissima	10	Υ	OBL	Dominance te	st is >50%	-
6 Lotus corniculata	10	Y	FACU	Prevalence inc	dex is ≤3.0*	
7				Morphological	adantation	s* (provide
8				supporting dat		\I
9				separate shee	et)	
10				Problematic h	ydrophytic v	egetation*
	60	= Total Cove	r	(explain)		
Woody vine stratum (Plot size: 1 m sq)					nd hydrology must be
1 2				present, unle	ess disturbed of	or problematic
2	0	= Total Cove		vegetation		
	J	i otai oove		present?	N	
Remarks: (Include photo numbers here or on a separ	rate sheet)					

Profile Desc	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	e indica	tor or confirm the abs	sence of indicators.)
Depth	Matrix			lox Feat				·
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
*Typo: C = 0	Concontration D	- Donlot	ion, RM = Reduc	od Matri	iv MC –	Mackad	Sand Grains **Lo	cation: PL = Pore Lining, M = Matrix
		- Deblei	lion, Rivi – Reduc	eu maui	IX, IVIO –	IVIASKEU		-
1 -	il Indicators:							oblematic Hydric Soils:
Hist	isol (A1)		Sar	idy Gley	ed Matrix	(S4)	Coast Prairie	Redox (A16) (LRR K, L, R)
Hist	ic Epipedon (A2)		Sar	dy Redo	ox (S5)		Dark Surface	(S7) (LRR K, L)
Blac	ck Histic (A3)		Stri	oped Ma	trix (S6)		5 cm Mucky P	eat or Peat (S3) (LRR K, L, R)
— Hvd	rogen Sulfide (A	4)	Loa	mv Muc	ky Miner	al (F1)	Iron-Mangane	ese Masses (F12) (LRR K, L, R)
	tified Layers (A5			•	ed Matri	. ,		Dark Surface (TF12)
		,						
	n Muck (A10)				atrix (F3)		Other (explain	in remarks)
	leted Below Dark				Surface			
Thic	k Dark Surface (A12)	Dep	leted Da	ark Surfa	ce (F7)	*Indicators of hy	drophytic vegetation and wetland
San	dy Mucky Minera	ıl (S1)	Red	lox Depr	essions	(F8)		t be present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	3)				, 0,	problematic
	Layer (if observ					Ī		·
	avel, ballast, fill	eu).					Hydric soil pres	ont?
Depth (inche		nined			•		riyuric son pres	
	not determ	iiiicu						
Remarks:								
Area ma	pped as urban	land, a	and a gravel pa	rking p	ad 2-4	feet hig	her than surroundir	g wetland.
HYDROLO	OGY							
	drology Indicate	ors:						
-			s required; check	all that a	annly)		Secondary I	ndicators (minimum of two required)
-		01 0110 1	o roquirou, orioon			40)		
	Water (A1)				Fauna (B	-		ce Soil Cracks (B6)
High Wa	ter Table (A2)			•	uatic Plar	, ,		age Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	I) Dry-S	eason Water Table (C2)
Water M	arks (B1)			Oxidized	Rhizoso	heres on	Living Roots Crayfi	sh Burrows (C8)
Sedimen	t Deposits (B2)			(C3)	. 1 tm200p	110100 011		ation Visible on Aerial Imagery (C9)
	oosits (B3)				e of Redu	iced Iron		ed or Stressed Plants (D1)
				TICSCIIC	c or recu	acca iron		
	t or Crust (B4)				ron Redu	iction in T		orphic Position (D2)
Iron Dep	osits (B5)			(C6)			FAC-I	Neutral Test (D5)
Inundation	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ck Surfac	e (C7)		
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)		
Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)	
Field Obser	•	,					,	
Surface wat		Yes	No	Х	Depth (i	inches).	v	Vetland
Water table	•	Yes	No	X	Depth (i			ydrology
Saturation p	•	Yes	No	$\frac{\lambda}{X}$	Depth (i	,		resent?
•	pillary fringe)	-				-,	 "	
		am gauc	ie. monitorina we	II. aerial	photos.	previous	inspections), if availab	le:
	(3-10	, , , , , , , , , , , , , , , , , , , ,	,	, ,			
Remarks:								
2-4 feet l	nigher in eleva	tion tha	an adjacent we	tland sv	wales w	ith no e	evidence of hydrolog	av
	5		,		•			,

Project/Site Lake Calu	umet CTA Red L	ine Extension	City/	County:	Cook	Samp	ling Date:	8/13/2015
Applicant/Owner: 0	CTA/MWRD			State	e: Illir	nois Sampli	ing Point:	14
Investigator(s): J Mer	ngler, V Mosca				Section, Towns	ship, Range:	T37N, R1	4E, S26
Landform (hillslope, te	errace, etc.):	SW	/ale		Local relief (co	ncave, convex, none):	swale
Slope (%):	Lat:	41.659598	8	Long:	-87.594	462 Datum	n:	
Soil Map Unit Name:	urban land- orthe	ents, clayey, cor	mplex, near	ly level	NV	VI Classification:	n	none
Are climatic/hydrologi	c conditions of the	he site typical fo	or this time o	of the year?	? <u>Y</u> ((If no, explain in rema	arks)	_
Are vegetation	, soil Y	, or hydro	ology	significar	ntly disturbed?	Y Are "normal circ	cumstances"	
Are vegetation	, soil	, or hydro	ology	naturally	problematic?	N present?		<u> </u>
SUMMARY OF FI	NDINGS					(If needed, exp	lain any answ	ers in remarks.)
Hydrophytic veget	tation present?	<u>Y</u>		ı				
Hydric soil presen	ıt?			Is the	sampled area	within a wetland?	Y	
Wetland hydrolog	y present?	<u>Y</u>		If ye	es, optional we	tland site ID:	Wetland 10	
Remarks: (Explain alt	ernative procedu	ures here or in a	a separate r	eport.)				
Relied primarily up	oon vegetatior	n and landsca	ane nositic	n due to	dry time of se	eason and mostly	/ urhanland/	fill for substrate.
					dry time or or		ui bui iiu iu.	IIII IOI GUDGII GIC.
VEGETATION U	Jse scientific r	names of plar	nts.					
T Ctrotum	(Dist size)	•	Absolute			Dominance Te		
Tree Stratum	(Plot size:	9 m)	% Cover	Species	s Status	Number of Dominan are OBL, FACW		
2			. ——					1 (A)
3						Total Number of Species Across		1 (B)
4						Percent of Dominan		``
5						are OBL, FACW	•	100.00% (A/B)
			0	= Total Cov	/er			
Sapling/Shrub stratu	um (Plot size:	4.6 m)			Prevalence Inc	lex Workshe	et
1						Total % Cover		
2						OBL species	0 x 1	
3						FACW species	100 x 2 0 x 3	
5						FAC species FACU species	$\frac{0}{0}$ x 3	
			0	= Total Cov	ver	UPL species	$\frac{0}{0}$ x 5	
Herb stratum	(Plot size:	1 m sq)	-		Column totals	100 (A)	
1 Phragmites aus	tralis		100	Y	FACW	Prevalence Ind		2.00
2								
3						Hydrophytic V	•	
4							for hydrophytic	-
5						X Dominance		
6						X Prevalence	Index is ≥3.∪	*
8			. ——			' '	cal adaptation	\(1
9						supporting separate sh	data in Rema neet)	rks or on a
10						<u> </u>	c hydrophytic	vegetation*
			100	= Total Cov	ver	(explain)	Jiyuropriyas	vegetation
Woody vine stratum	n (Plot size:	1 m sq)			*Indicators of hyc	fric soil and wetla	and hydrology must be
1						•	unless disturbed	
						Hydrophyt	ic	
2		,						
2			0	= Total Cov	ver	vegetation present?		
-	oto numbers her	or on a senar		= Total Cov	ver	vegetation present?	Y	<u>.</u>
2Remarks: (Include ph	oto numbers her	re or on a separ		= Total Cov	ver	_		-

Profile Des	cription: (Descr	ibe to th	ne depth neede	to docu	ument th	e indica	tor or confirm t	he absend	ce of indicators.)
Depth	Matrix			dox Feat					,
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	:	Remarks
								-	
*Type: C = 0	Concentration, D	= Deple	tion, RM = Redu	ced Matri	ix, MS =	Masked	Sand Grains.	**Locatio	on: PL = Pore Lining, M = Matrix
Hydric Sc	oil Indicators:						Indicators	for Proble	matic Hydric Soils:
•	tisol (A1)		Sa	ndy Gley	ed Matrix	(S4)			lox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo		. (0 .)) (LRR K, L)
				-					or Peat (S3) (LRR K, L, R)
	ck Histic (A3)	4)		pped Ma	, ,			-	
	drogen Sulfide (A			amy Muc	•	` '		•	Masses (F12) (LRR K, L, R)
	atified Layers (A5)		amy Gley					k Surface (TF12)
2 cı	m Muck (A10)			pleted M			Other (explain in ı	remarks)
Dep	oleted Below Dark	k Surfac	e (A11) Re	dox Dark	Surface	(F6)			
Thi	ck Dark Surface (A12)	De	pleted Da	ark Surfa	ce (F7)	*Indicator	e of hydro	phytic vegetation and wetland
Sar	ndy Mucky Minera	al (S1)	Re	dox Depr	essions	(F8)			present, unless disturbed or
5 cı	m Mucky Peat or	Peat (S3	3)				,		problematic
	Layer (if observe		<u>, </u>			Ī			
	ravel, ballast, fill	eu).					Hydric so	il nresent	?
Depth (inch		nined			-		Tiyano 30	ıı prosent	·
Remarks:					•				
Area ma	pped as urban	land, a	and located at	base of	roadwa	ay emb	ankment and a	along rail	road
HYDROL	OGY								
	drology Indicato	ors:							
_	cators (minimum		s required: check	all that	apply)		Secon	ndary Indic	ators (minimum of two required
-	Water (A1)	0. 0	<u> </u>		Fauna (B	13)	<u></u>	•	oil Cracks (B6)
				-	uatic Plar	,		-	Patterns (B10)
	ater Table (A2)			- '		. ,		_	, ,
X Saturation				Hydroge	n Sulfide	Odor (C		-	on Water Table (C2)
Water M	larks (B1)			Oxidized	d Rhizosp	heres on	Living Roots	Crayfish E	Burrows (C8)
Sedimer	nt Deposits (B2)			(C3)				Saturation	Visible on Aerial Imagery (C9)
Drift De	posits (B3)			Presenc	e of Redu	uced Iron	(C4)	Stunted or	r Stressed Plants (D1)
Algal Ma	at or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils	Geomorph	nic Position (D2)
Iron Dep	oosits (B5)			(C6)				FAC-Neut	tral Test (D5)
Inundati	on Visible on Aeria	l Imager	y (B7)	Thin Mu	ck Surfac	e (C7)		=	
	/ Vegetated Conca	•		-	or Well Da				
	tained Leaves (B9			-	xplain in		A		
Field Obser	•	,	_	Otrici (L	.xpiaiii iii	rtemarks	')		
Surface wat		Yes	No	Χ	Depth (i	inches).		Wetla	and
Water table		Yes	No	$\frac{\lambda}{X}$	Depth (i				ology
Saturation p	•	Yes	X No		Depth (i	,	0	pres	
	pillary fringe)				`	,			
Describe re	corded data (strea	am gaug	ge, monitoring we	ell, aerial	photos,	previous	inspections), if a	available:	
Remarks:									
Saturation	on within draina	age swa	ale along high	er grour	nd, wet	mud ar	nong old tires.		

Project/Site Lake Calumet CTA Red Line Extensio	n City/	/County:	Cook	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State		oois Sampling Point:	15
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range: T37N R	14E S26
Landform (hillslope, terrace, etc.):	ditch	<u>-</u>	Local relief (cor	ncave, convex, none):	ditch
Slope (%): Lat: 41.660	019	Long:	-87.5954	429 Datum:	
Soil Map Unit Name: urban land-orthents clayey co	mplex, nearly	level	NV	VI Classification:	none
Are climatic/hydrologic conditions of the site typical	I for this time	of the year?	Y (If no, explain in remarks)	
Are vegetation, soilY, or hyd	drology	significan	ntly disturbed?	Y Are "normal circumstances"	
Are vegetation, soil, or hydronic,	drology	naturally	problematic?	N present?	<u>Y</u>
SUMMARY OF FINDINGS				(If needed, explain any answ	vers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present?		Is the	sampled area	within a wetland? Y	
Wetland hydrology present? Y		If ye	es, optional wet	tland site ID: Wetland 11	<u> </u>
Remarks: (Explain alternative procedures here or	in a separate r	report.)			
Relied primarily upon vegetation and lands	scane nositic	on due to i	dry time of se	eason, and mostly urbaniand	I/fill for substrate
		// uuc to .	ary time or co		/IIII IOI JUDOLIGIO.
VEGETATION Use scientific names of p	lants.			•	
Trans Christians (Diet eigen our	Absolute			Dominance Test Workshe	et
Tree Stratum (Plot size: 9 m)	% Cover	Species	s Status	Number of Dominant Species that	
2		. ———		are OBL, FACW, or FAC:	1 (A)
3				Total Number of Dominant Species Across all Strata:	1 (B)
4				Percent of Dominant Species that	``
5				are OBL, FACW, or FAC:	100.00% (A/B)
	0	= Total Cov	/er		
Sapling/Shrub stratum (Plot size: 4.6 m)			Prevalence Index Worksho	et
1 Salix interior			FACW	Total % Cover of:	
2				OBL species 0 x	
3				FACW species 100 x 2	
4				· —	3 = <u>0</u> 4 = 0
⁵		= Total Cov			5 = <u>0</u>
Herb stratum (Plot size: 1 m sq)			Column totals 100 (A	
1 Phragmites australis	′ 100	Υ	FACW	Prevalence Index = B/A =	2.00
2					
3				Hydrophytic Vegetation In	dicators:
4				Rapid test for hydrophyt	-
5				X Dominance test is >50%	
6				X Prevalence index is ≤3.0) *
7				Morphological adaptation	\(\frac{1}{2}\)
89	_	-		supporting data in Rema	arks or on a
10					· · · · · · · · · · · · · · · · · · ·
	100	= Total Cov	/er	Problematic hydrophytic (explain)	; vegetation:
Woody vine stratum (Plot size: 1 m sq)			*Indicators of hydric soil and wet	deed by drology must be
1	— ′			present, unless disturbed	
2				Hydrophytic	
	0	= Total Cov	/er	vegetation present? Y	
Described (Include whate numbers here or on a co	oboot\			present? Y	_
Remarks: (Include photo numbers here or on a se	parate sneet)				

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docı	ument th	e indica	tor or confirm the abser	nce of indicators.)
Depth	Matrix			dox Feat				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
	 				 			
	 			 	\vdash			
				<u> </u>				
				l				
	 							
	 			 	\vdash			
				<u> </u>				
	!			l'	l!			
*Type: C = (Concentration, D	= Deplet	ion, RM = Reduc	ed Matri	ix, MS =	Masked	Sand Grains. **Locat	tion: PL = Pore Lining, M = Matrix
	oil Indicators:	-						lematic Hydric Soils:
-	tisol (A1)		Sar	ndv Glev	ed Matrix	(S4)		edox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo		(0.)	Dark Surface (S	, , , , , , , , , , , , , , , , , , , ,
				-				
	ck Histic (A3)	_			atrix (S6)			at or Peat (S3) (LRR K, L, R)
	drogen Sulfide (A	,		•	ky Minera	, ,		Masses (F12) (LRR K, L, R)
Stra	atified Layers (A5)	Loa	my Gley	ed Matrix	x (F2)	Very Shallow Da	ark Surface (TF12)
2 cr	m Muck (A10)		Dep	oleted Ma	atrix (F3))	Other (explain in	remarks)
Der	pleted Below Dark	k Surface	e (A11) Rec	dox Dark	Surface	(F6)		
—— Thi	ck Dark Surface (A12)	Dep	oleted Da	ark Surfa	ce (F7)	*!	the constation and wotland
	ndy Mucky Minera	,			ressions			ophytic vegetation and wetland e present, unless disturbed or
	m Mucky Peat or			ion Dop.	00010.1.0	(1 5)	Hydrology Huat b	problematic
			(^ر					problematic
	Layer (if observe	ed):			ļ			
7.	ravel, ballast, fill	*			.		Hydric soil preser	it?
Depth (inch	es): not determ	inea			<u> </u>			
Remarks:								
^ ma		مامحا م	مام المحاجمة		' -4 boo		The section of the se	Dealer and within 2.4
			ina located alo	ng road	d at das	se or a r	allroad empankment.	Probe refusal within 2-4
inches a	lue to gravel ar	id fill.						
HYDROL	OGY							_
	drology Indicate	ors:						
-	icators (minimum		s required: check	all that a	annlv)		Secondary Indi	icators (minimum of two required)
X Surface		0. 02			Fauna (B	12\	· · · · · · · · · · · · · · · · · · ·	Soil Cracks (B6)
	` ,			• *	-			
	ater Table (A2)			•	uatic Plan			e Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C1	1) Dry-Sea	son Water Table (C2)
Water M	/larks (B1)			Oxidized	l Rhizosp	heres on	Living Roots Crayfish	Burrows (C8)
Sedimer	nt Deposits (B2)			(C3)	*			on Visible on Aerial Imagery (C9)
Drift De	posits (B3)			Presenc	e of Redu	uced Iron	(C4) Stunted	or Stressed Plants (D1)
	at or Crust (B4)			-			Coomer	phic Position (D2)
	, ,				ron Reau	iction in I		• •
	oosits (B5)			(C6)		: >=\	FAC-ING	utral Test (D5)
	on Visible on Aeria			Thin Mu	ck Surfac	e (C7)		
Sparsely	y Vegetated Conca	ve Surfac	ce (B8)	Gauge o	or Well Da	ata (D9)		
Water-S	Stained Leaves (B9)		Other (E	xplain in	Remarks)	
Field Obser	rvations:		 _	<u>'</u>				_
Surface wat	er present?	Yes	No	X	Depth (i	inches):		tland
Water table	•	Yes	No	X	Depth (i	,		rology
Saturation p		Yes	X No		Depth (i	inches):	0 pre	sent? Y
	apillary fringe)							
Describe re	corded data (streate	am gaug	e, monitoring we	II, aerial	photos, p	previous	inspections), if available:	
D								
Remarks:								
I								
l								

Project/Site Lake Calumet CTA Red Line	Extension	City/Cou	unty:	Cook	Sampling Date: 8/19/2015
Applicant/Owner: CTA/MWRD			State:	Illine	ois Sampling Point: 16
Investigator(s): J Mengler, V Mosca			Sec	ction, Towns	ship, Range: T37N R14E S27
Landform (hillslope, terrace, etc.):	ditch		Loca	al relief (con	ncave, convex, none): ditch
Slope (%): Lat:	41.667542	Lr	ong:	-87.6020	91 Datum:
Soil Map Unit Name: urban land-orthents	clayey complex	ς, nearly leve	el	NW	/I Classification: none
Are climatic/hydrologic conditions of the	site typical for th	is time of th	ne year?	<u>Y</u> (I	If no, explain in remarks)
Are vegetation, soilY	, or hydrology	ysi	ignificantly o	disturbed?	Y Are "normal circumstances"
Are vegetation, soil	, or hydrology	y na	aturally prob	olematic?	N present? Y
SUMMARY OF FINDINGS					(If needed, explain any answers in remarks.)
Hydrophytic vegetation present?	<u>Y</u>				
Hydric soil present?			Is the sar	mpled area	within a wetland? Y
Wetland hydrology present?	<u>Y</u>		If yes, o	optional wet	land site ID: Wetland 12
Remarks: (Explain alternative procedure:	s here or in a se	parate repo	ort.)		
Relied primarily upon vegetation a	nd landscape	nosition c	tue to dry	time of se	eason, and mostly urbanland/fill for substrate
	•	•	ide to dry	11110 01 00	ason, and mostly dibaniana/iii for substrate
VEGETATION Use scientific nar	nes of plants.	ı			
To a Charles (Diet eige)				Indicator	Dominance Test Worksheet
Tree Stratum (Plot size: 9	<u>m</u>) %	6 Cover	Species	Status	Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
2	 -				``
3					Total Number of Dominant Species Across all Strata: 1 (B)
4					Percent of Dominant Species that
5					are OBL, FACW, or FAC: 100.00% (A/B
		0 = To	otal Cover		
Sapling/Shrub stratum (Plot size:	4.6 m)				Prevalence Index Worksheet
1					Total % Cover of:
2					OBL species 0 x 1 = 0
3					FACW species 100 x 2 = 200 FAC species 0 x 3 = 0
5		—— —			FAC species 0 x 3 = 0 FACU species 0 x 4 = 0
<u> </u>		0 = To	otal Cover		UPL species $0 \times 5 = 0$
<u>Herb stratum</u> (Plot size:	1 m sq)				Column totals 100 (A) 200 (B)
1 Phragmites australis		100	Υ	FACW	Prevalence Index = B/A = 2.00
2					
3					Hydrophytic Vegetation Indicators:
4					Rapid test for hydrophytic vegetation
5					X Dominance test is >50%
6					X Prevalence index is ≤3.0*
7	—— –	—— –			Morphological adaptations* (provide
9					supporting data in Remarks or on a separate sheet)
10					Problematic hydrophytic vegetation*
		100 = To	otal Cover		(explain)
Woody vine stratum (Plot size:	1 m sq)				*Indicators of hydric soil and wetland hydrology must b
1					present, unless disturbed or problematic
2					Hydrophytic
		0 = To	otal Cover		vegetation present?
Domarks: (Include photo numbers here o	r on a senarate		otal Cover		vegetation present? Y
Remarks: (Include photo numbers here of	or on a separate		otal Cover		_

Depth						4111611t ti		tor or commi	ii tiie absei	nce of indicators.)
	<u>Matrix</u>				dox Feat					,
(Inches)	Color (moist)	%	Color ((moist)	%	Type*	Loc**	Textu	ıre	Remarks
*Type: C = Co	oncentration, D	= Deplet	tion, RM	= Redu	ced Matri	ix, MS =	Masked			ion: PL = Pore Lining, M = Matri
Hydric Soil	Indicators:							Indicator	s for Probl	ematic Hydric Soils:
Histis	sol (A1)			Saı	ndy Gley	ed Matrix	x (S4)	Coas	st Prairie Re	dox (A16) (LRR K, L, R)
Histic	Epipedon (A2)		•	Saı	ndy Redo	ox (S5)		 Dark	Surface (S	7) (LRR K, L)
Black	(Histic (A3)		•	Str	pped Ma	trix (S6)		5 cm	Mucky Pea	t or Peat (S3) (LRR K, L, R)
	ogen Sulfide (A	4)	•		amy Muc	` ′			•	Masses (F12) (LRR K, L, R)
	ified Layers (A5		i		amy Gley	•			•	rk Surface (TF12)
	Muck (A10)	,	•		pleted Ma		` ,		r (explain in	
	, ,		- (044)			•			i (expiairi ii	Terriarks)
	eted Below Dark		e (ATT)		dox Dark					
	Dark Surface (•		pleted Da			*Indica	tors of hydr	ophytic vegetation and wetland
	ly Mucky Minera	. ,	,	Re	dox Depr	essions	(F8)	hydro	logy must b	e present, unless disturbed or
5 cm	Mucky Peat or	Peat (S3	3)							problematic
Restrictive La	ayer (if observ	ed):								
Type: grav	vel, ballast, fill							Hydric	soil presen	t?
Depth (inches	s): not determ	nined				-				
Remarks:										
Area map	-		and loca	ited ald	ong road	d at bas	se of a r	oad embank	kment. P	robe refusal within 2-4
Area map	ped as urban e to gravel ar		and loca	ited ald	ong road	d at bas	se of a r	oad embank	kment. P	robe refusal within 2-4
Area map	e to gravel ar		and loca	ited ald	ong road	d at bas	se of a r	oad embanl	kment. P	robe refusal within 2-4
Area mappinches due	e to gravel ar	nd fill.	and loca	ited alc	ong road	d at bas	se of a r	oad embank	kment. P	robe refusal within 2-4
Area mappinches due	e to gravel ar GY rology Indicato	ors:					se of a r			
Area mappinches due HYDROLOG Wetland Hydi Primary Indica	e to gravel ar GY rology Indicato ators (minimum	ors:			all that a	apply)			condary Indi	cators (minimum of two required
Area mappinches due HYDROLOG Wetland Hydrimary Indica X Surface W	e to gravel ar GY rology Indicato ators (minimum /ater (A1)	ors:			all that a	<u>apply)</u> Fauna (B	113)	<u>Sec</u>	condary Indi	cators (minimum of two required Soil Cracks (B6)
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Area mappinches due HYDROLOG Wetland Hydro Primary Indica X Surface W High Wate Saturation	e to gravel ar GY rology Indicate ators (minimum /ater (A1) er Table (A2) a (A3)	ors:			all that a	apply) Fauna (B uatic Plai	113)	<u>Sec</u>	condary Indi Surface X Drainage Dry-Sea:	cators (minimum of two required Soil Cracks (B6) e Patterns (B10) son Water Table (C2)
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Project/Site Lake Calumet CTA Red Line Extension	on City/	County:	Cook	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State	: Illin	ois Sampling Point:	17
Investigator(s): J Mengler, V Mosca		<u></u>	Section, Towns	ship, Range: T37N R	R14E S27
Landform (hillslope, terrace, etc.):	ditch		ocal relief (cor	ncave, convex, none):	ditch
Slope (%): Lat: 41.669	9078	Long:	-87.6024	Datum:	
Soil Map Unit Name: urban land-orthents clayey c	omplex, nearly	level	NW	/I Classification:	none
Are climatic/hydrologic conditions of the site typical	al for this time	of the year?	<u>Y</u> (If no, explain in remarks)	
Are vegetation, soilY, or hy	ydrology	significantl	ly disturbed?	Y Are "normal circumstances"	п
Are vegetation, soil, or hy	ydrology	naturally p	roblematic?	N present?	<u> </u>
SUMMARY OF FINDINGS		1		(If needed, explain any answ	wers in remarks.)
Hydrophytic vegetation present? Y	l				
Hydric soil present?	ļ	Is the s	sampled area	within a wetland? Y	
Wetland hydrology present? Y		If yes	s, optional wet	land site ID: Wetland 13	
Remarks: (Explain alternative procedures here or	in a separate r	report.)			
Relied primarily upon vegetation and land	ecane nositic	on due to d	ry time of se	eason, and mostly urhaniand	d/fill for substrate
		m due to a	Ty tillie of 30	ason, and mostly dibamand	J/III IOI SUDSTIAC.
VEGETATION Use scientific names of p	olants.			1	
- Ci i (Districtor	Absolute			Dominance Test Workshe	et
Tree Stratum (Plot size: 9 m) % Cover	Species	Status	Number of Dominant Species tha	
2				are OBL, FACW, or FAC:	1 (A)
3				Total Number of Dominant Species Across all Strata:	1 (B)
4				Percent of Dominant Species that	``,
5				are OBL, FACW, or FAC:	100.00% (A/B)
	0	= Total Cove	er		
Sapling/Shrub stratum (Plot size: 4.6 m)	r.		Prevalence Index Worksh	eet
1				Total % Cover of:	
2				OBL species 0 x	
3				FACW species 100 x 2	
4			_	· —	3 = <u>0</u> 4 = 0
⁵		= Total Cove	<u> </u>		5 = 0
Herb stratum (Plot size: 1 m sq)	10.0.	,1	Column totals 100 (A	
1 Phragmites australis	100	Υ	FACW	Prevalence Index = B/A =	2.00
2					
3				Hydrophytic Vegetation In	ndicators:
3 4				Rapid test for hydrophy	tic vegetation
5				Rapid test for hydrophy X Dominance test is >50%	tic vegetation %
4 5 6				Rapid test for hydrophy	tic vegetation %
4 5 6 7				Rapid test for hydrophy X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptation	tic vegetation % 0* ons* (provide
4 5 6 7 8				Rapid test for hydrophy X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem	tic vegetation % 0* ons* (provide
4 5 6 7 8 9				Rapid test for hydrophyl X Dominance test is >509 X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet)	tic vegetation % 0* ons* (provide arks or on a
4 5 6 7 8	100	= Total Cove		Rapid test for hydrophy X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem	tic vegetation % 0* ons* (provide arks or on a
4 5 6 7 8 9		= Total Cove		Rapid test for hydrophy X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet) Problematic hydrophytic (explain)	tic vegetation
4 5 6 7 8 9		= Total Cove	5t	Rapid test for hydrophyl X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet) Problematic hydrophytic	tic vegetation % 0* ons* (provide larks or on a c vegetation*
4		= Total Cove	51	Rapid test for hydrophy X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet) Problematic hydrophytic (explain) *Indicators of hydric soil and we present, unless disturbed Hydrophytic	tic vegetation % 0* ons* (provide larks or on a c vegetation*
4	100	= Total Cove		Rapid test for hydrophyl X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet) Problematic hydrophytic (explain) *Indicators of hydric soil and were present, unless disturbed Hydrophytic vegetation	tic vegetation % 0* ons* (provide larks or on a c vegetation*
4 5 6 7 8 9 10 Woody vine stratum (Plot size: 1 m sq 1 2	0			Rapid test for hydrophy X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet) Problematic hydrophytic (explain) *Indicators of hydric soil and we present, unless disturbed Hydrophytic	tic vegetation % 0* ons* (provide larks or on a c vegetation*
4	0			Rapid test for hydrophyl X Dominance test is >50% X Prevalence index is ≤3. Morphological adaptatic supporting data in Rem separate sheet) Problematic hydrophytic (explain) *Indicators of hydric soil and were present, unless disturbed Hydrophytic vegetation	tic vegetation % 0* ons* (provide larks or on a c vegetation*

Profile Des	cription: (Descr	ibe to th	ne depth	needec	to docu	ıment th	ne indica	tor or confirm	the abser	nce of indicators.)
Depth	Matrix				dox Feat					,
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	ire	Remarks
*Type: C = 0	Concentration, D	= Deple	tion, RM =	Reduc	ed Matri	x, MS =	Masked	Sand Grains.	**Locat	ion: PL = Pore Lining, M = Matrix
Hydric Sc	oil Indicators:							Indicator	s for Probl	ematic Hydric Soils:
•	tisol (A1)			Sar	ndv Glev	ed Matrix	x (S4)			edox (A16) (LRR K, L, R)
	tic Epipedon (A2)		-		ndy Redo		. (0 .)			7) (LRR K, L)
			-		-	itrix (S6)			•	it or Peat (S3) (LRR K, L, R)
	ck Histic (A3)	4)	-		• •	` '			-	
	drogen Sulfide (A		_		•	ky Miner			-	Masses (F12) (LRR K, L, R)
	atified Layers (A5)	_			ed Matri				rk Surface (TF12)
2 cr	m Muck (A10)		_			atrix (F3)		Other	(explain in	remarks)
Dep	oleted Below Dark	k Surfac	e (A11)	Red	dox Dark	Surface	(F6)			
Thi	ck Dark Surface (A12)		De	oleted Da	ark Surfa	ce (F7)	*Indicat	tore of hydr	ophytic vegetation and wetland
Sar	ndy Mucky Minera	ıl (S1)	_	Red	dox Depr	essions	(F8)			e present, unless disturbed or
	m Mucky Peat or	, ,	3)		•		` ,	riyaror	ogy mast b	problematic
	Layer (if observe		- /				1			
	ravel, ballast, fill	eu).						Hydric (soil presen	.+2
Depth (inch		nined				•		riyuric s	oui preser	
, ,	- Hot determ	iiiiou								
Remarks:										
Area ma	nned as urban	land a	and locat	ed alc	na railr	oad em	hankm	ent Probe	refusal wi	thin 2-4 inches due to
gravel a		iaria, c	110 1000	.cu uic	nig raiii	oud on	ibariikiiri	0116. 1 1000	roradar w	allin 2 1 mones due to
gravera	id iiii.									
HYDROL	OGY									
Wetland Hy	drology Indicate	rs:								
Primary Indi	cators (minimum	of one is	s required	; check	all that a	apply)		Sec	ondary Indi	cators (minimum of two required
X Surface	Water (A1)				Aquatic	Fauna (B	313)		Surface	Soil Cracks (B6)
High Wa	ater Table (A2)				True Ag	uatic Plar	nts (B14)	_	X Drainage	e Patterns (B10)
Saturation							Odor (C	_		son Water Table (C2)
	larks (B1)				•			_		Burrows (C8)
	` '					l Rhizosp	heres on	Living Roots _	_ ′	* *
	nt Deposits (B2)				(C3)					on Visible on Aerial Imagery (C9)
Drift Dep	posits (B3)				Presenc	e of Redi	uced Iron	(C4)	Stunted	or Stressed Plants (D1)
Algal Ma	at or Crust (B4)				Recent I	ron Redu	uction in T	illed Soils	Geomor	phic Position (D2)
Iron Dep	oosits (B5)				(C6)			_	FAC-Nei	utral Test (D5)
Inundation	on Visible on Aeria	I Imager	y (B7)		Thin Mu	ck Surfac	ce (C7)	_		
Sparsely	Vegetated Conca	ve Surfa	ce (B8)		Gauge c	r Well Da	ata (D9)			
 ·	tained Leaves (B9		, ,				Remarks)		
Field Obser		,			Julio (L	.Apidiii iii	. tomants	/		
Surface wat		Yes	Х	No		Denth (inches):	0-2	Wet	tland
Water table	•	Yes		No	X		inches):	<u> </u>		rology
Saturation p	•	Yes	X	No			inches):	0	-	sent? Y
	pillary fringe)					`	,			
Describe red	corded data (strea	am gaug	e, monito	ring we	II, aerial	photos,	previous	inspections), i	f available:	
	- (J				,		-,,		
<u></u>										
Remarks:										
Ì										

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illin	nois Sampling Point:	18
Investigator(s): J Mengler, V Mosca			ection, Towns	ship, Range: T37N F	R14E S27
Landform (hillslope, terrace, etc.):	tch	Lo	ocal relief (co	ncave, convex, none):	ditch
Slope (%): Lat: 41.66728	9	Long:	-87.600	100 Datum:	
Soil Map Unit Name: urban land-orthents clayey com	plex, nearly	level	NV	VI Classification:	none
Are climatic/hydrologic conditions of the site typical for	or this time	of the year?	Υ (If no, explain in remarks)	
Are vegetation , soil Y , or hydro	logy	significantl	y disturbed?	Y Are "normal circumstances	, m
	ology	•	roblematic?	N present?	Y
SUMMARY OF FINDINGS		•		(If needed, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present?		Is the s	ampled area	within a wetland?	
Wetland hydrology present? Y		If yes	s, optional we	tland site ID: Wetland 14	
Remarks: (Explain alternative procedures here or in a	a separate i	report.)			
	·	. ,			
Relied primarily upon vegetation and landsca	ape position	on due to di	ry time of se	eason, and mostly urbanian	d/fill for substrate.
VEGETATION Use scientific names of plan	nts.				
·	Absolute	Dominant	Indicator	Dominance Test Worksho	et
<u>Tree Stratum</u> (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that	at
1				are OBL, FACW, or FAC:	3 (A)
2				Total Number of Dominant	
3				Species Across all Strata:	3 (B)
5		·		Percent of Dominant Species that are OBL, FACW, or FAC:	
3	0	= Total Cove		are OBL, I ACVV, OF I AC.	100.00% (A/B)
Sapling/Shrub stratum (Plot size: 4.6 m)		•	Prevalence Index Worksh	
1	,			Total % Cover of:	
2				OBL species 0 x	1 = 0
3				FACW species 100 x	2 = 200
4				FAC species 0 x	3 = 0
5				· —	4 = 0
(5)	0	= Total Cove	r	· —	5 = <u>0</u>
Herb stratum (Plot size: 1 m sq	100	V	EAC\\\	Column totals 100 (/	
1 Phragmites australis 2	100	·	FACW	Prevalence Index = B/A =	2.00
3				Hydrophytic Vegetation I	ndicators:
4				Rapid test for hydrophy	
5				X Dominance test is >50	-
6				X Prevalence index is ≤3	.0*
7				Morphological adaptati	ons* (provide
8				supporting data in Ren	\I
9				separate sheet)	
10				Problematic hydrophyti	c vegetation*
Woody vine stretum (District) 4 mg/s	100	= Total Cove	r	(explain)	
Woody vine stratum (Plot size: 1 m sq)	V	EAC\A/	*Indicators of hydric soil and we	
1 Vitis riparia 2 Convolvulus sepium	20 15	- Y	FACW FAC	present, unless disturbe	a or problematic
2 Conversal Septem	35	= Total Cove		vegetation	
		. 5.0. 0010	•	present? Y	_
Remarks: (Include photo numbers here or on a separ	rate sheet)				

Profile Des	cription: (Descr	ibe to th	ne depth	needec	to docu	ument th	ne indica	tor or confirr	n the abse	nce of indicators.)
Depth Matrix Redox Features								•		
(Inches)	Color (moist)	%	Color (ı	noist)	%	Type*	Loc**	Text	ure	Remarks
*Type: C = (Concentration, D	= Deplet	ion RM =	Reduc	ed Matri	ix MS =	Masked	Sand Grains	**Locat	tion: PL = Pore Lining, M = Matrix
	il Indicators:	Верісі	.1011, 1 (111	rtoduc	oca iviatii	ix, ivio	Maskea			lematic Hydric Soils:
•				0		1 1 1 1 - 4 - 4 - 4	(0.4)			•
	tisol (A1)		_	_		ed Matrix	x (S4)			edox (A16) (LRR K, L, R)
— His	tic Epipedon (A2)		_	Sar	ndy Redo	ox (S5)			•	7) (LRR K, L)
Bla	ck Histic (A3)		_	Stri	pped Ma	trix (S6)		5 cm	Mucky Pea	at or Peat (S3) (LRR K, L, R)
Hyd	lrogen Sulfide (A	1)		Loa	ımy Muc	ky Miner	al (F1)	Iron-	Manganese	Masses (F12) (LRR K, L, R)
Stra	atified Layers (A5)		Loa	ımy Gley	ed Matri	x (F2)	Very	Shallow Da	ark Surface (TF12)
	n Muck (A10)		_			atrix (F3)			r (explain in	
	oleted Below Dark	Surface	_ (Δ11) =			Surface			. (oxp.a	
	ck Dark Surface (-			ark Surfa				ophytic vegetation and wetland
	ndy Mucky Minera		_	Red	ox Depr	essions	(F8)	hydro	logy must b	e present, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	3)							problematic
Restrictive	Layer (if observe	ed):								
Type: gi	avel, ballast, fill							Hydric	soil preser	nt?
Depth (inch	es): not determ	ined				_				
Remarks:										
r torriaritor										
Area ma	pped as urban	land, a	and locat	ed be	tween g	gravel r	oads.	Probe refusa	al within 2	-4 inches due to gravel and
fill.										
LIVEROL	201/									
HYDROL										
-	drology Indicato									
Primary Indi	cators (minimum	of one is	s required	; check	all that a	apply)		Sec	condary Indi	icators (minimum of two required)
X Surface	Water (A1)				Aquatic	Fauna (B	313)	_	Surface	Soil Cracks (B6)
High Wa	iter Table (A2)				True Aq	uatic Plar	nts (B14)	_	X Drainage	e Patterns (B10)
Saturation	on (A3)				Hvdroae	n Sulfide	Odor (C	1)	Drv-Sea	son Water Table (C2)
	larks (B1)				•			_		Burrows (C8)
	nt Deposits (B2)					Rnizosp	neres on	Living Roots _		on Visible on Aerial Imagery (C9)
	. , ,			_	(C3)	(5.		_		3 , (,
	posits (B3)				Presenc	e of Real	uced Iron	(C4)		or Stressed Plants (D1)
Algal Ma	it or Crust (B4)				Recent I	ron Redu	uction in T	illed Soils	Geomor	phic Position (D2)
Iron Dep	osits (B5)				(C6)			_	FAC-Ne	utral Test (D5)
Inundation	on Visible on Aeria	l Imager	/ (B7)		Thin Mu	ck Surfac	ce (C7)			
Sparsely	Vegetated Conca	ve Surfa	ce (B8)		Gauge o	or Well Da	ata (D9)			
Water-S	tained Leaves (B9	١	, ,				Remarks	1		
Field Obser		,			Other (E	.xpiaiii iii	Tterriarite			
Surface wat		Yes	X	No		Denth (inches):	0-2	Wes	tland
Water table	•	Yes		No	X		inches):	U-L		rology
Saturation p	•	Yes	X	No		- ' '	inches):	0	-	sent? Y
	pillary fringe)					• • •	,			
Describe red	corded data (strea	am gauc	e, monito	ring we	II, aerial	photos.	previous	inspections),	if available:	
	- (J 3		5		,		,//		
<u></u>										
Remarks:										
1										

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook	Sampling Date:	8/19/2015		
Applicant/Owner: CTA/MWRD		State:		nois Sampling Point:	19		
Investigator(s): J Mengler, V Mosca		s	ection, Towns	ship, Range: T37N R1	4E S27		
Landform (hillslope, terrace, etc.):	tch	 Lc	ocal relief (cor	ncave, convex, none):	ditch		
Slope (%): Lat: 41.667289	9	Long:	-87.6001	100 Datum:			
Soil Map Unit Name: urban land-orthents clayey comp	plex, nearly	level	NW	VI Classification: n	none		
Are climatic/hydrologic conditions of the site typical fo	or this time o	of the year?	<u>Y</u> ((If no, explain in remarks)			
Are vegetation, soilY, or hydro	ology	significantly	y disturbed?	Y Are "normal circumstances"			
		naturally pr	roblematic?	N present?	Y		
SUMMARY OF FINDINGS				(If needed, explain any answ	rers in remarks.)		
Hydrophytic vegetation present? N							
Hydric soil present?	1	Is the s	ampled area	within a wetland? N	=		
Wetland hydrology present?	ĺ	If yes	s, optional wet	tland site ID:			
Remarks: (Explain alternative procedures here or in a	a separate r	eport.)					
			the of or		'C' ferreshotrata		
Relied primarily upon vegetation and landsca	ipe positio	n due to ui	y time or se	ason, and mostly urbanianu/	fill for substrate.		
VEGETATION Use scientific names of plan	nts.						
	Absolute	Dominant		Dominance Test Workshee	t		
<u>Tree Stratum</u> (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that			
1 Morus alba	40	<u>Y</u>	FAC	are OBL, FACW, or FAC:	3 (A)		
2 Acer negundo	20	Y	FAC	Total Number of Dominant	5 (D)		
3				Species Across all Strata:	6 (B)		
5			- ——	Percent of Dominant Species that are OBL, FACW, or FAC:	50.00% (Δ/R)		
5	60 :	= Total Cove	ar .	ale ODL, FACEV, OLI AC.	50.00% (A/B)		
Sapling/Shrub stratum (Plot size: 4.6 m)	- 10tai 00.2.	1	Prevalence Index Workshe			
1 Prunus serotina	15	Υ	FACU	Total % Cover of:			
2			<u> </u>	OBL species 0 x 1	= 0		
3				FACW species 5 x 2	= 10		
4			· —	FAC species 60 x 3			
5				FACU species 35 x 4			
	15:	= Total Cove	:r	UPL species 0 x 5			
Herb stratum (Plot size: 1 m sq)			Column totals 100 (A)			
1 Eupatorium rugosum	10	Y Y	FACU	Prevalence Index = B/A =	3.30		
2 Arctium minus 3 Geum laciniatum	<u>10</u> 5	- Y Y	FACU FACW	Hydrophytic Vegetation Ind	licatore:		
4			FACTV	Rapid test for hydrophytic			
5				Dominance test is >50%	-		
6		-	- ——	Prevalence index is ≤3.0			
7				-			
8				Morphological adaptation supporting data in Rema	**		
9				separate sheet)			
10				Problematic hydrophytic	vegetation*		
<u> </u>	25	= Total Cove	r:	(explain)			
Woody vine stratum (Plot size: 1 m sq)			*Indicators of hydric soil and wetla			
1			- ——	present, unless disturbed	or problematic		
2		T-1-1 Causa	- ——	Hydrophytic vegetation			
	0 :	= Total Cove	:r	present? N			
Remarks: (Include photo numbers here or on a separ	rate sheet)			<u> </u>			
,	,						

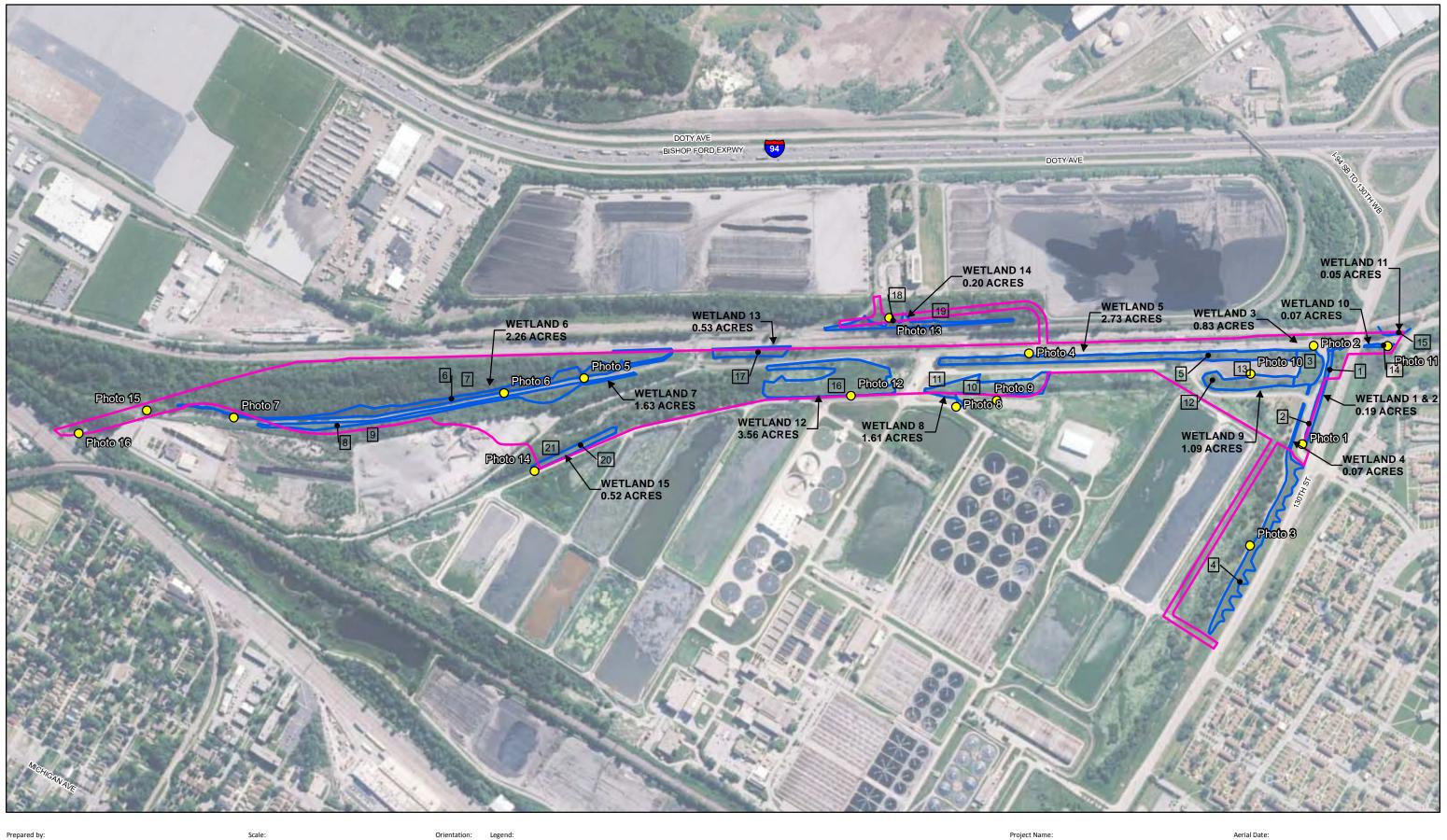
Profile Desc	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirm the abse	nce of indicators.)		
Depth Matrix Redox Features										
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks		
*Type: C = C	Concentration, D	= Deplet	ion, RM = Reduc	ed Matri	x, MS =	Masked	Sand Grains. **Loca	tion: PL = Pore Lining, M = Matrix		
Hydric So	il Indicators:						Indicators for Prob	lematic Hydric Soils:		
Hist	isol (A1)		Sar	dv Gleve	ed Matrix	(S4)	Coast Prairie R	edox (A16) (LRR K, L, R)		
	ic Epipedon (A2)			dy Redo		(-)	Dark Surface (S	, , , , , , , , , , , , , , , , , , , ,		
	ck Histic (A3)			-	ıtrix (S6)			at or Peat (S3) (LRR K, L, R)		
	, ,	4)		•	` ,					
	rogen Sulfide (A				ky Miner			e Masses (F12) (LRR K, L, R)		
	tified Layers (A5)			ed Matri			ark Surface (TF12)		
	n Muck (A10)			leted Ma	atrix (F3))	Other (explain i	n remarks)		
Dep	leted Below Dark	k Surface	e (A11) Red	ox Dark	Surface	(F6)				
Thic	ck Dark Surface (A12)	Dep	leted Da	ark Surfa	ce (F7)	*Indicators of hyd	rophytic vegetation and wetland		
San	dy Mucky Minera	ıl (S1)	Red	ox Depr	essions	(F8)		be present, unless disturbed or		
5 cr	n Mucky Peat or	Peat (S3	<u>—</u>				, 0,	problematic		
Restrictive	Layer (if observ	eq).	•							
	avel, ballast, fill	cuj.					Hydric soil prese	nt?		
Depth (inche		nined					yuo oo p.ooo			
	<u> </u>				•					
Remarks:										
Area ma	pped as urban	land, a	and located bet	ween g	gravel re	oads.	Probe refusal within 2	2-4 inches due to gravel and		
fill.	•	,			•			ŭ		
HYDROLO										
-	drology Indicato									
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Secondary Inc	icators (minimum of two required)		
Surface '	Water (A1)			Aquatic	Fauna (B	13)	Surface	Soil Cracks (B6)		
High Wa	ter Table (A2)			True Aqı	uatic Plar	nts (B14)	Drainag	Drainage Patterns (B10)		
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	Dry-Sea	ison Water Table (C2)		
_	arks (B1)						Crowfield	Burrows (C8)		
	t Deposits (B2)			(C3)	Rnizosp	neres on	Living Roots	on Visible on Aerial Imagery (C9)		
					o of Dod	lood Iron				
	oosits (B3)			Presenc	e oi Redi	uced Iron		or Stressed Plants (D1)		
	t or Crust (B4)				ron Redu	iction in T	ilica collo	phic Position (D2)		
	osits (B5)			(C6)			FAC-Ne	eutral Test (D5)		
Inundatio	on Visible on Aeria	I Imager	/ (B7)	Thin Mu	ck Surfac	e (C7)				
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)				
Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)			
Field Obser	vations:									
Surface water	er present?	Yes	No	Χ	Depth (i	inches):	We	tland		
Water table	•	Yes	No	Χ	Depth (i	,	hye	drology		
Saturation p		Yes	No	Χ	Depth (i	inches):	pre	esent? N		
	pillary fringe)									
Describe red	corded data (strea	am gaug	e, monitoring we	I, aerial	photos,	previous	inspections), if available	:		
Remarks:										
. Cinano.										
No ovida	noo of budgets	av obo	onvod Croves	1 00110	mostly	dayus	disturbed leaf litter			
INO EVIDE	ince of flydrold	gy obs	erveu, Groun	ı cover	mosuy	ury uri	disturbed leaf litter.			

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook	:	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State	ate: Illinois		Sampling Point:	20
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N R	14E S27
Landform (hillslope, terrace, etc.):	tch	L	ocal relief (co	ncave, convex,	none):	ditch
Slope (%): Lat: 41.67156	62	Long:	-87.607	147 I	Datum:	
Soil Map Unit Name: urban land-orthents clayey com	ıplex, nearly l			VI Classification	n: r	none
Are climatic/hydrologic conditions of the site typical f	or this time o	f the year?	Υ (If no, explain ir	remarks)	
Are vegetation , soil Y , or hydro	ology	significant	ly disturbed?	Y Are "norm	nal circumstances"	
Are vegetation , soil , or hydro	ology	naturally p	roblematic?	N present?	iai on cametanece	Υ
SUMMARY OF FINDINGS				(If needed	d, explain any ansv	vers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the	sampled area	within a wetla	and? Y	
Wetland hydrology present?		If ye	s, optional we	tland site ID:	Wetland 15	
Remarks: (Explain alternative procedures here or in	a separate re	eport.)				
	·	. ,		_		
Relied primarily upon vegetation and landsc	ape positio	n due to d	ry time of se	eason, and m	lostly urbaniand	fill for substrate.
VEGETATION Use scientific names of pla	nts.					
	Absolute	Dominant	Indicator	Dominan	ce Test Workshee	et
Tree Stratum (Plot size: 9 m)	% Cover	Species	Status	Number of Do	minant Species that	
1				are OBL,	FACW, or FAC:	1 (A)
2					ber of Dominant	4 (5)
3					cross all Strata:	1(B)
5		-			minant Species that FACW, or FAC:	100.00% (A/B)
	0 :	= Total Cove	er	arc obl.,	7,000,017,0.	100.0070 (A/B)
Sapling/Shrub stratum (Plot size: 4.6 m)			Prevalen	ce Index Workshe	et
1	• '			Total % C	over of:	
2				OBL spec	eies <u>0</u> x 1	= 0
3				FACW sp	ecies 100 x 2	= 200
4				FAC spec		
5		- Tatal Caus		FACU spe		
Herb stratum (Plot size: 1 m sg	,	= Total Cove	er	UPL spec		
1 Phragmites australis	_) 100	Y	FACW		otals 100 (A) ce Index = B/A =	2.00 (B)
2	100		171011	Trevalence	oe maex Birt	
3			_	Hydrophy	tic Vegetation Inc	dicators:
4				Rapid	test for hydrophyti	c vegetation
5				X Domii	nance test is >50%	1
6				X Preva	lence index is ≤3.0)*
7				Morph	nological adaptatio	ns* (provide
8					orting data in Rema	arks or on a
9					ate sheet)	
10	100 :	= Total Cove		Proble (expla	ematic hydrophytic ain)	vegetation*
Woody vine stratum (Plot size: 1 m sq)	10101 0010	5 1	 , .	,	
1	- ′				s of hydric soil and wetl esent, unless disturbed	and hydrology must be or problematic
2				Hydro	phytic	
	0 :	= Total Cove	er	veget		
Demonstra (Include that a super-	mata -t O			prese	ent? Y	_
Remarks: (Include photo numbers here or on a sepa	ırate sneet)					

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ıment th	e indica	tor or confirn	n the absence	e of indicators.)
Depth	th <u>Matrix</u> <u>Redox Features</u>					·			
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	ıre	Remarks
	Concentration, D	= Deplet	ion, RM = Reduc	ed Matri	x, MS =	Masked			n: PL = Pore Lining, M = Matrix
Hydric Sc	oil Indicators:								natic Hydric Soils:
His	tisol (A1)		Sar	idy Gleye	ed Matrix	(S4)	Coas	t Prairie Redo	ox (A16) (LRR K, L, R)
His	tic Epipedon (A2)		Sar	dy Redo	ox (S5)		Dark	Surface (S7)	(LRR K, L)
Bla	ck Histic (A3)		Stri	pped Ma	ıtrix (S6)		5 cm	Mucky Peat of	or Peat (S3) (LRR K, L, R)
Hyd	lrogen Sulfide (A	1)	Loa	my Mucl	ky Minera	al (F1)	Iron-l	Manganese M	lasses (F12) (LRR K, L, R)
Stra	atified Layers (A5))		-	ed Matrix			-	Surface (TF12)
	m Muck (A10)			-	atrix (F3)			r (explain in re	
	oleted Below Dark	Surface			Surface			(,
	ck Dark Surface (` ′ —		ark Surfa	` '			
	ndy Mucky Minera	,			essions	` '			hytic vegetation and wetland
	•	. ,		iox Debi	62210112	(ГО)	hydrol		present, unless disturbed or
	m Mucky Peat or		3)					pr	oblematic
	Layer (if observe	ed):							
, <u> </u>	ravel, ballast, fill						Hydric	soil present?	'
Depth (inch	es): not determ	inea			•				
Remarks:									
Area ma	nned as urban	land a	and along stoo	a road (ambank	mont	Drobe refue	sal within 2	4 inches due to gravel
and fill.	ppeu as urbari	iaiiu, c	ind along steel	J Toau e	SIIIDalik	iiieiit.	Flobe leius	sai wiliiii 2-	4 iliches due to gravei
and iii.									
HYDROL	OGY								
Wetland Hy	drology Indicate	rs:							
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Sec	ondary Indica	tors (minimum of two required)
X Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface So	il Cracks (B6)
	ater Table (A2)				uatic Plar		_	X Drainage P	, ,
Saturation				•	n Sulfide				n Water Table (C2)
_	larks (B1)						_		urrows (C8)
	` '				l Rhizosp	heres on	Living Roots _	_ ′	, ,
	nt Deposits (B2)			(C3)	(5)			_	Visible on Aerial Imagery (C9)
	posits (B3)			Presenc	e of Redu	iced Iron	(C4)		Stressed Plants (D1)
Algal Ma	at or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils _	Geomorphi	c Position (D2)
Iron Dep	osits (B5)			(C6)				FAC-Neutra	al Test (D5)
Inundation	on Visible on Aeria	I Imager	/ (B7)	Thin Mu	ck Surfac	e (C7)			
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)			
Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)		
Field Obser	rvations:			•					
Surface wat	er present?	Yes	No	Х	Depth (i	nches):		Wetla	nd
Water table	•	Yes	No	Х	Depth (i	,		hydro	••
Saturation p		Yes	X No		Depth (i	nches):	0	prese	nt? Y
· ·	pillary fringe)								
Describe red	corded data (strea	am gaug	e, monitoring we	II, aerial	photos, p	orevious	inspections), i	t available:	
Remarks:									
. tomanto.									

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:		nois Sampling Point:	21
Investigator(s): J Mengler, V Mosca		Se	ection, Towns	ship, Range: T37N R1	4E S27
Landform (hillslope, terrace, etc.):	tch	Lo	cal relief (cor	ncave, convex, none):	ditch
Slope (%): Lat: 41.671562	2	Long:	-87.6071	147 Datum:	
Soil Map Unit Name: urban land-orthents clayey comp	plex, nearly	level	Nv	VI Classification: n	ione
Are climatic/hydrologic conditions of the site typical for	or this time c	of the year?	<u>Y</u> ((If no, explain in remarks)	
Are vegetation, soilY, or hydro	ology	significantly	disturbed?	Y Are "normal circumstances"	
Are vegetation, soil, or hydro	ology	naturally pro	oblematic?	N present?	Y
SUMMARY OF FINDINGS				(If needed, explain any answ	ers in remarks.)
Hydrophytic vegetation present? N					
Hydric soil present?		Is the sa	ampled area	within a wetland? N	=
Wetland hydrology present?		If yes,	, optional wet	tland site ID:	_
Remarks: (Explain alternative procedures here or in a	a separate r	eport.)			
			· ·	moothy urbaniand/	CII for cubatrata
Relied primarily upon vegetation and landsca	ape positio	n due to ury	y time or se	eason, and mostly urbanianu	fill for substrate.
VEGETATION Use scientific names of plan	nts.				
	Absolute	Dominant	Indicator	Dominance Test Workshee	t
Tree Stratum (Plot size: 9 m)	% Cover	Species	Status	Number of Dominant Species that	
1				are OBL, FACW, or FAC:	2 (A)
2				Total Number of Dominant	; (D)
3		. ———		Species Across all Strata:	4 (B)
5				Percent of Dominant Species that are OBL, FACW, or FAC:	50.000/ (Δ/R)
5	0	= Total Cover	. ——	ale ODL, FACTY, OF FAC.	50.00% (A/B)
Sapling/Shrub stratum (Plot size: 4.6 m	,	- Total 55.5.		Prevalence Index Workshee	
1 Rhamnus cathartica	80	Υ	FAC	Total % Cover of:	
2 Morus alba	20	Y	FAC	OBL species 0 x 1	= 0
3				FACW species 0 x 2	= 0
4				FAC species 100 x 3	= 300
5				FACU species 30 x 4	= 120
_	100	= Total Cover		UPL species 0 x 5	
Herb stratum (Plot size: 1 m sq)			Column totals 130 (A)	
1 Glechoma hederacea	15	Y Y	FACU	Prevalence Index = B/A =	3.23
2 Arctium minus	15	<u> </u>	FACU	Under which Vegetation Ind	··
3				Hydrophytic Vegetation Ind Rapid test for hydrophytic	
5				Dominance test is >50%	-
6				Prevalence index is ≤3.0	
7				-	
8				Morphological adaptation supporting data in Rema	**
9				separate sheet)	110 01 01
10				Problematic hydrophytic	vegetation*
	30	= Total Cover	. -	(explain)	· ·
Woody vine stratum (Plot size: 1 m sq	.)			*Indicators of hydric soil and wetla	
1				present, unless disturbed	or problematic
2				Hydrophytic vegetation	
	0	= Total Cover		present? N	
Remarks: (Include photo numbers here or on a separ	rate sheet)			<u> </u>	•
Tromano. (morado pristo resistante de la constante de la const	Tato C,				

Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	e indica	tor or confirm t	he absen	ce of indicators.)		
Depth Matrix Redox Features							,				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	;	Remarks		
*Type: C = 0	Concentration, D	= Deple	ion, RM = Reduc	ed Matr	ix, MS =	Masked	Sand Grains.	**Location	on: PL = Pore Lining, M = Matrix		
Hydric Sc	il Indicators:						Indicators	for Proble	ematic Hydric Soils:		
•	tisol (A1)		San	dv Glev	ed Matrix	(S4)			lox (A16) (LRR K, L, R)		
	tic Epipedon (A2)			idy Redo		. (0 .)) (LRR K, L)		
				-				•	or Peat (S3) (LRR K, L, R)		
	ck Histic (A3)	4)		•	itrix (S6)			-			
	Irogen Sulfide (A			•	ky Miner			•	Masses (F12) (LRR K, L, R)		
	atified Layers (A5)			ed Matri				k Surface (TF12)		
2 cr	m Muck (A10)		Dep	leted M	atrix (F3))	Other (explain in	remarks)		
Dep	oleted Below Dark	k Surfac	e (A11) Red	lox Dark	Surface	(F6)					
Thi	ck Dark Surface (A12)	Dep	leted Da	ark Surfa	ce (F7)	*Indicator	re of hydro	phytic vegetation and wetland		
Sar	ndy Mucky Minera	al (S1)	Red	lox Depi	essions	(F8)			present, unless disturbed or		
5 cr	m Mucky Peat or	Peat (S3		•		, ,	nyarolog		problematic		
	Layer (if observe	•				1		<u>'</u>			
	ravel, ballast, fill	eu).					Hydric so	il procont	2		
Depth (inch		nined			-		Hydric So	ii present	·		
	not determ	iiiica									
Remarks:											
Δrea ma	nned as urhan	land a	and along steel	road i	emhank	ment	Prohe refusa	l within 2	-4 inches due to gravel		
and fill.	pped do dibaii	iaria, c	ind diong steep	o roda v	Ciribain	arront.	T TODE TETUSA	· •••••	- mones due to graver		
and iii.											
HYDROL	OGY										
Wetland Hy	drology Indicate	ors:									
Primary Indi	cators (minimum	of one is	s required; check	all that	apply)		Secor	ndary Indic	ators (minimum of two required)		
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface S	oil Cracks (B6)		
	ater Table (A2)				uatic Plar	-	-		·		
Saturation					n Sulfide			Drainage Patterns (B10) Dry-Season Water Table (C2)			
			-	riyuroge	ii Suiliue	Ouoi (C		- '			
	larks (B1)				d Rhizosp	heres on	Living Roots	_ ′	Burrows (C8)		
	nt Deposits (B2)			(C3)				_	No Visible on Aerial Imagery (C9)		
Drift Dep	oosits (B3)			Presenc	e of Redu	uced Iron	(C4)	Stunted o	r Stressed Plants (D1)		
Algal Ma	at or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils	Geomorp	hic Position (D2)		
Iron Dep	osits (B5)			(C6)				FAC-Neu	tral Test (D5)		
Inundation	on Visible on Aeria	l Imager	/ (B7)	Thin Mu	ck Surfac	e (C7)		_			
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	i e	or Well Da						
	tained Leaves (B9				xplain in	, ,	.)				
	•	,		Other (L	.xpiaiii iii	1 Ciliai No	·)	1			
Field Obser Surface wat		Yes	No	Х	Depth (i	inches).		Wetl	and		
Water table	•	Yes	No	X	Depth (i	,			ology		
Saturation p	•	Yes	No	X	Depth (i	,		pres			
	pillary fringe)					-,-					
•	corded data (stream	am gauc	e, monitorina we	II, aerial	photos.	previous	inspections). if a	available:			
		J3		,			,,, •				
Remarks:											
i											



Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture



Latest Revision: 10/5/2015

Data Point O Photo Locations

Surveyed Wetland Boundary (Labled wetland acreas for Project Permanent Envelope only) Project Permanent Envelope

CTA Red Line Extension Prepared For:

CDM Smith

2014

Exhibit Title:



Photograph 1:

Wetland 1 looking east from west end.



Photograph 2:

Existing fly dumping piles along Cottage Grove Road and edge of Wetland 3.

Project Number: 15-0218

Project Name:

CTA Red Line Extension



Photograph 3:

North edge of Wetland 4 looking west – mostly out of project area.



Photograph 4:

Edge of Wetland 5 along Cottage Grove Road looking south.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title:

Exhibit:



Photograph 5:

Wetland 6 along railroad looking



Photograph 6:

Evidence of hydrology along railroad and edge of Wetland 6.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title: Exhibit:

Representative Photographs #10



Photograph 7:

Remnant prairie plants in Wetland 7 along railroad.



Photograph 8:

Mowed edge of Wetland 8.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title: Exhibit:



Photograph 9:

Existing upland gravel area next to Wetland 8.



Photograph 10:

Wetland 9.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title:

Representative Photographs #10

Exhibit: #10



Photograph 11:

Existing trash piles in Wetland 10.



Photograph 12:

Wetland 12.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title: Exhibit:

Representative Photographs #10



Photograph 13:

Wetland 14.



Photograph 14: Wetland 15.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title: Exhibit:



Photograph 15:

Upland in northwest finger of project area looking north.



Photograph 16:

Northwest extent of project area.

Project Number: 15-0218

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Project Name:

CTA Red Line Extension

Exhibit Title:

Representative Photographs #10

Exhibit: