

2017

Hegewisch Marsh Section 506 Great Lakes Fishery & Ecosystem Restoration Study

Appendix A – Draft 404/401 and Coordination



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A1 – SECTION 404(B)(1) EVALUATION for REGIONAL PERMIT 5 CERTIFICATION

Regional Permit 5 (RP5) authorizes the restoration, creation and enhancement of wetlands and riparian areas, and the restoration and enhancement of rivers, creeks and streams, and open water areas on any public or private land. Wetland and stream restoration and enhancement activities include the removal of accumulated sediments; installation, removal and maintenance of small water control structures, dikes and berms; installation of current deflectors; enhancement, restoration, or creation of riffle and pool structures; placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or create stream meanders; backfilling of artificial channels and drainage ditches; removal of existing drainage structures; construction of open water areas; activities needed to reestablish vegetation, including plowing or disking for seed bed preparation; mechanized land-clearing to remove undesirable vegetation; and other related activities. This RP may be used to relocate aquatic habitat types on the project site, provided there are net gains in aquatic resource functions and values. Authorization under RP5 is subject to the following requirements which shall be addressed in writing and submitted with the notification:

- a. All projects will be processed under Category I.
- b. This permit does not authorize activities to relocate or channelize a linear waterway such as a river, stream, creek, etc.
- c. This permit cannot be used for the conversion of a stream or creek to another aquatic use, such as the creation of an impoundment for waterfowl habitat.
- d. This permit cannot be used to authorize the conversion of natural wetlands to another aquatic use, such as creation of waterfowl impoundments where a forested wetland previously existed, or the conversion of waterfowl impoundments and wildlife habitat areas.
- e. A management and monitoring plan shall be required for the restoration, creation or enhancement of aquatic resources. Upon the District's approval, the management and monitoring plan may be designed to be site specific, with the duration of the plan determined on a case-by-case basis.
- f. For a project site adjacent to a conservation area, forest preserve holdings, or village, city, municipal or county owned lands, the permittee shall request a letter from the organization responsible for management of the area. The response letter should identify recommended measures to protect the area from impacts that may occur as a result of the development. A copy of the request and any response received from the organization shall be submitted to the District with the notification.
- g. For projects receiving State or Federal grants or funding sources, the permittee shall submit a copy of the document disclosing the expiration date for use of the funds and the expected calendar date for commencement of the project in order to meet funding deadlines.

These conditions were agreed to and certified for 401 Water Quality Certification by the Illinois Environmental Protection Agency (ILEPA) in a letter dated 02 April 2012 and is effective until 2017.

The following 404(b)(1) Analysis provides documentation that the River Riparian Section 506 project is in compliance with RP5, and would result in improvements in water quality and riverine and riparian habitat quality. All construction activities to achieve the restoration goals were determined to have short term, negligible effects on current water quality, habitat and the human environment.

I. Project Description

a. Location

Hegewisch Marsh is a 131-acre natural area owned by the CPD located on the southeast side of Chicago. The site is bounded to the north by 130th Street, to the east by Torrence Avenue, to the south by USACE

property (O'Brien Lock & Dam), and to the west by the Calumet River (T37N, R14E, S36). The USACE also owns 1.8 acres along the southern edge of the site, and has an access road leading to the Thomas J. O'Brien Lock and Dam.

b. General Description

Alternative Plan 3 was selected as the National Ecosystem Restoration (NER) Plan, which consists of the following measures: (BN) Bank Naturalization, (ER) Evapotranspiration Reduction, (WCS) Water Control Structure, (VPa) Vernal Pools, (W) Woodland, (WPb) Wet Prairie and (M) Marsh. The implementation of all of the measures cohesively under Alternative Plan 3 would restore riverine fish habitat and side-stream marsh (1 acre), hemi-marsh (33.1 acres), wet prairie (21.5 acres), wet woodland (63.3 acres) and vernal pool (8.8 acres nested within the wet prairie and woodland habitats), all of which are riparian to the Calumet River. The implementation of these features totals about 118.9 acres. General construction activities and sequencing would include:

(1) Site Preparation – The first task would be to install safety fencing, signage and other safety features in order to keep the public out of the site during heavy construction. Staging areas and access roads would be demarcated. Instructive signage for workers would be set up as well to signify off limit work areas and site restrictions.

(2) Invasive Species Eradication – All invasive plant species would be physically and if need be, chemically eradicated from the planting zones. A “No Invasive Species Clearing” window between 01 March and 01 October was established via verbal coordination with the USFWS and the local birding community. All woody invasive species removed too small for snag habitat would be chipped into small pieces and spread over areas within Hegewisch Marsh.

(3) Geomorphic Contouring – Once targeted woody and invasive species are removed, bank and vernal pool would be graded to provide a suitable hydrology and micro topography for establishing native plant species. These areas will be contoured and all excess soils will be incorporated into the landscape within Hegewisch Marsh project site. Grading activities would be limited to less than 12 inches below surface grades to avoid past remediation, most of which can be accomplished by hand raking or small push tillers. Graded areas will be planted with seeds, plugs or shrubs and immediately stabilized to prevent erosion according to the plant community the work falls within. Large stones and woody debris gathered from the site would be placed on the side-stream marsh's toe within the Calumet River during this step as well. Organic leaf litter compost and wood chips would be spread as needed within the plant community zones.

(4) Water Level Management – The purpose of the water level management plan is to support one of the primary objectives of the Hegewisch Marsh restoration project, i.e. to establish and maintain a hemi-marsh appropriate for wetland-dependent birds within a wetland historically supporting these species. Hemi-marsh is a type of wetland characterized by an interspersed mixture of emergent vegetation and open water, ideally approaching a ratio of 1:1 or approximately 50% emergent vegetation and 50% open water.

(5) Native Plant Community Establishment – Next would be to establish native plant communities of side-stream marsh, hemi-marsh, wet prairie, and wet woodland with interspersed vernal pools over the remainder of the construction period. Planting lists are presented as Future With-Project Planting Lists located in Appendix A. Zones would be seeded and planted with seed and live plugs. Live plug areas will require predatory control, primarily stringing and caging to prevent Canada Goose and Common Carp predation during the construction phase only. Again, the duration of the construction contract would primarily be for spot herbicide application and additional planting.

(5) BMPs – Soil erosion and sediment control measures will be designed during design phase and will comply with local and federal environmental requirements. The minimum measures required at the project site may include:

- Hydroseeding, seeding, and mulching to stabilize disturbed areas
- Installation of silt fences around graded slopes and stockpile areas
- Protection of the ponds where grading occurs with silt fencing prevent sediments from traveling into the ponds
- Stabilizing construction entrances to limit soil disturbance at the ingress/egress from the site
- Installing erosion blanket over unprotected finished grades that are to be unplanted for at least two weeks

Recreational Features – Components of recreation are not proposed under this project.

c. Authority and Purpose

This study is authorized under Section 506 of the Water Resources Development Act (WRDA) of 2000, Great Lakes Fishery and Ecosystem Restoration. Authority is given to plan, design, and construct projects to restore the fishery, ecosystem, and beneficial uses of the Great Lakes. Projects are justified by ecosystem benefits alone, while considering affects to the human environment including public health, safety, economic benefits, recreational or any combination of these.

The Chicago Park District holds many natural areas within the Chicago City limits, many in which have remnant habitats that exemplify the Chicago Region. The CPD has in turn requested that the Chicago District, USACE initiate a study under the Section 506 WRDA 2000, Great Lakes Fishery and Ecosystem Restoration (GLFER) authority to ascertain the feasibility of restoring important migratory bird and wildlife habitat at the Hegewisch Marsh natural area. This report has evaluated the feasibility and environmental effects of restoring hydrology, geomorphic features, and palustrine and riparian plant communities. The main purpose of the DPR is to recommend a plan, including consideration of the No Action Plan, for ecological restoration of the Hegewisch Marsh.

Before the late 1800's, the Hegewisch Marsh area was a marshy ecosystem riparian to the Calumet River. Over a period of several decades, this ecosystem was severely altered by human activities. Currently, Hegewisch Marsh no longer provides a diversity of high quality habitats sufficient to maintain structure and support healthy plant and animal communities. Based on site inventory and characterization by the USACE, a set of Problems and Opportunities were developed by the study team, non-Federal Sponsors and supporting stakeholders. These drive the need for action, which is summarized as the historic loss of significant migratory bird, fish and wildlife habitats. Based on site qualitative and quantitative investigations, and the study results above, the main problems at the Hegewisch Marsh in which 506 Authority may address are as follows:

- Hydrogeomorphic conditions that limit native plant richness and abundance
- High abundance of invasive, water pumping trees, which reduce water levels and temporal longevity of vernal wetlands and hemi-marsh habitats
- Impaired connectivity for reptile and amphibians between Calumet River and Hegewisch Marsh due to bank configuration
- Impaired habitat patches due to invasive plant species dominance
- Lack of critical habitat for locally endangered and rare fauna
- Lack of high quality food source and resting habitat for migratory birds

d. General Description of Fill Material

1) General Characteristics of Material

Fill material for this project would consist of quarried limestone slabs/flags and woody debris. Woody debris consists of soil free rootwads, trunks and large branches; small branches and leaves would be removed.

2) Quantity of Material

Limestone Slabs/Flags = 200-cyd

Glacial Boulder/Cobble/Gravel = 200-cyd

Woody Debris = 200-cyd (~20 trees)

3) Source of Material

All materials would be harvested from the project site or purchased from a licensed vendor.

e. Description of Proposed Discharge Site

1) Location

There would be no discharge of aqueous materials. All solid materials identified above would be placed along the toe of the restored wetland in the Calumet River. These would be placed by small backhoe from the land. See Plan sheets in Appendix B.

2) Size, Type, and Habitat

See Section 2.3 of Detailed Project Report for habitat descriptions:

Current Condition = 118.9-acres of ruderal successional growth woodland and a cattail dominated marsh.

After Restoration = Side-Stream Marsh (1-ac), Hemi-Marsh (33.1-ac), Wet Prairie (21.5-ac), Woodland (63.3-ac)

3) Timing and Duration of Discharge

USACE ecosystem restoration projects are typically 5-years. In the first couple months, all of the minor earthwork and hydrology restoration measures would be implemented. Years 1 – 5 would be establishment of native plant communities. The placement of limestone and woody debris would be timed to avoid disturbing spawning fishes and migratory birds.

f. Description of Placement Method

Small bobcat/backhoe like vehicles and handwork would be the primary means of placing and contouring materials.

II. Factual Determinations

a. Physical Substrate Determinations

1) Substrate Elevation and Slope

Wetland substrate slopes are nearly 0%, with the slightest of pitch toward the Calumet River. The Calumet River bank slope is fairly steep (2:1), and will be gentled to (10:1) in order to promote wetland plant growth and turtle passage.

2) Sediment Type

The Calumet River wetland shelf substrate is a mixture of natural muck, sand and stones from past erosion control efforts. The bank was eroded primarily due to recreational boat traffic, but has long since reached its equilibrium and no longer erodes.

3) Fill Material Movement

Limestone and woody debris are not expected to move at all based on the controlled hydraulics of the system.

4) Physical Effects on Benthos

Existing benthos directly beneath where the limestone and woody debris would be placed would temporarily be covered, but the area is so small it would have insignificant effects on the macroinvertebrate population. Effects to the benthic invertebrate assemblage would be positive through the enhancement of structural habitat and native riparian plant communities, which would greatly increase species richness. These minor impacts are necessary to create improved conditions for benthic invertebrates. There are no significant adverse effects expected.

5) Other Effects

There would be no other significant substrate impacts.

6) Actions Taken to Minimize Impacts

Special measures would be taken to minimize the temporary impacts on physical substrates associated with the proposed activity since this project is both beneficial to ecology and water quality. These include the timing of particular restoration measures, silt control, biodegradable erosion control fabric and lots of native plants.

b. Water Circulation, Fluctuation, and Salinity Determinations

1) Water

(a) Salinity

Not applicable.

(b) Water Chemistry

Since native and inert substrates are being used, no adverse water chemistry changes are expected.

(c) Clarity

No effects are expected.

(d) Color

No effects are expected.

(e) Odor

No effects are expected.

(f) Taste

No effects are expected.

(g) Dissolver Gas Levels

No effects are expected.

(h) Nutrients

No effects are expected.

(i) Eutrophication

No effects are expected.

(j) Other

No effects are expected for a restored ecosystem.

2) Current Patterns and Circulation

See Section 2.2.3 of Detailed Project Report for description of Site Hydrology.

(a) Current Patterns and Flow

Not applicable to lentic palustrine systems.

(b) Velocity

Not applicable to lentic palustrine systems.

(c) Stratification

There are no expected affects to limnic or lotic stratification due the project area occurring within shallow hemi-marsh, vernal pool and Calumet River.

(d) Hydrologic Regime

The intent of this project in terms of the hydrologic regime is to primarily increase the longevity of surficial waters within the hemi-marsh and vernal pools. These effects are expected due utilization of the control structure at the marsh outlet and altering evapotranspirative processes via the removal of water pumping trees (Cottonwoods/Green Ash).

3) Normal Water Level Fluctuations

Water level fluctuations at the site are controlled by direct precipitation, evapotranspiration, urban runoff, Lake Michigan, and the O'Brien Lock & Dam. This project seeks to stabilize surficial vernal pool and hemi-marsh water levels via the manipulation of evapotranspirative and surface water laminar flows. No effects to the Calumet River or Lake Michigan are expected.

4) Salinity Gradients

Not applicable to freshwater environments, although the municipality uses too much salt which aids in the spread of *Phragmites*, which is a salt marsh species.

5) Actions that will be Taken to Minimize Impacts

No special measures would be taken to minimize the temporary impacts on water circulation and fluctuation since there are no predicted adverse effects. The purpose of the project is to restore native habitat.

c. Suspended Particulate/Turbidity Determinations

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Fill Site

There would be negligible to minor increases in suspended particulates and turbidity levels in the immediate area of the proposed fill activity during construction, most of which would be significantly less than any given summer thunderstorm.

2) Effects on Chemical and Physical Properties of the Water Column

(a) Light Penetration

No effects are expected.

(b) Dissolved Oxygen

No effects are expected.

(c) Toxic Metals and Organics

No effects are expected.

(d) Pathogens

No effects are expected.

(e) Aesthetics

No effects are expected since the restoration of native plants communities seems to be beautiful to most people.

(f) Other

No effects are expected for a restored ecosystem.

3) Effects on Biota

(a) Primary Production, Photosynthesis

Primary production would increase on the stones and woody debris.

(b) Suspension/Filter Feeders

Suspension and filter feeders are expected to increase due to the increase in a balanced primary production of zoo and phytoplankton, and improvement in saprophyte species richness such as shredding macroinvertebrates and crayfishes.

(c) Sight Feeders

This is specific to the side-stream marsh habitat along the Calumet River, as there are no fishes found within the hemi-marsh. Stone and woody debris are expected to attract smaller fishes due to structure and primary production source; therefore, predatory fishes such as Smallmouth and Rock Bass and birds such as Mergansers and Terns would increase in site abundance.

4) Actions Taken to Minimize Impacts

Biodegradable erosion control fabric, silt fencing and native plantings would be implemented to minimize the temporary turbidity impacts associated with the proposed activity.

d. Contaminant Determinations

The proposed fill material would not introduce any new contaminants into the Calumet River, or release any significant amounts of existing contaminants (if any are present) through bottom disturbance in the construction zone.

e. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton

Only beneficial affects to planktonic organisms are expected.

2) Effects on Benthos

Existing benthos directly beneath where materials would be placed would temporarily be covered, but the area is so small it would have insignificant effects on the macroinvertebrate population. Effects to the benthic invertebrate assemblage would be positive through the enhancement structural habitat, which

would greatly increase species richness. These minor impacts are necessary to create improved conditions for benthic invertebrates. There are no significant adverse effects expected.

3) Effects on Nekton

Fish eggs and larvae would not be smothered by the proposed fill activity since the anticipated construction activities will occur during non-reproductive or rearing seasons. Fish and other free-swimming organisms will tend to avoid the construction area; the construction area will be used again by those organisms soon after construction ends and overall species richness is expected to increase.

4) Effects on Aquatic Food Web

Beneficial improvements to the food web are expected, due to expected increases in native plant and macroinvertebrate richness and abundance.

5) Effects on Special Aquatic Sites

- a) Sanctuaries and Refuges – this project is vital to the Millennium Reserve Initiative
- b) Wetlands – increase in native hydrophytic vegetation richness and abundance
- c) Mud Flats – none present; no significant impact
- d) Vegetated Shallows – increase in vernal pool and submergent aquatic macrophytes
- e) Freshwater Reefs – stone and woody debris habitat placed for fishes & turtles
- f) Riffle and Pool Complexes – not applicable to lentic systems

6) Threatened and Endangered Species

Coordination with the USFWS and the Illinois Department of Natural Resources (IDNR) was commenced on 09 April 2013 with a project scoping letter. Upon review of this document, the USFWS concluded that the project is not likely to adversely affect federal or state listed species, and their letter dated [REDACTED], precluded the need for further consultation on the Hegewisch Marsh restoration project as required under Section 7 of the Endangered Species Act of 1973, as amended.

Implementation of the proposed project would only benefit endangered or threatened species if they colonize the project site. Currently, no Federal listed endangered or threatened species have been recorded from the project site; however, numerous state listed species have been recorded not necessarily from the site, but from the surrounding area. Restoration features would directly increase the quality of the habitat present at Hegewisch Marsh; hence potentially encouraging colonization or continued habitation of the area by state listed species such as the Banded Killifish (*Fundulus diaphanus*), Black-Crowned Night Heron (*Nycticorax nycticorax*), Common Moorhen (*Gallinula chloropus*), Little Blue Heron (*Egretta caerulea*), Peregrine Falcon (*Falco peregrinus*), Yellow-Crowned Night Heron (*Nyctanassa violacea*), Yellow-Headed Blackbird and (*Xanthocephalus xanthocephalus*), Iowa Darter (*Etheostoma exile*), Mudpuppy (*Necturus maculosus*), American Bittern (*Botaurus lentiginosus*), Black Tern (*Chlidonias niger*), Black-Billed Cuckoo (*Coccyzus erythrophthalmus*), King Rail (*Rallus elegans*), Least Bittern (*Ixobrychus exilis*), Northern Harrier (*Circus cyaneus*), Osprey (*Pandion haliaetus*), and Snowy Egret (*Egretta thula*).

7) Other Wildlife

No other wildlife would be significantly impacted by the proposed activity. This project would provide about 118.9-acres of restored native marsh, wet prairie and woodland habitat for migratory birds and fishes.

8) Actions to Minimize Impacts

General construction scheduling and sequencing would minimize impacts to reproducing macroinvertebrates and fishes. Erosion control fabric, silt fencing and native plantings would be implemented to minimize the temporary turbidity impacts associated with the proposed activity. A No Tree Clearing Window will be established in the contract set that would protect migratory birds between 01 March and 01 October and spawning fishes between 01 March and 01 July.

f. Proposed Disposal/Discharge Site Determinations

1) Mixing Zone Determination

A mixing zone is not applicable to this project as no violation of applicable water quality standards is expected during construction.

2) Determination of Compliance with Applicable Water Quality Standards

The proposed activity would not cause significant or long-term degradation of water quality within the Calumet River and would comply with all applicable water quality standards.

3) Potential Effects on Human use Characteristics

(a) Municipal and Private Water Supply

No effects expected.

(b) Recreational and Commercial Fisheries

Positive effect expected due to increase in productivity through the food chain.

(c) Water Related Recreation

Positive effects are expected due to improvements in migratory bird habitat, fish habitat, and native aesthetics of rare Great Lakes' plant communities.

(d) Aesthetics

Positive effects are expected via unsightly geomorphology repair and native plant community restoration.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves

All protected historical and cultural resources would not be affected by this project. This project improves the Hegewisch Marsh in terms of native habitat, which supports any nearby important habitat areas and preserves.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

The proposed project would restore aquatic habitat structure and function. There are no significant adverse effects expected. See Section 5.5 of Detailed Project Report for Cumulative Effects Assessment.

h. Determination of Secondary Effects on the Aquatic Ecosystem

No significant impacts on the Calumet River ecosystem are expected as a result of the proposed activity.

III. Findings of Compliance or Non-Compliance with Restrictions on Discharge

a. No adaptation of the Section 404(b)(1) guidelines was made for this evaluation.

b. No practical alternatives are available that produce fewer adverse aquatic impacts than the proposed plan.

c. The proposed project would comply with applicable water quality standards.

d. The project is in compliance with applicable Toxic Effluent Standards under Section 307 of the Clean Water Act; with the Endangered Species Act of 1973; with the National Historic Preservation Act of 1966; and with the Marine Protection, Research, and Sanctuaries Act of 1972.

e. The proposed fill activity would have no significant adverse impact on human health or welfare, including municipal and private water supplies, recreational and commercial fisheries, plankton, fish, shellfish, or wildlife communities (including community diversity, productivity, and stability), special aquatic sites, or recreational, aesthetic, and economic values.

f. Typical erosion control measures would be taken to minimize construction impacts other than selection of the least environmentally damaging construction alternative.

g. On the basis of the Guidelines, the proposed site for the discharge of fill material is specified as complying with the requirements of these guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse impacts to the aquatic ecosystem.

A2 – 404 / 401 Regional Permit 5 Requirements

The following is a checklist of items to be provided to the Illinois EPA for notice of intent of Regional Permit 5 use:

A. Cover Letter

The cover letter for this notification is provided in [Section A3](#).

B. Joint Application Form

The joint application for this notification is not provided for Regional Permit use since all of the information is provided in this document and the Detailed Project Report.

C. Special Measures

See Section [II e\) 8](#)) of 404b1 Analysis for special measures.

D. Project Purpose & Need

See Section [I c](#)) of 404b1 Analysis for Purpose & Need.

E. Regional Permit Used

The U.S. Army Corps of Engineers, Chicago District Regional Permit (RP)5 Wetland & Stream Restoration and Enhancement permits the restoration, creation and enhancement of wetlands and riparian areas, and the restoration and enhancement of rivers, creeks and streams, and open water areas on any public or private land. Wetland and stream restoration and enhancement activities include the removal of accumulated sediments; installation, removal and maintenance of small water control structures, dikes and berms; installation of current deflectors; enhancement, restoration, or creation of riffle and pool structures; placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or create stream meanders; backfilling of artificial channels and drainage ditches; removal of existing drainage structures; construction of open water areas; activities needed to reestablish vegetation, including plowing or disking for seed bed preparation; mechanized land-clearing to remove undesirable vegetation; and other related activities. This RP may be used to relocate aquatic habitat types on the project site, provided there are net gains in aquatic resource functions and values.

F. Area of Impact

The area of impacted is about 0.75-acres of the Calumet River. The impact is beneficial since the project provides newly created structural habitat. The restoration project is planned and designed based on a 50-year period of analysis, however, it is the intention that the restoration features last perpetually.

G. Fill Type & Quantity

See Section [I d](#)) for types and quantity of fill material.

H. Project Area Map

See **Figure 11** in the Detailed Project Report and **Plate 3**, for project mapping.

I. Site Coordinates

UTM: -9747616.118, 5109512.217

J. Site Documentation

See **Chapter 2 Inventory & Forecasting** of the Feasibility Report for a complete description of current physical, ecological and cultural resources, which includes photos of the site.

K. Wetland Delineation

See **Chapter 2 Inventory & Forecasting** of the Feasibility Report for a complete description of current physical and ecological resources, which describes the plant communities to be restored. The wetlands within the project area meet the criteria for soils, hydrology and hydrophytic plants required. See [Section A6](#) for Florist Quality Assessment.

L. Farmed Wetlands

There are no farmed wetlands within the project area.

M. Plat of Survey

Property boundaries and real estate are presented in **Appendix E**. All project real estate is owned by the Chicago Park District or US Army Corps of Engineers.

N. Engineering Drawings

Engineering design drawings are presented in **Appendix B** – Civil Design.

O. Schedule

φ 30 Day Public Review Start	March 2017
φ 30 Day Public Review Ends	April 2017
φ Final FS Report for Approval	September 2017
φ Design Complete	May 2018
φ Open Bids	August 2018
φ Contract Award	September 2018
φ Notice to Proceed	Fall 2018
φ Construction Complete	Fall 2023

P. Soil Erosion Sediment Control Plan

The affected area of disturbance is less than 1-acre and significant erosion and sediment release is not expected. The SESC plan is part of the plans and specifications, and consists of BMP measures such as silt fencing, and biodegradable erosion control fabric and permanent project features such as native vegetation.

Q. Federally Threatened & Endangered Species

See Section [II e\) 6](#) of 404b1 Analysis.

R. State Threatened & Endangered Species

See Section [II e\) 6](#) of 404b1 Analysis.

S. Illinois Historic Preservation Agency

Correspondence and clearance with the ILSHPO is provided in [Section A4](#) in a letter dated 17 April 2013.

T. Applicable Watershed Plans

There is no applicable watershed plan associated with the Hegewisch Marsh.

U. After the Fact Permit

NA

V. Mitigation Plan

This is a restoration plan that requires no mitigation since lost resources are being recovered.

W. Project Funding Source

This project is federally funded 65% by the USEPA managed GLRI appropriations and 35% by the Chicago Park District.

X. Regional Permit 5 Guidelines

Authorization under RP5 is subject to the following requirements which shall be addressed in writing and submitted with the notification:

a. All projects will be processed under Category I.

This project would be processed under Category I.

b. This permit does not authorize activities to relocate or channelize a linear waterway such as a river, stream, creek, etc.

No streams are present. See Section [I b](#).

c. This permit cannot be used for the conversion of a stream or creek to another aquatic use, such as the creation of an impoundment for waterfowl habitat.

No streams are present. See Section [I b](#).

d. This permit cannot be used to authorize the conversion of natural wetlands to another aquatic use, such as creation of waterfowl impoundments where a forested wetland previously existed, or the conversion of waterfowl impoundments and wildlife habitat areas.

No part of the project area of the project would be converted to another aquatic use. The project is solely intended for ecological restoration. See Section [I b](#).

e. A management and monitoring plan shall be required for the restoration, creation or enhancement of aquatic resources. Upon the District's approval, the management and monitoring plan may be designed to be site specific, with the duration of the plan determined on a case-by-case basis.

Monitoring is required under the GLFER Authority. The monitoring plan is presented in **Appendix H**.

f. For a project site adjacent to a conservation area, forest preserve holdings, or village, city, municipal or county owned lands, the permittee shall request a letter from the organization responsible for management of the area. The response letter should identify recommended measures to protect the area from impacts that may occur as a result of the development. A copy of the request and any response received from the organization shall be submitted to the District with the notification.

The non-Federal sponsor will be responsible for the maintenance and protection of the restoration project per the legally binding Project Partnership Agreement to be signed after this Feasibility Study is approved and before construction commences. This intent is confirmed by the **Letter of Intent** provided by the Chicago Park District.

g. For projects receiving State or Federal grants or funding sources, the permittee shall submit a copy of the document disclosing the expiration date for use of the funds and the expected calendar date for commencement of the project in order to meet funding deadlines.

The expiration date for USEPA managed GLRI funds to be used for this project would be 1 year from the date of receipt.

A3 – Agency Coordination



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO IL 60606-7206

Planning Branch
Environmental Formulation Section

Kenneth Westlake, Chief
Environmental Review Branch
U.S. EPA ME-19J
77 West Jackson
Chicago, IL 60604

09 APR 2013

Dear Mr. Westlake:

The Chicago District is preparing a National Environmental Policy Act (NEPA) document on impacts of planned ecosystem restoration at the Cook County Forest Preserves' Hegewisch Marsh in Chicago, Cook County, Illinois. As part of the scoping process the Chicago District would appreciate your comments. A map of the area is attached.

The project will involve the restoration of wetlands, invasive species removal, and the reestablishment of native plant communities.

I am particularly interested in your comments regarding impacts to aquatic habitat and threatened or endangered species. Please reply within 30 days, marking your reply to the attention of Mr. Peter Bullock, U.S. Army Corps of Engineers, 111 North Canal Street, Suite 600, Chicago, Illinois 60606. Questions may be directed to Mr. Bullock at 312/846-5587, or at peter.y.bullock@usace.army.mil. Your assistance is appreciated.

Sincerely,

151

Susanne J. Davis, P. E.
Chief of Planning Branch

Enclosure

MFR: Routine scoping letter as required by NEPA.

4/7/13
Bullock PM-PL-E

4/8/13
Fleming PM-PL-E

Buczak PM-PM

4/8/13
Davis PM-PL-E

4/8/13

HEGEWISCH MARSH GLFER 506 AGENCY DISTRIBUTION LIST

Kenneth Westlake, Chief
Environmental Review Branch
U.S. EPA ME-19J
77 West Jackson
Chicago, IL 60604

US Fish and Wildlife Service
Chicago Illinois Field Office
1250 South Grove, Suite 103
Barrington, Illinois 60010
Attn. Louise Clemency

Todd Rettig
Office of Resource Review
Illinois DNR
One Natural Resource Way
Springfield, IL 62702-1271

Pat Malone
Illinois DNR – Realty/Planning
One Natural Resource Way
Springfield, IL 62702-1271

Illinois DNR/OWR
160 N. LaSalle St,
Suite S-700
Chicago, Illinois 60601
ATTN: Dan Injerd

Illinois DNR
Illinois Coastal Management Program
160 N. LaSalle St,
Suite S-700
Chicago, Illinois 60601
ATTN: Diane Tecic

Illinois EPA
Water Pollution Division
1001 N. Grand
Springfield, IL 62794
ATTN: Bruce Yurdin

Illinois Hist. Pres. Agency
1 Old State Capitol Plaza
Springfield, IL 62701
ATTN: Anne Haaker

TRIBAL DISTRIBUTION LIST

Kickapoo Tribe of Oklahoma
P.O. Box 70
McCloud, OK 74851

Kickapoo Of Kansas
1107 Goldfinch Rd.
Horton, KS 66434

Kickapoo Tribe of Texas
Box HC 1 9700
Eagle Pass, TX 78853

Miami Nation in Indiana
P.O. Box 41
Peru, IN 46970

Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355
ATTN: George Strack

Citizen Potawatomi Nation
1901 S. Gordon Cooper Dr.
Shawnee, OK 74801

Forest County Potawatomi Exec. Council
P. O. Box 340
Crandon, WI 54520

Nottawaseppi Huron Potawatomi Tribal Office
2221 One-and-a-half Mile Rd.
Fulton, MI 49052

Hannahville Potawatomi Comm., Council
N 14911 Hannahville Road
Wilson, MI 49896-9728

Prairie Band Potawatomi Tribal Council
16281 Q RD
Mayetta, KS 66509

Pokagon Band of Band of Potawatomi Indians
P.O. Box 180
Dowagiac, MI 49047

CULTURAL RESOURCES DIVISION

Ho Chunk Nation

P.O. Box 667

W9035 Highway 54

Black River Falls, WI 54615

ATTN: Bill Quakenbush



Illinois Historic Preservation Agency

1 Old State Capitol Plaza • Springfield, Illinois 62701-1512 • www.illinois-history.gov

Cook County
Chicago
Hegewisch Marsh, Cook County Forest Preserve
COEC
Ecosystem restoration

PLEASE REFER TO: IHPA LOG #012041213

April 17, 2013

Peter Bullock
Department of The Army
U.S. Army Corps of Engineers
Chicago District
111 North Canal Street, Suite 600
Chicago, IL 60606

Dear Mr. Bullock:

We have reviewed the documentation submitted for the referenced project(s) in accordance with 36 CFR Part 800.4. Based upon the information provided, no historic properties are affected. We, therefore, have no objection to the undertaking proceeding as planned.

Please retain this letter in your files as evidence of compliance with section 106 of the National Historic Preservation Act of 1966, as amended. This clearance remains in effect for two (2) years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Skeletal Remains Protection Act (20 ILCS 3440).

If you are an applicant, please submit a copy of this letter to the state or federal agency from which you obtain any permit, license, grant, or other assistance.

Sincerely,

Anne E. Haaker

Anne E. Haaker
Deputy State Historic
Preservation Officer

*Recd
28 Apr 13*



Coastal Management Program

160 N. LaSalle Street, Suite S-708 • Chicago, Illinois 60601 • <http://www.dnr.illinois.gov/cmp>

April 25, 2013

Peter Bullock
U.S. Army Corps of Engineers
Planning Branch, Environmental Formulation Section
111 North Canal Street, Suite 600
Chicago, IL 60606

Mr. Bullock,

This letter is in response to request for comments on impacts of planned ecosystem restoration at Hegewisch Marsh in Chicago, Illinois.

The Illinois Coastal Management Program (ICMP) supports work that is planned for the site and does not anticipate negative impacts to aquatic habitat and threatened or endangered species. The site is located in the Calumet region, an area that once contained extensive wetland systems and supported diverse plant and wildlife species. Despite extensive alteration remnants of those habitats still remain and provide valuable habitat. Hegewisch Marsh is considered especially valuable since it supports hemi-marsh conditions and restoration of wetlands at Hegewisch Marsh would benefit many rare bird species for which the loss of hemi-marsh habitats has been devastating. For example, Common Moorhen (state endangered) and Least Bittern (state threatened) are present in the region but are in steep decline and some species like Black-crowned Night Heron and Yellow-headed Blackbird (both state endangered) have disappeared from Calumet.

Restoration of wetlands, invasive species removal, and reestablishment of native plant communities will improve quality of habitat at Hegewisch Marsh. This work will benefit the myriad resident and migratory bird species that use the site, including the above-mentioned state listed species. ICMP believes that the proposed work will improve the overall health of the habitat and will provide beneficial impacts to the local environment. If you have any additional questions, please feel free to contact me at diane.tecic@illinois.gov or 312-814-0665.

Sincerely,

Diane Tecic
Program Director

Peter,

We received your letter indicating that the Chicago District is preparing a National Environmental Policy Act (NEPA) document for the Hegewisch Marsh ecosystem restoration project. We are not aware of any particular issues that should be addressed during the scoping process regarding this project. We will plan to respond to your request to review the NEPA documents when they are complete.

Shawn Cirton
Fish and Wildlife Biologist
USFWS - Chicago Illinois Field Office
1250 South Grove Avenue, Suite 103
Barrington, IL 60010
(847)381-2253 xt.19
(847)381-2285 Fax
Wednesdays and Fridays - USACOE - (312)846-5545
<http://midwest.fws.gov/chicago>



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 16 2013

REPLY TO THE ATTENTION OF:

E-19J

Peter Bullock
U.S. Army Corps of Engineers – Chicago District
111 N. Canal St.
Chicago, Illinois 60604

**RE: Scoping Comments – Hegewisch Marsh Ecosystem Restoration; Chicago,
Cook County, Illinois**

Dear Mr. Bullock:

The U.S. Environmental Protection Agency has received U.S. Army Corps of Engineers (USACE) correspondence (hereafter: scoping document) dated April 9, 2013, requesting EPA's review of and comments on a proposed ecosystem restoration project at the Hegewisch Marsh in Chicago, Illinois. According to your cover letter, USACE's proposal will involve the restoration of wetlands, invasive species removal, and the reestablishment of native plant communities.

EPA has reviewed your correspondence and the figure provided for the aforementioned project. This letter provides our comments on the scoping document pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act. Due to the lack of information provided in your scoping document, EPA is only able to provide broad comments and recommendations.

As stated in your scoping document, the ecosystem restoration project proposes "restoration of wetlands, invasive species removal, and the reestablishment of native plant communities." Your scoping document did not provide any additional information, such as the baseline health or status of the current environments and habitats, the coverage and types of invasive species proposed to be removed, the restoration activities proposed to be undertaken, or how USACE proposes to restore native plant communities within the project area. These elements, along with information on how USACE will ensure that non-native invasive species do not return to restoration areas, and how restoration areas will be protected from trampling and other disturbances, should all be analyzed and discussed in the upcoming environmental assessment (EA).

Because the project area is located in the midst of a highly industrialized part of Chicago, we recommend the Draft EA discuss the USACE's process of testing for contaminated soils at the proposed restoration site. If soils need to be disturbed, discuss how they will be tested for

contaminants and, if contaminants are found, how the soil will be managed to protect the environment.

The Draft EA should provide detailed information on how the site will be accessed, whether or not staging areas will be required (and their locations, if applicable), and whether or not any regulated activities, such as filling of jurisdictional wetlands and other waters of the United States, are proposed as part of the restoration.

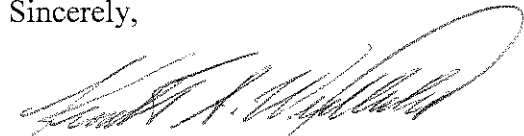
The proposed project area consists of approximately 100 acres of woodland and wetlands. Hegewisch Marsh is an Illinois Natural Areas Inventory site. Several Illinois threatened and endangered species (T&E species) can be found at the Marsh. Due to the sensitive nature of this area as well as the known state-listed T&E species found at the site, EPA recommends that, before you finalize plans, you coordinate with the Illinois Department of Natural Resources to ensure any proposed work on the project will not detrimentally affect any state-listed endangered or threatened species or critical habitat likely to be present at the project site. Additionally, we understand that the City of Chicago (City) is undertaking major road improvements at the intersection of 130th and Torrence Avenue. The construction activities will require wetland mitigation that will take place, in part, at the Hegewisch Marsh. We anticipate the Draft EA will discuss how wetland mitigation by the City will dovetail with USACE's proposed ecosystem restoration project.

If funding sources in addition to those of USACE will be used to restore the site (i.e., stimulus funds), the Draft EA should discuss these funding sources, the work being done under each funding source, and how these other projects will dovetail with USACE's proposed restoration plans.

Finally, EPA recommends that a Monitoring and Adaptive Management Plan be developed. The plan should include a description of proposed monitoring activities at the project location, should include quantifiable and measureable success criteria for the ecosystem restoration work, and should specify the length of the monitoring period(s). Additional information on the party(ies) who will maintain the site in perpetuity should also be included in the Draft EA.

Thank you for the opportunity to review and comment upon this scoping document. *In the future, please note that the more information you provide to EPA at the scoping stage, the more project-specific our comments can be.* We are available to discuss these comments with you in further detail if requested. We look forward to reviewing future NEPA documents prepared for this project. If you have any questions about this letter, please contact Kathy Kowal of my staff at 312-353-5206 or via email at kowal.kathleen@epa.gov.

Sincerely,



Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

cc: Brad Semel, IDNR

A4 – Planning Information

Applicant: USACE
Contact: Frank Veraldi
Address: 231 S. LaSalle St, Suite 1500
Chicago, IL 60604

IDNR Project Number: 1412156
Date: 06/11/2014

Project: Hegewisch Marsh Section 506 GLFER
Address: 130th & Torrence, Chicago

Description: This project would restore hydrology for marsh and vernal pool habitat, remove invasive/nonnative plant species, and reestablish marsh, meadow, savanna and woodland habitats riparian to the Calumet River.

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:

130Th Street Marsh INAI Site
Lake Calumet INAI Site
Banded Killifish (*Fundulus diaphanus*)
Black-Crowned Night Heron (*Nycticorax nycticorax*)
Blanding's Turtle (*Emydoidea blandingii*)
Common Moorhen (*Gallinula chloropus*)
Little Blue Heron (*Egretta caerulea*)
Little Blue Heron (*Egretta caerulea*)
Little Blue Heron (*Egretta caerulea*)
Peregrine Falcon (*Falco peregrinus*)
Peregrine Falcon (*Falco peregrinus*)
Yellow-Crowned Night Heron (*Nyctanassa violacea*)
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, 36



IL Department of Natural Resources Contact

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

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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SITE: Hegewisch Marsh
LOCALE: Wet Prairie (Existing Conditions)
BY: Robbie Sliwinski
NOTES:

TRANSECT QUADRAT

QUAD	MC	W/Ad	FQI	W/Ad	MW	W/Ad	NS	TS	
1	3.67	3.67	11		11	-0.22	-0.22	9	9
2	3.33	3.33	8.16		8.16	-0.83	-0.83	6	6
3	4.67	4.67	8.08		8.08	-1.33	-1.33	3	3
4	2.33	2.33	4.04		4.04	-1.33	-1.33	3	3
5	1	0.5	1.41		1	-1	-1.5	2	4
6	3.67	3.67	6.35		6.35	-2	-2	3	3
7	2	2	3.46		3.46	-1.33	-1.33	3	3
8	3	2	4.24		3.46	-2	-1.67	2	3
9	3	3	4.24		4.24	-2	-2	2	2
10	3	1.5	4.24		3	-2	-2	2	4
11	3.67	2.75	6.35		5.5	-2	-2	3	4
12	5	5	7.07		7.07	-1	-1	2	2
13	1.67	1.25	2.89		2.5	-1	-1.25	3	4
14	4.8	4	10.73		9.8	-2	-2	5	6
15	3.5	2.8	7		6.26	-2	-2	4	5
16	4	3	6.93		6	-2	-1.75	3	4
17		0	0		0		-1.5		2
18	4.5	3.6	9		8.05	-2	-2	4	5
19	3	3	4.24		4.24	-2	-2	2	2
20	6	6	6		6	-2	-2	1	1
AVG	3.29	2.9	5.77		5.41	-1.5	-1.59	3.1	3.75
STD	1.42	1.47	2.87		2.83	0.65	0.5	1.92	1.83

TRANSECT SUMMARY

C	NUMBER			#VALUE!	NATIVE SPECIES
0	1			25	TOTAL SPECIES
1	3			3.57	NATIVE MEAN C
2	3			3	W/Adventives
3	0	0:	4.76%	16.37	NATIVE FQI
4	7	1 to 3:	28.57%	15	W/Adventives
5	4	4 to 7:	66.67%	-1.1	NATIVE MEAN W
6	3	8 to 10:	0.00%	-1.16	W/Adventives
7	0				
8	0				
9	0				
10	0				

PHYSIOGNOMIC SUMMARY

PHYSIOGNOMY

NATIVE			ADVENTIVE		
Tree	21	84.00%	Tree	4	16.00%
Shrub	1	4.00%	Shrub	0	0.00%
Vine	0	0.00%	Vine	0	0.00%
Forb	0	0.00%	Forb	0	0.00%
Grass	12	48.00%	Grass	2	8.00%
Sedge	3	12.00%	Sedge	2	8.00%
Fern	5	20.00%		0	0.00%
	0	0.00%			

PHYSIOGNOMIC RELATIVE IMPORTANCE VALUES

PHYSIOG	FRQ	COV	RFRQ	RCOV	RIV	
N Tree	1	1	1.3		0.2	0.8
N Forb	33	61	44		10.7	27.4
N Grass	7	141	9.3		24.7	17
N Sedge	21	270	28		47.4	37.7
A Forb	10	86	13.3		15.1	14.2
A Grass	3	11	4		1.9	3

SPECIES RELATIVE IMPORTANCE VALUES

SCIENTIFIC NAME (NM C	WETNESS FRQ		COV	RFRQ	RCOV	RIV
Panicum virgatum	5	FAC	4	110	5.3	19.3
Carex pellita	4	OBL	6	90	8	15.8
Schoenoplectus acutus	6	OBL	2	85	2.7	14.9
Lythrum salicaria	0	OBL	8	80	10.7	14
Eleocharis palustris	2	OBL	10	55	13.3	9.6
Scirpus atrovirens	4	OBL	2	35	2.7	6.1
Leersia oryzoides	4	OBL	2	30	2.7	5.3
Alisma subcordatum	4	OBL	7	11	9.3	1.9
Lycopus americanus	5	OBL	8	8	10.7	1.4
Eupatorium serotinum	0	FAC	4	8	5.3	1.4
Bidens frondosa	1	FACW	2	6	2.7	1.1
Juncus torreyi	4	FACW	2	6	2.7	1.1
Solidago altissima	1	FACU	2	6	2.7	1.1
Typha X glauca	0	OBL	2	6	2.7	1.1
Phragmites australis ssp.	0	FACW	2	6	2.7	1.1
Packera plattensis	6	FACU	1	5	1.3	0.9
Symphyotrichum ericoid	5	FACU	1	5	1.3	0.9
Eleocharis acicularis	2	OBL	1	5	1.3	0.9
Phalaris arundinacea	0	FACW	1	5	1.3	0.9
Proserpinaca palustris	6	OBL	2	2	2.7	0.4
Asclepias incarnata	4	OBL	2	2	2.7	0.4
Dichanthelium acuminat	2	FAC	1	1	1.3	0.2
Juncus dudleyi	4	FACW	1	1	1.3	0.2
Fraxinus pennsylvanica	1	FACW	1	1	1.3	0.2
Scutellaria lateriflora	5	OBL	1	1	1.3	0.2
			75	570		

TRANSECT INVENTORY

Acronym	Scientific Name (NWPL/Mohlenbrock)	Scientific Name Synonym (Swink & Wilhelm)	Common Name (NWPL/Mohlenbrock)	C	WETNESS	WETNESS VALUE
alisub	Alisma subcordatum	Alisma subcordatum	American Water-Plantain	4	OBL	-2
ascinc	Asclepias incarnata	Asclepias incarnata	Swamp Milkweed	4	OBL	-2
bidfro	Bidens frondosa	Bidens frondosa	Devil's-Pitchfork	1	FACW	-1
cxpell	Carex pellita	Carex pellita	Woolly Sedge	4	OBL	-2
panimp	Dichanthelium acuminatum	Panicum implicatum; Panicum auburne; Pa	Tapered Rosette Grass	2	FAC	0
eleaci	Eleocharis acicularis	Eleocharis acicularis	Needle Spike-Rush	2	OBL	-2
elepal	Eleocharis palustris	Eleocharis erythropoda; Eleocharis palustri	Common Spike-Rush	2	OBL	-2
eupser	Eupatorium serotinum	Eupatorium serotinum	Late-Flowering Thoroughwort	0	FAC	0
frapen	Fraxinus pennsylvanica	Fraxinus pennsylvanica subintegerrima	Green Ash	1	FACW	-1
jundud	Juncus dudleyi	Juncus dudleyi	Dudley's Rush	4	FACW	-1
juntor	Juncus torreyi	Juncus torreyi	Torrey's Rush	4	FACW	-1
leeroy	Leersia oryzoides	Leersia oryzoides	Rice Cut Grass	4	OBL	-2
lycame	Lycopus americanus	Lycopus americanus	Cut-Leaf Water-Horehound	5	OBL	-2
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	-2
senpla	Packera plattensis	Senecio plattensis	Prairie Groundsel	6	FACU	1
panvir	Panicum virgatum	Panicum virgatum	Wand Panic Grass	5	FAC	0
phaaru	Phalaris arundinacea	PHALARIS ARUNDINACEA	Reed Canary Grass	0	FACW	-1
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	-1
propal	Proserpinaca palustris		Marsh Mermaidweed	6	OBL	-2
sciacu	Schoenoplectus acutus	Scirpus acutus	Hard-Stem Club-Rush	6	OBL	-2
sciatv	Scirpus atrovirens	Scirpus atrovirens	Dark-Green Bulrush	4	OBL	-2
sculat	Scutellaria lateriflora	Scutellaria lateriflora	Mad Dog Skullcap	5	OBL	-2
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	1
asteri	Symphyotrichum ericoides	Aster ericoides	White Heath American-Aster	5	FACU	1
typgla	Typha X glauca	Typha X glauca		0	OBL	-2

SITE: Hegewisch Marsh
LOCALE: Woodland (Existing Conditions)
BY: Robbie Sliwinski
NOTES:

TRANSECT QUADRAT

QUAD	MC	W/Ad	FQI	W/Ad	MW	W/Ad	NS	TS	
	1	2.1	2.1	6.64	6.64	0	0	10	10
	2	4.2	4.2	9.39	9.39	-0.4	-0.4	5	5
	3	3.29	2.56	8.69	7.67	-0.43	-0.11	7	9
	4	3	3	5.2	5.2	-0.33	-0.33	3	3
	5	2.6	1.86	5.81	4.91	-0.4	-0.14	5	7
	6	1.67	1	2.89	2.24	0	0.8	3	5
	7	3	3	6	6	-0.25	-0.25	4	4
	8	3.67	2.2	6.35	4.92	-0.33	-0.2	3	5
	9	4.4	4.4	9.84	9.84	0.6	0.6	5	5
	10	2.83	2.83	6.94	6.94	0.33	0.33	6	6
	11	2.6	2.17	5.81	5.31	-0.4	-0.33	5	6
	12	2	1.5	3.46	3	-0.67	0	3	4
	13	2.5	2	5	4.47	-0.25	-0.2	4	5
	14	2	1.33	4.9	4	1	0.89	6	9
	15	2.8	1.75	6.26	4.95	1	0.88	5	8
	16	3.2	2.29	7.16	6.05	0.4	0.57	5	7
	17	3.33	2.5	5.77	5	-0.67	0	3	4
	18	1.5	1	3	2.45	0	0.33	4	6
	19	2.5	1.25	3.54	2.5	1	1	2	4
	20	5	4	10	8.94	0.75	0.6	4	5
AVG		2.91	2.35	6.13	5.52	0.05	0.2	4.6	5.85
STD		0.91	1	2.13	2.23	0.56	0.47	1.79	1.93

TRANSECT SUMMARY

C	NUMBER			#VALUE!	NATIVE SPECIES
	0	7		37	TOTAL SPECIES
	1	4		3	NATIVE MEAN C
	2	4		2.51	W/Adventives
	3	1	0:	16.7	NATIVE FQI
	4	6	1 to 3:	15.29	W/Adventives
	5	5	4 to 7:	0.1	NATIVE MEAN W
	6	0	8 to 10:	0.27	W/Adventives
	7	3			
	8	1			
	9	0			
	10	0			

PHYSIOGNOMIC SUMMARY

PHYSIOGNOMY

NATIVE			ADVENTIVE		
Tree	31	83.78%	Tree	6	16.22%
Shrub	1	2.70%	Shrub	0	0.00%
Vine	0	0.00%	Vine	1	2.70%
Forb	3	8.11%	Forb	0	0.00%
Grass	20	54.05%	Grass	4	10.81%
Sedge	5	13.51%	Sedge	1	2.70%
Fern	1	2.70%		0	0.00%

PHYSIOGNOMIC RELATIVE IMPORTANCE VALUES

PHYSIOG	FRQ	COV	RFRQ	RCOV	RIV	
N Tree	1	5	0.9		0.4	0.6
N Vine	6	31	5.1		2.6	3.9
N Forb	63	592	53.8		49.5	51.7
N Grass	13	211	11.1		17.6	14.4
N Sedge	8	107	6.8		8.9	7.9
N Fern	1	40	0.9		3.3	2.1
A Shrub	8	141	6.8		11.8	9.3
A Forb	11	15	9.4		1.3	5.3
A Grass	6	55	5.1		4.6	4.9

SPECIES RELATIVE IMPORTANCE VALUES

SCIENTIFIC NAME (NM C)		WETNESS FRQ		COV	RFRQ	RCOV	RIV
Solidago altissima	1	FACU	10	216	8.5	18	13.3
Elymus virginicus	4	FACW	9	171	7.7	14.3	11
Rhamnus cathartica	0	FAC	8	141	6.8	11.8	9.3
Solidago gigantea	4	FACW	7	115	6	9.6	7.8
Carex blanda	1	FAC	8	107	6.8	8.9	7.9
Monarda fistulosa	4	FACU	5	81	4.3	6.8	5.5
Poa pratensis	0	FAC	6	55	5.1	4.6	4.9
Equisetum arvense	0	FAC	1	40	0.9	3.3	2.1
Fragaria virginiana	1	FACU	6	40	5.1	3.3	4.2
Viola sororia	3	FAC	8	36	6.8	3	4.9
Penstemon calycosus	7	FACU	2	20	1.7	1.7	1.7
Geum canadense	1	FAC	3	16	2.6	1.3	2
Vitis riparia	2	FACW	3	16	2.6	1.3	2
Sphenopholis intermedia	4	FAC	1	15	0.9	1.3	1.1
Sorghastrum nutans	5	FACU	1	15	0.9	1.3	1.1
Silphium perfoliatum	5	FACW	3	11	2.6	0.9	1.7
Symphyotrichum laterifl	4	FACW	2	11	1.7	0.9	1.3
Toxicodendron radicans	2	FAC	2	10	1.7	0.8	1.3
Eupatorium altissimum	0	UPL	1	10	0.9	0.8	0.8
Zizia aurea	7	FAC	3	7	2.6	0.6	1.6
Blephilia hirsuta	8	FACU	3	7	2.6	0.6	1.6
Melilotus albus	0	UPL	2	6	1.7	0.5	1.1
Boehmeria cylindrica	2	OBL	1	5	0.9	0.4	0.6
Leersia virginica	7	FACW	1	5	0.9	0.4	0.6
Daucus carota	0	UPL	5	5	4.3	0.4	2.3
Clematis virginiana	4	FAC	1	5	0.9	0.4	0.6
Crataegus mollis	2	FAC	1	5	0.9	0.4	0.6
Bromus pubescens	5	FACU	1	5	0.9	0.4	0.6
Symphyotrichum ericoid	5	FACU	1	5	0.9	0.4	0.6
Plantago rugelii	0	FAC	1	5	0.9	0.4	0.6
Pastinaca sativa	0	UPL	3	3	2.6	0.3	1.4
Erigeron annuus	0	FACU	2	2	1.7	0.2	0.9
Prunella vulgaris ssp. lai	0	FAC	2	2	1.7	0.2	0.9
Asclepias syriaca	0	FACU	1	1	0.9	0.1	0.5
Taraxacum officinale	0	FACU	1	1	0.9	0.1	0.5
Ambrosia artemisiifolia	0	FACU	1	1	0.9	0.1	0.5
Lycopus americanus	5	OBL	1	1	0.9	0.1	0.5
			117	1197			

TRANSECT INVENTORY

Acronym	Scientific Name (NWPL/Mohlenbrock)	Scientific Name Synonym (Swink & Wilhelm)	Common Name (NWPL/Mohlenbrock)	C	WETNESS	WETNESS VALUE
ambart	Ambrosia artemisiifolia	Ambrosia artemisiifolia elatior	Annual Ragweed	0	FACU	1
ascsy	Asclepias syriaca	Asclepias syriaca	Common Milkweed	0	FACU	1
blehir	Blephilia hirsuta	Blephilia hirsuta	Hairy Pagoda-Plant	8	FACU	1
boecyl	Boehmeria cylindrica	Boehmeria cylindrica drummondiana	Small-Spike False Nettle	2	OBL	-2
bropub	Bromus pubescens	Bromus pubescens	Hairy Woodland Brome	5	FACU	1
cxblan	Carex blanda	Carex blanda	Eastern Woodland Sedge	1	FAC	0
clevir	Clematis virginiana	Clematis virginiana	Devil's-Darning-Needles	4	FAC	0
cramol	Crataegus mollis	Crataegus mollis	Downy Hawthorn	2	FAC	0
daucar	Daucus carota	DAUCUS CAROTA	Queen Anne's Lace	0	UPL	2
elyvir	Elymus virginicus	Elymus virginicus	Virginia Wild Rye	4	FACW	-1
equarv	Equisetum arvense	Equisetum arvense	Field Horsetail	0	FAC	0
eriann	Erigeron annuus	Erigeron annuus	Eastern Daisy Fleabane	0	FACU	1
eupalt	Eupatorium altissimum	Eupatorium altissimum	Tall Boneset	0	UPL	2
fravir	Fragaria virginiana	Fragaria virginiana	Virginia Strawberry	1	FACU	1
geucan	Geum canadense	Geum canadense	White Avens	1	FAC	0
leevir	Leersia virginica	Leersia virginica	White Grass	7	FACW	-1
lycame	Lycopus americanus	Lycopus americanus	Cut-Leaf Water-Horehound	5	OBL	-2
melalb	Melilotus albus	MELILOTUS ALBA	White Sweet-Clover	0	UPL	2
monfis	Monarda fistulosa	Monarda fistulosa	Oswego-Tea	4	FACU	1
passat	Pastinaca sativa	PASTINACA SATIVA	Parsnip	0	UPL	2
pencal	Penstemon calycosus	Penstemon calycosus	Long-Sepal Beardtongue	7	FACU	1
plarug	Plantago rugelii	Plantago rugelii	Black-Seed Plantain	0	FAC	0
poapra	Poa pratensis	POA PRATENSIS	Kentucky Blue Grass	0	FAC	0
pruvull	Prunella vulgaris ssp. lanceolata	Prunella vulgaris lanceolata	Common Selfheal	0	FAC	0
rhacat	Rhamnus cathartica	RHAMNUS CATHARTICA	European Buckthorn	0	FAC	0
silper	Silphium perfoliatum	Silphium perfoliatum	Cup-Plant	5	FACW	-1
solalt	Solidago altissima	Solidago altissima	Tall Goldenrod	1	FACU	1
solgig	Solidago gigantea	Solidago gigantea	Late Goldenrod	4	FACW	-1
sornut	Sorghastrum nutans	Sorghastrum nutans	Yellow Indian Grass	5	FACU	1
sphint	Sphenopholis intermedia	Sphenopholis intermedia	Slender Wedgescale	4	FAC	0
asteri	Symphyotrichum ericoides	Aster ericoides	White Heath American-Aster	5	FACU	1
astlat	Symphyotrichum lateriflorum	Aster lateriflorus	Farewell-Summer	4	FACW	-1
taroff	Taraxacum officinale	TARAXACUM OFFICINALE	Common Dandelion	0	FACU	1
rhurad	Toxicodendron radicans	Rhus radicans	Eastern Poison-Ivy	2	FAC	0
viosor	Viola sororia	Viola sororia	Hooded Blue Violet	3	FAC	0
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2	FACW	-1
zizaur	Zizia aurea	Zizia aurea	Golden Alexanders	7	FAC	0

SITE: Hegewisch Marsh
LOCALE: Marsh (Existing Conditions)
BY: Robbie Sliwinski
NOTES:

TRANSECT QUADRAT

QUAD	MC	W/Ad	FQI	W/Ad	MW	W/Ad	NS	TS
1			0	0	0		-1	1
2			0	0	0		-1	1
3			0	0	0		-1	1
4			0	0	0		-1.5	2
5			0	0	0		-1	1
6			0	0	0		-1.5	2
7	4		2	4	2.83	-2	-1.5	1
8			0	0	0		-1	1
9			0	0	0		-1	1
10			0	0	0		-1	1
11			0	0	0		-1	1
12	4		2.67	5.66	4.62	-2	-2	2
13			0	0	0		-1	1
14			0	0	0		-1	1
15			0	0	0		-1.5	2
16			0	0	0		-1	1
17			0	0	0		-1	1
18	6		2	6	3.46	-2	-1.67	1
19	4		2	4	2.83	-2	-1.5	1
20			0	0	0		-1	1
AVG		0.9	0.43	0.98	0.69	-0.4	-1.21	0.25
STD		1.89	0.9	2.06	1.45	0.82	0.31	0.55

TRANSECT SUMMARY

C	NUMBER	#VALUE!	NATIVE SPECIES
0	0	6	TOTAL SPECIES
1	0	4.5	NATIVE MEAN C
2	0	3	W/Adventives
3	0	9	NATIVE FQI
4	3	7.35	W/Adventives
5	0	-2	NATIVE MEAN W
6	1	-1.83	W/Adventives
7	0		
8	0		
9	0		
10	0		

PHYSIOGNOMIC SUMMARY

PHYSIOGNOMY

NATIVE			ADVENTIVE		
Tree	0	0.00%	Tree	0	0.00%
Shrub	0	0.00%	Shrub	0	0.00%
Vine	0	0.00%	Vine	0	0.00%
Forb	1	16.67%	Forb	1	16.67%
Grass	1	16.67%	Grass	1	16.67%
Sedge	2	33.33%	Sedge	0	0.00%
Fern	0	0.00%			

PHYSIOGNOMIC RELATIVE IMPORTANCE VALUES

PHYSIOG	FRQ	COV	RFRQ	RCOV	RIV
N Forb	2	10	6.9		0.6
N Grass	1	5	3.4		0.3
N Sedge	2	15	6.9		0.9
A Forb	5	115	17.2		6.9
A Grass	19	1515	65.5		91.3

SPECIES RELATIVE IMPORTANCE VALUES

SCIENTIFIC NAME (NW C	WETNESS FRQ	COV	RFRQ	RCOV	RIV
Phragmites australis ssp.	0 FACW	19	1515	65.5	91.3 78.4
Typha X glauca	0 OBL	5	115	17.2	6.9 12.1
Alisma subcordatum	4 OBL	2	10	6.9	0.6 3.7
Carex pellita	4 OBL	1	10	3.4	0.6 2
Leersia oryzoides	4 OBL	1	5	3.4	0.3 1.9
Schoenoplectus acutus	6 OBL	1	5	3.4	0.3 1.9
		29	1660		

TRANSECT INVENTORY

Acronym	Scientific Name (NWPL/Mohlenbrock)	Scientific Name Synonym (Swink & Wilhelm)	Common Name (NWPL/Mohlenbrock)	C	WETNESS	WETNESS VALUE
alisub	Alisma subcordatum	Alisma subcordatum	American Water-Plantain	4	OBL	-2
cypell	Carex pellita	Carex pellita	Woolly Sedge	4	OBL	-2
leory	Leersia oryzoides	Leersia oryzoides	Rice Cut Grass	4	OBL	-2
phrausu	Phragmites australis ssp. australis	Phragmites australis	Common Reed	0	FACW	-1
sciacu	Schoenoplectus acutus	Scirpus acutus	Hard-Stem Club-Rush	6	OBL	-2
typgla	Typha X glauca	Typha X glauca		0	OBL	-2

SITE: Hegewisch Marsh
LOCALE: Wet Prairie (Future With Project)
BY: Robbie Sliwinski
NOTES:

CONSERVATISM-BASED METRICS		ADDITIONAL METRICS	
MEAN C (NATIVE SPECIES)	5.36	SPECIES RICHNESS (ALL)	50
MEAN C (ALL SPECIES)	5.36	SPECIES RICHNESS (NATIVE)	50
MEAN C (NATIVE TREES)	n/a	% NON-NATIVE	0.00
MEAN C (NATIVE SHRUBS)	7.00	WET INDICATOR (ALL)	-1.60
MEAN C (NATIVE HERBACEOUS)	5.33	WET INDICATOR (NATIVE)	-1.60
FQAI (NATIVE SPECIES)	37.90	% HYDROPHYTE (MIDWEST)	1.00
FQAI (ALL SPECIES)	37.90	% NATIVE PERENNIAL	0.92
ADJUSTED FQAI	53.60	% NATIVE ANNUAL	0.08
% C VALUE 0	0.00	% ANNUAL	0.08
% C VALUE 1-3	0.14	% PERENNIAL	0.92
% C VALUE 4-6	0.60		
% C VALUE 7-10	0.26		

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	NC-NE WET INDICATOR	WET INDICATOR (NUMERIC)	HABIT	DURATION	NATIVITY
agapur	Agalinis purpurea	Agalinis purpurea	Purple False Foxglove		6 FACW	FACW		-1 Forb	Annual	Native
anecan	Anemone canadensis	Anemone canadensis	Round-Leaf Thimbleweed		4 FACW	FACW		-1 Forb	Perennial	Native
angatr	Angelica atropurpurea	Angelica atropurpurea	Purple-Stem Angelica		7 OBL	OBL		-2 Forb	Perennial	Native
cacpla	Arnoglossum plantagineum	Cacalia plantaginea	Groove-Stem Indian-Plantain		10 FAC	FAC		0 Forb	Perennial	Native
ascinc	Asclepias incarnata	Asclepias incarnata	Swamp Milkweed		4 OBL	OBL		-2 Forb	Perennial	Native
bidcer	Bidens cernua	Bidens cernua	Nodding Burr-Marigold		5 OBL	OBL		-2 Forb	Annual	Native
bidfro	Bidens frondosa	Bidens frondosa	Devil's-Pitchfork		1 FACW	FACW		-1 Forb	Annual	Native
calcan	Calamagrostis canadensis	Calamagrostis canadensis	Bluejoint		3 OBL	OBL		-2 Grass	Perennial	Native
calpal	Caltha palustris	Caltha palustris	Yellow Marsh-Marigold		5 OBL	OBL		-2 Forb	Perennial	Native
cxbebb	Carex bebbii	Carex bebbii	Bebb's Sedge		6 OBL	OBL		-2 Sedge	Perennial	Native
cxhayd	Carex haydenii	Carex haydenii	Cloud Sedge		6 OBL	OBL		-2 Sedge	Perennial	Native
cxpell	Carex pellita	Carex pellita	Woolly Sedge		4 OBL	OBL		-2 Sedge	Perennial	Native
cxscop	Carex scoparia	Carex scoparia	Pointed Broom Sedge		7 FACW	FACW		-1 Sedge	Perennial	Native
cxstip	Carex stipata	Carex stipata	Stalk-Grain Sedge		3 OBL	OBL		-2 Sedge	Perennial	Native
cxstri	Carex stricta	Carex stricta	Uptight Sedge		5 OBL	OBL		-2 Sedge	Perennial	Native
cxtrib	Carex tribuloides	Carex tribuloides	Blunt Broom Sedge		3 OBL	FACW		-2 Sedge	Perennial	Native

cxviri	Carex viridula	Carex viridula	Little Green Sedge	10 OBL	OBL	-2 Sedge	Perennial	Native
cicmac	Cicuta maculata	Cicuta maculata	Spotted Water-Hemlock	6 OBL	OBL	-2 Forb	Perennial	Native
doeumb	Doellingeria umbellata	Aster umbellatus	Parasol White-Top	9 FACW	FACW	-1 Forb	Perennial	Native
eleaci	Eleocharis acicularis	Eleocharis acicularis	Needle Spike-Rush	2 OBL	OBL	-2 Sedge	Perennial	Native
eleobt	Eleocharis obtusa	Eleocharis ovata	Blunt Spike-Rush	3 OBL	OBL	-2 Sedge	Annual	Native
		Eleocharis erythropoda;						
		Eleocharis palustris major;						
elepal	Eleocharis palustris	Eleocharis smallii	Common Spike-Rush	2 OBL	OBL	-2 Sedge	Perennial	Native
eupper	Eupatorium perfoliatum	Eupatorium perfoliatum	Common Boneset	4 OBL	FACW	-2 Forb	Perennial	Native
galobt	Galium obtusum	Galium obtusum	Blunt-Leaf Bedstraw	5 FACW	FACW	-1 Forb	Perennial	Native
glystr	Glyceria striata	Glyceria striata	Fowl Manna Grass	4 OBL	OBL	-2 Grass	Perennial	Native
helaut	Helenium autumnale	Helenium autumnale	Fall Sneezeweed	5 FACW	FACW	-1 Forb	Perennial	Native
irivir	Iris virginica var. shrevei	Iris virginica shrevei	Virginia Blueflag	5 OBL	OBL	-2 Forb	Perennial	Native
jundud	Juncus dudleyi	Juncus dudleyi	Dudley's Rush	4 FACW	FACW	-1 Forb	Perennial	Native
juntor	Juncus torreyi	Juncus torreyi	Torrey's Rush	4 FACW	FACW	-1 Forb	Perennial	Native
leeory	Leersia oryzoides	Leersia oryzoides	Rice Cut Grass	4 OBL	OBL	-2 Grass	Perennial	Native
liaspi	Liatris spicata	Liatris spicata	Dense Gayfeather	6 FAC	FAC	0 Forb	Perennial	Native
lysquil	Lysimachia quadriflora	Lysimachia quadriflora	Four-Flower Yellow-Loosestrife	9 OBL	OBL	-2 Forb	Perennial	Native
lysthy	Lysimachia thysiflora	Lysimachia thysiflora	Tufted Yellow-Loosestrife	9 OBL	OBL	-2 Forb	Perennial	Native
lytala	Lythrum alatum	Lythrum alatum	Wing-Angle Loosestrife	7 OBL	OBL	-2 Forb	Perennial	Native
		Mentha arvensis villosa						
menarv	Mentha arvensis	Mentha arvensis villosa	American Wild Mint	5 FACW	FACW	-1 Forb	Perennial	Native
onosen	Onoclea sensibilis	Onoclea sensibilis	Sensitive Fern	8 FACW	FACW	-1 Fern	Perennial	Native
phyvir	Physostegia virginiana	Physostegia virginiana	Obedient-Plant Marsh	6 FACW	FACW	-1 Forb	Perennial	Native
propal	Proserpinaca palustris	Proserpinaca palustris	0 Mermaidweed	6 OBL	OBL	-2 Forb	Perennial	Native
		Rumex orbiculatus						
rumorb	Rumex britannica	Rumex orbiculatus	Greater Water Dock	8 OBL	OBL	-2 Forb	Perennial	Native
saglat	Sagittaria latifolia	Sagittaria latifolia	Duck-Potato	4 OBL	OBL	-2 Forb	Perennial	Native
sciacu	Schoenoplectus acutus	Scirpus acutus	Hard-Stem Club-Rush	6 OBL	OBL	-2 Sedge	Perennial	Native
sciatv	Scirpus atrovirens	Scirpus atrovirens	Dark-Green Bulrush	4 OBL	OBL	-2 Sedge	Perennial	Native
scipen	Scirpus pendulus	Scirpus pendulus	Rufous Bulrush	4 OBL	OBL	-2 Sedge	Perennial	Native
siusua	Sium suave	Sium suave	Hemlock Water-Parsnip	7 OBL	OBL	-2 Forb	Perennial	Native
spapec	Spartina pectinata	Spartina pectinata	Freshwater Cord Grass	4 FACW	FACW	-1 Grass	Perennial	Native
spialb	Spiraea alba	Spiraea alba	White Meadowsweet	7 FACW	FACW	-1 Shrub	Perennial	Native
		Aster puniceus;						
		Aster puniceus						
astpun	Symphyotrichum puniceum	Symphyotrichum puniceum	Purple-Stem American-Aster	7 OBL	OBL	-2 Forb	Perennial	Native
		Thalictrum dasycarpum						
thadas	Thalictrum dasycarpum	Thalictrum hypoglaucom	Purple Meadow-Rue	5 FACW	FACW	-1 Forb	Perennial	Native
		Thelypteris palustris var. pubescens						
thepal	Thelypteris palustris var. pubescens	Thelypteris pubescens	Eastern Marsh Fern	6 OBL	FACW	-2 Fern	Perennial	Native
verhas	Verbena hastata	Verbena hastata	Simpler's-Joy	4 FACW	FACW	-1 Forb	Perennial	Native

SITE: Hegewisch Marsh
LOCALE: Woodland (Future With Project)
BY: Robbie Sliwinski
NOTES:

CONSERVATISM-BASED METRICS		ADDITIONAL METRICS	
MEAN C (NATIVE SPECIES)	5.77	SPECIES RICHNESS (ALL)	70
MEAN C (ALL SPECIES)	5.77	SPECIES RICHNESS (NATIVE)	70
MEAN C (NATIVE TREES)	6.20	% NON-NATIVE	0.00
MEAN C (NATIVE SHRUBS)	5.43	WET INDICATOR (ALL)	0.19
MEAN C (NATIVE HERBACEOUS)	5.78	WET INDICATOR (NATIVE)	0.19
FQAI (NATIVE SPECIES)	48.29	% HYDROPHYTE (MIDWEST)	0.50
FQAI (ALL SPECIES)	48.29	% NATIVE PERENNIAL	0.99
ADJUSTED FQAI	57.71	% NATIVE ANNUAL	0.01
% C VALUE 0	0.00	% ANNUAL	0.01
% C VALUE 1-3	0.11	% PERENNIAL	0.99
% C VALUE 4-6	0.50		
% C VALUE 7-10	0.39		

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	NC-NE WET INDICATOR	WET INDICATOR (NUMERIC)	HABIT	DURATION	NATIVITY
amearb	Amelanchier arborea	Amelanchier arborea	Downy Service-Berry		8 FACU	FACU		1 Tree	Perennial	Native
anevir	Anemone virginiana	Anemone virginiana	Tall Thimbleweed		5 FACU	FACU		1 Forb	Perennial	Native
antpla	Antennaria plantaginifolia	Antennaria plantaginifolia	Pussy-Toes		3 UPL	UPL		2 Forb	Perennial	Native
aqucan	Aquilegia canadensis	Aquilegia canadensis	Red Columbine		6 FACU	FACU		1 Forb	Perennial	Native
ascinc	Asclepias incarnata	Asclepias incarnata	Swamp Milkweed		4 OBL	OBL		-2 Forb	Perennial	Native
asctub	Asclepias tuberosa ssp. interior	Asclepias tuberosa	Butterfly-Weed		7 UPL	UPL		2 Forb	Perennial	Native
bapalb	Baptisia alba var. macrophylla	Baptisia leucantha	White Wild Indigo		8 FACU	FACU		1 Forb	Perennial	Native
blehir	Blephilia hirsuta	Blephilia hirsuta	Hairy Pagoda-Plant		8 FACU	FACU		1 Forb	Perennial	Native
boecyl	Boehmeria cylindrica	Boehmeria cylindrica drummondia	Small-Spike False Nettle		2 OBL	OBL		-2 Forb	Perennial	Native
brokal	Bromus kalmii	Bromus kalmii	Kalm's Brome		10 FAC	FAC		0 Grass	Perennial	Native
cxcris	Carex cristatella	Carex cristatella	Crested Sedge		4 FACW	FACW		-1 Sedge	Perennial	Native
cxgray	Carex grayi	Carex grayi	Gray's Sedge		7 FACW	FACW		-1 Sedge	Perennial	Native

cxgris	Carex grisea	Carex grisea	Inflated Narrow- Leaf Sedge	2 FAC	FAC	0 Sedge	Perennial	Native
cxhirs	Carex hirsutella	Carex hirsutella	Hairy-Leaf Sedge	4 UPL	UPL	2 Sedge	Perennial	Native
cxlupn	Carex lupulina	Carex lupulina	Hop Sedge	7 OBL	OBL	-2 Sedge	Perennial	Native
cxmusk	Carex muskingumensis	Carex muskingumensis	Muskingum Sedge	8 OBL	OBL	-2 Sedge	Perennial	Native
cxnorm	Carex normalis	Carex normalis	Greater Straw Sedge	5 FACW	FACW	-1 Sedge	Perennial	Native
cxpens	Carex pensylvanica	Carex pensylvanica	Pennsylvania Sedge	5 UPL	UPL	2 Sedge	Perennial	Native
cxradi	Carex radiata	Carex radiata	Eastern Star Sedge	6 UPL	FAC	2 Sedge	Perennial	Native
cxspar	Carex sparganioides	Carex sparganioides	Burr-Reed Sedge	3 FAC	FACU	0 Sedge	Perennial	Native
cxsqua	Carex squarrosa	Carex squarrosa	Squarrose Sedge	10 OBL	OBL	-2 Sedge	Perennial	Native
cxtene	Carex tenera	Carex tenera	Quill Sedge	8 FACW	FAC	-1 Sedge	Perennial	Native
carovt	Carya ovata	Carya ovata	Shag-Bark Hickory	5 FACU	FACU	1 Tree	Perennial	Native
comumb	Comandra umbellata	Comandra umbellata	Bastard-Toadflax	7 FACU	FACU	1 Forb	Perennial	Native
cortri	Coreopsis tripteris	Coreopsis tripteris	Tall Tickseed	5 FAC	FAC	0 Forb	Perennial	Native
corame	Corylus americana	Corylus americana	American Hazelnut	5 FACU	FACU	1 Shrub	Perennial	Native
dalcan	Dalea candida	Petalostemu m candidum	White Prairie- Clover	9 UPL	UPL	2 Forb	Perennial	Native
dalpur	Dalea purpurea	Petalostemu m purpureum	Purple Prairie- Clover	9 UPL	UPL	2 Forb	Perennial	Native
dodmea	Dodecatheon meadia	Dodecatheon meadia	Pride-of-Ohio	6 FACU	FACU	1 Forb	Perennial	Native
elyhys	Elymus hystrix	Elymus hystrix	Eastern Bottle- Brush Grass	5 FACU	FACU	1 Grass	Perennial	Native
eupcor	Euphorbia corollata	Euphorbia corollata	Flowering Spurge	2 UPL	UPL	2 Forb	Perennial	Native
fesobt	Festuca subverticillata	Festuca subverticillata	Nodding Fescue	5 FACU	FACU	1 Grass	Perennial	Native
galobt	Galium obtusum	Galium obtusum	Blunt-Leaf Bedstraw	5 FACW	FACW	-1 Forb	Perennial	Native
germac	Geranium maculatum	Geranium maculatum	Spotted Crane's-Bill	4 FACU	FACU	1 Forb	Perennial	Native
glystr	Glyceria striata	Glyceria striata	Fowl Manna Grass	4 OBL	OBL	-2 Grass	Perennial	Native
hamvir	Hamamelis virginiana	Hamamelis virginiana	American Witch- Hazel	8 FACU	FACU	1 Shrub	Perennial	Native
heuric	Heuchera richardsonii	Heuchera richardsonii	Richardson's Alumroot	8 FACU	FACU	1 Forb	Perennial	Native
leevir	Leersia virginica	Leersia virginica	White Grass	7 FACW	FACW	-1 Grass	Perennial	Native
liaasp	Liatris aspera	Liatris aspera	Rough Gayfeather	6 UPL	UPL	2 Forb	Perennial	Native
lilmic	Lilium michiganense	Lilium michiganense	Michigan Lily	6 FACW	FACW	-1 Forb	Perennial	Native
linben	Lindera benzoin	Lindera benzoin	Northern Spicebush	7 FACW	FACW	-1 Shrub	Perennial	Native
lobcar	Lobelia cardinalis	Lobelia cardinalis	Cardinal-Flower	7 OBL	OBL	-2 Forb	Perennial	Native
lobsip	Lobelia siphilitica	Lobelia siphilitica	Great Blue Lobelia	6 OBL	FACW	-2 Forb	Perennial	Native
maiste	Maianthemum stellatum	Maianthemum stellatum	Starry False Solomon's-Seal	5 FAC	FAC	0 Forb	Perennial	Native
monfis	Monarda fistulosa	Monarda fistulosa	Oswego-Tea	4 FACU	FACU	1 Forb	Perennial	Native
prealb	Nabalus albus	Nabalus albus	White Rattlesnake- Root	5 FACU	FACU	1 Forb	Perennial	Native
onosen	Onoclea sensibilis	Onoclea sensibilis	Sensitive Fern	8 FACW	FACW	-1 Fern	Perennial	Native
senpau	Packera paupercula	Packera paupercula	Balsam Groundsel	6 FAC	FAC	0 Forb	Perennial	Native
pedcan	Pedicularis canadensis	Pedicularis canadensis	Canadian Lousewort	9 FACU	FACU	1 Forb	Perennial	Native
pendig	Penstemon digitalis	Penstemon digitalis	Foxglove Beardtongue	4 FAC	FAC	0 Forb	Perennial	Native
phldiv	Phlox divaricata	Phlox divaricata	Wild Blue Phlox Canadian	5 FACU	FACU	1 Forb	Perennial	Native
pilpum	Pilea pumila	Pilea pumila	Clearweed	5 FACW	FACW	-1 Forb	Annual	Native
quebic	Quercus bicolor	Quercus bicolor	Swamp White Oak	6 FACW	FACW	-1 Tree	Perennial	Native
queell	Quercus ellipsoidalis	Quercus ellipsoidalis	O Hill's Oak	4 UPL	UPL	2 Tree	Perennial	Native

quepau	Quercus palustris	Quercus palustris	Pin Oak	8 FACW	FACW	-1 Tree	Perennial	Native
ribame	Ribes americanum	Ribes americanum	Wild Black Currant	7 FACW	FACW	-1 Shrub	Perennial	Native
roscar	Rosa carolina	Rosa carolina	Carolina Rose	5 FACU	FACU	1 Shrub	Perennial	Native
samcan	Sambucus nigra ssp. canadensis	Sambucus canadensis	Black Elder	1 FACW	FACW	-1 Shrub	Perennial	Native
sangre	Sanicula odorata	Sanicula gregaria	Clustered Black-Snakeroot	2 FAC	FAC	0 Forb	Perennial	Native
silper	Silphium perfoliatum	Silphium perfoliatum	Cup-Plant	5 FACW	FACW	-1 Forb	Perennial	Native
solfle	Solidago flexicaulis	Solidago flexicaulis	Zigzag Goldenrod	7 FACU	FACU	1 Forb	Perennial	Native
solpat	Solidago patula	Solidago patula	Round-Leaf Goldenrod	9 OBL	OBL	-2 Forb	Perennial	Native
solspe	Solidago speciosa	Solidago speciosa	Showy Goldenrod	7 UPL	UPL	2 Forb	Perennial	Native
solum	Solidago ulmifolia	Solidago ulmifolia	Elm-Leaf Goldenrod	5 UPL	UPL	2 Forb	Perennial	Native
asteri	Symphyotrichum ericoides	Aster ericoides	White Heath American-Aster	5 FACU	FACU	1 Forb	Perennial	Native
traohi	Tradescantia ohimensis	Tradescantia ohimensis	Bluejacket	2 FACU	FACU	1 Forb	Perennial	Native
actalt	Verbesina alternifolia	Actinomeris alternifolia	Wingstem	5 FACW	FACW	-1 Forb	Perennial	Native
vervir	Veronicastrum virginicum	Veronicastrum virginicum	Culver's-Root	7 FAC	FAC	0 Forb	Perennial	Native
vibpru	Viburnum prunifolium	Viburnum prunifolium	Smooth Blackhaw	5 FACU	FACU	1 Shrub	Perennial	Native
zizaur	Zizia aurea	Zizia aurea	Golden Alexanders	7 FAC	FAC	0 Forb	Perennial	Native

SITE: Hegewisch Marsh
LOCALE: Marsh (Future With Project)
BY: Robbie Sliwinski
NOTES:

CONSERVATISM-BASED METRICS		ADDITIONAL METRICS	
MEAN C (NATIVE SPECIES)	5.92	SPECIES RICHNESS (ALL)	50
MEAN C (ALL SPECIES)	5.92	SPECIES RICHNESS (NATIVE)	50
MEAN C (NATIVE TREES)	4.00	% NON-NATIVE	0.00
MEAN C (NATIVE SHRUBS)	8.00	WET INDICATOR (ALL)	-1.80
MEAN C (NATIVE HERBACEOUS)	5.95	WET INDICATOR (NATIVE)	-1.80
FQAI (NATIVE SPECIES)	41.86	% HYDROPHYTE (MIDWEST)	1.00
FQAI (ALL SPECIES)	41.86	% NATIVE PERENNIAL	0.88
ADJUSTED FQAI	59.20	% NATIVE ANNUAL	0.12
% C VALUE 0	0.00	% ANNUAL	0.12
% C VALUE 1-3	0.14	% PERENNIAL	0.88
% C VALUE 4-6	0.44		
% C VALUE 7-10	0.42		

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	NC-NE WET INDICATOR	WET INDICATOR (NUMERIC)	HABIT	DURATION	NATIVITY
acoame	Acorus americanus		Several-Vein Sweetflag	0	7 OBL	OBL	-2	Forb	Perennial	Native
agaten	Agalinis tenuifolia	Agalinis tenuifolia	Slender-Leaf False Foxglove		7 FACW	FACW	-1	Forb	Annual	Native
alisub	Alisma subcordatum	Alisma subcordatum	American Water-Plantain	4	OBL	OBL	-2	Forb	Perennial	Native
angatr	Angelica atropurpurea	Angelica atropurpurea	Purple-Stem Angelica	7	OBL	OBL	-2	Forb	Perennial	Native
bidcer	Bidens cernua	Bidens cernua	Nodding Burr-Marigold	5	OBL	OBL	-2	Forb	Annual	Native
brasch	Brasenia schreberi	Brasenia schreberi	Water Shield	10	OBL	OBL	-2	Forb	Perennial	Native
cxcomo	Carex comosa	Carex comosa	Bearded Sedge	5	OBL	OBL	-2	Sedge	Perennial	Native
cxlacu	Carex lacustris	Carex lacustris	Lakebank Sedge	6	OBL	OBL	-2	Sedge	Perennial	Native
cxstri	Carex stricta	Carex stricta	Uptight Sedge	5	OBL	OBL	-2	Sedge	Perennial	Native
celocc	Celtis occidentalis	Celtis occidentalis	Common Hackberry	3	FAC	FAC	0	Tree	Perennial	Native
decver	Decodon verticillatus	Decodon verticillatus	Swamp-Loosestrife	8	OBL	OBL	-2	Shrub	Perennial	Native
eleaci	Eleocharis acicularis	Eleocharis acicularis	Needle Spike-Rush	2	OBL	OBL	-2	Sedge	Perennial	Native
eleobt	Eleocharis obtusa	Eleocharis ovata	Blunt Spike-Rush	3	OBL	OBL	-2	Sedge	Annual	Native

elepal	Eleocharis palustris	Eleocharis erythropoda;	Common Spike-Rush	2 OBL	OBL	-2 Sedge	Perennial	Native
elocan	Elodea canadensis	Elodea canadensis	Canadian Waterweed	5 OBL	OBL	-2 Forb	Perennial	Native
eupper	Eupatorium perfoliatum	Eupatorium perfoliatum	Common Boneset	4 OBL	FACW	-2 Forb	Perennial	Native
hibpal	Hibiscus moscheutos	Hibiscus palustris	Crimson-Eyed Rose-Mallow	9 OBL	OBL	-2 Forb	Perennial	Native
impcap	Impatiens capensis	Impatiens capensis	Spotted Touch-Me-Not	3 FACW	FACW	-1 Forb	Annual	Native
irivir	Iris virginica var. shrevei	Iris virginica shrevei	Virginia Blueflag	5 OBL	OBL	-2 Forb	Perennial	Native
jundud	Juncus dudleyi	Juncus dudleyi	Dudley's Rush	4 FACW	FACW	-1 Forb	Perennial	Native
juneff	Juncus effusus ssp. solutus	Juncus effusus	Lamp Rush	7 OBL	OBL	-2 Forb	Perennial	Native
lemmio	Lemna minor	Lemna minor	Common Duckweed	5 OBL	OBL	-2 Forb	Annual	Native
lobsip	Lobelia siphilitica	Lobelia siphilitica	Great Blue Lobelia	6 OBL	FACW	-2 Forb	Perennial	Native
lycame	Lycopus americanus	Lycopus americanus	Cut-Leaf Water-Horehound	5 OBL	OBL	-2 Forb	Perennial	Native
lycuni	Lycopus uniflorus	Lycopus uniflorus	Northern Water-Horehound	7 OBL	OBL	-2 Forb	Perennial	Native
lysthy	Lysimachia thyrsiflora	Lysimachia thyrsiflora	Tufted Yellow-Loosestrife	9 OBL	OBL	-2 Forb	Perennial	Native
menarv	Mentha arvensis	Mentha arvensis villosa	American Wild Mint	5 FACW	FACW	-1 Forb	Perennial	Native
mimrin	Mimulus ringens	Mimulus ringens	Allegheny Monkey-Flower	6 OBL	OBL	-2 Forb	Perennial	Native
myrexa	Myriophyllum sibiricum	Myriophyllum exalbescent	Siberian Water-Milfoil	7 OBL	OBL	-2 Forb	Perennial	Native
nupadv	Nuphar advena	Nuphar advena	Yellow Pond-Lily	7 OBL	OBL	-2 Forb	Perennial	Native
nymtub	Nymphaea odorata	Nymphaea tuberosa	American White Water-Lily	7 OBL	OBL	-2 Forb	Perennial	Native
pelvir	Peltandra virginica	Peltandra virginica	Green Arrow-Arum	10 OBL	OBL	-2 Forb	Perennial	Native
pensed	Penthorum sedoides	Penthorum sedoides	Ditch-Stonecrop	5 OBL	OBL	-2 Forb	Perennial	Native
polhyd	Persicaria hydropiper	Polygonum hydropiper	Mild Water-Pepper	2 OBL	OBL	-2 Forb	Annual	Native
poncor	Pontederia cordata	Pontederia cordata	Pickerselweed	10 OBL	OBL	-2 Forb	Perennial	Native
potnat	Potamogeton natans	Potamogeton natans	Floating Pondweed	7 OBL	OBL	-2 Forb	Perennial	Native
propal	Proserpinaca palustris	Proserpinaca palustris	Marsh Mermaidweed	6 OBL	OBL	-2 Forb	Perennial	Native
rumbri	Rumex britannica	Rumex orbiculatus	Greater Water Dock	8 OBL	OBL	-2 Forb	Perennial	Native
saglat	Sagittaria latifolia	Sagittaria latifolia	Duck-Potato	4 OBL	OBL	-2 Forb	Perennial	Native
salamy	Salix amygdaloides	Salix amygdaloides	Peach-Leaf Willow	5 FACW	FACW	-1 Tree	Perennial	Native
schacu	Schoenoplectus acutus	Schoenoplectus acutus	Hard-Stem Club-Rush	6 OBL	OBL	-2 Sedge	Perennial	Native
schtab	Schoenoplectus tabernaemontani	Schoenoplectus tabernaemontani	Soft-Stem Club-Rush	5 OBL	OBL	-2 Sedge	Perennial	Native
siusua	Sium suave	Sium suave	Hemlock Water-Parsnip	7 OBL	OBL	-2 Forb	Perennial	Native
spaame	Sparganium americanum	Sparganium americanum	American Burr-Reed	10 OBL	OBL	-2 Forb	Perennial	Native
spaeur	Sparganium eurycarpum	Sparganium eurycarpum	Broad-Fruit Burr-Reed	6 OBL	OBL	-2 Forb	Perennial	Native
spialb	Spiraea alba	Spiraea alba	White Meadowsweet	7 FACW	FACW	-1 Shrub	Perennial	Native
spitom	Spiraea tomentosa	Spiraea tomentosa	Steeplebush	9 FACW	FACW	-1 Shrub	Perennial	Native
stupec	Stuckenia pectinata	Stuckenia pectinata	Sago False Pondweed	5 OBL	OBL	-2 Forb	Perennial	Native
valame	Vallisneria spiralis	Vallisneria spiralis	American Eel-Grass	7 OBL	OBL	-2 Forb	Perennial	Native
vitrip	Vitis riparia	Vitis riparia	River-Bank Grape	2 FACW	FAC	-1 Vine	Perennial	Native

