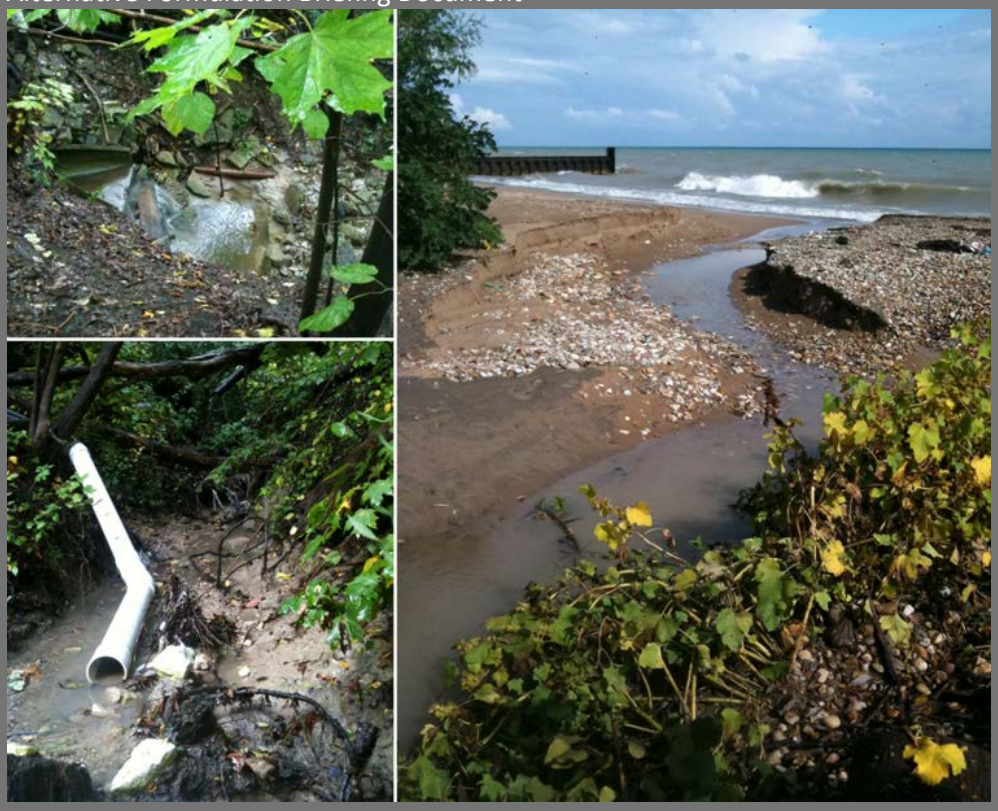
2013

Ravine 8 Ecosystem Restoration

Appendix G – Compliance & Permit Information

Alternative Formulation Briefing Document



Chicago District
US Army Corps of Engineers
01/31/2013

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G1. SECTION 404(B)(1) EVALUATION

I. Project Description

a. Location

The study area is part of the Lake Michigan coastline and is located in northeastern Illinois within the southeast boundary of Lake County. The proposed restoration project would be located east of Lake Road, north of Prospect Rd. and south of Laurel within the City of Highland Park, Illinois; Highland Park Quad Map, Illinois. The Ravine 8 study area is about 4-acres and consists of one ravine, the bluff and several small foredunes.

b. General Description

The recommended plan includes the following measures:

(HB) In-Ravine Pipe Conveyance – This measure would curtail the quantity of water flowing through the ravine by encapsulating it in a subsurface pipe. Removing the unnatural quantities of storm water from the ravine would allow for natural sized substrates to be replaced that were lost. First, a 24-inch pipe would be crafted and installed to receive water from the main discharge culvert and pass all of the flow through the system directly onto the beach. The pipe does not need to be jacked since the ravine bottom is open from the sanitary sewer replacement the City of Highland Park completed in the summer of 2012. Once the pipe is into position, natural materials indicative of the ravine would be used to bury the pipe and provide the base for the restored ravine stream. Special considerations would be given to this design to prevent both the sanitary and storm sewer pipes from wicking away natural and critical surface and ground water flows. This measure precludes the use of abnormally large boulders, which in turn returns the ravine to a more natural state and allows for great species richness colonization.

Stream Connectivity – This sub-measure aims to remove defunct structures and recontour the mouth of the ravine to allow free passage for lake fishes that utilize the ravine during spring pulses. In addition to recontouring the mouth, small cobble riffles would be used to ensure stability while providing fish spawning and macroinvertebrate habitat.

(D) Dune Plant Community – This measure seeks to remove all woody and herbaceous invasive species within about 0.5-acres of dune area by hand pulling and/or spot herbicide application. Native plant establishment of dune would be achieved primarily though the installation of sand stabilizing marram grass (*Ammophila breviligulata*) as well as other species of local genotype that regularly inhabit beach and foredune areas. In order to replicate the genetic diversity and local genotypes found within native stands of marram grass in Illinois, only rhizome transplants of marram grass from existing stands along the North Shore coast and Illinois Beach State Park, with permission from IDNR, will be used within the project area. Current available commercial sources of marram grass do not match the genetic constitution or genetic diversity of local native populations of marram grass and thus may negatively impact long term establishment and success of restored populations as well as potentially threaten the sustainability of nearby native stands of this state endangered species.

(RB) Ravine & Bluff Plant Community – This measure seeks to selectively remove invasive and opportunistic woody vegetation shading the ravine and bluff's understory. This measure is dependent on HB. Selective shrub and tree clearance includes, but is not limited to, common buckthorn (*Rhamnus cathartica*), glossy buckthorn (*Frangula alnus*), European highbush cranberry (*Viburnum opulus*), black locust (*Robinia pseudoacacia*), staghorn sumac (*Rhus typhina*), Norway maple (*Acer platanoides*), gray

dogwood (*Cornus racemosa*), white mulberry (*Morus alba*), green ash (*Fraxinus lanceolata*), cottonwood (*Populus deltoides*), and basswood (*Tilia americana*). This measure also includes the removal of invasive herbaceous species by spot application of herbicide as well as the incorporation of a prescribed burn.

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.

Historically, the Highland Park moraine was dominated by several naturally occurring communities including wetlands, forests, savannas and prairies. By the late 1800s, much of these communities, particularly prairies, savannas and wetlands, were converted to agricultural, urban or industrial use. Subsequently, there was a significant loss of biodiversity and adverse physical effects such as an increase in flooding events and a decrease in water quality. Furthermore, the remnant parcels of natural community types are under pressure from continued human activities. Human induced disturbances to the remaining natural areas include fire suppression, altered hydrology and hydraulics, increase colonization of invasive species and fragmentation. Specific problems that need to be addressed are detailed in **Section 2.2** of the FS Report.

Dune & Bluff – Recreation and residential development has had a major influence on the physical structure of coastal habitat and the processes that created and sustained these habitats. This has allowed invasive nonnative species to colonize these altered areas that no longer provide suitable life requisites for native species. Lacustrine process of littoral drift and wave/current patterns have been altered from their natural state through shoreline development; the construction of harbors, break walls, jetties, piers, etc. Coastal habitat can no longer rely on the natural replenishment and movement of sand down the coast since these structure now intercept a great deal of the material. Sand flats are located far enough from the shore as to not be effected by this; however, near shore, beach, dune and bluffs are dramatically affected by these altered conditions. It is apparent that littoral drift sands accumulate where humans have built structures and erode away from natural areas where there are no effective structures.

Ravine – The colonization and subsequent development of the land surrounding the north shore ravines has greatly accelerated the pace of the geologic forces which first created them. The primary force responsible for the ravines' continued degradation is the increased volume of water flowing into and through them. The proliferation of impervious surfaces and turf grass within the subwatersheds and along the upper perimeter of ravines where native trees and plants once grew has greatly increased the flow of rainwater runoff. The result is an increase in the quantity and velocity of water flowing through the ravine, which increases the rate of erosion. The greater the quantity of water, the level of downward stream cutting increases, making the lower portion of the ravine slopes adjacent to the stream much steeper and increases the frequency of slumping. The slumping in particular has a devastating effect on the ability of plants and trees to grow on the banks. The ravines are secondarily impacted by the numerous storm sewer outlets which drain stormwater from the surrounding streets into the ravines. These outlets, some of which are several feet in diameter, cause massive destruction to the banks where they discharge and dramatically increase the quantity and velocity of water in the ravines. In a sense, the ravines are becoming younger instead of maturing due to the constant increase in urban runoff. Predictably, over time the slope of the stream bed will level off even further, the steepness of the banks will decline as the ravine further widens, and plants and trees will again be able to survive on the slopes rather than topple over in mudslides. Given enough time, the ravines might adapt to the increased volume of water, although most species of native vegetation specific to the ravines will vanish in the process and

won't return because the ravines have lost their morphology and function. In the short term, however, the accelerated rate of erosion spells disaster for the trees and herbaceous growth.

d. Proposed Fill Material

1) General Characteristics

Fill material consists of:

Table 1 – Ravine 8 Fill Materials and Quantities

Fill Item	Quantity	Unit
STORM SEWER - 30" RCP	720	LF
STORM MANHOLE - 4' DIA.	5	EA
STORM CATCH BASIN - 4' DIA.	1	EA
FLARED END SECTION W/GRATE - 30"	1	EA
8" PLASTIC DRAIN PIPE W/RIPRAP	155	LF
RIFFLE STONE (D30)	235	TONS
RIFFLE STONE (D50)	13	TONS
CLAY BACKFILL (may not be needed)	1000	CYD

2) Quantity

See **Table 1** above.

3) Source

Commercial sources would be utilized that provides clean inert materials free of fines, weed seeds and foreign debris.

e. Proposed Discharge Site

1) Location

There would be no discharge of aqueous materials. All solid materials identified in **Table 1** would be placed within the footprint of the restored Ravine 8 stream channel.

2) Size, Type, and Habitat

The current stream habitat was obliterated by the previous sanitary sewer replacement project. This project would use natural materials and contouring to rebuild stream channel morphology and structure. The affected area is about .2-acres.

3) Timing and Duration of Discharge

The stream restoration portion of this project would take no longer than a month to complete.

f. Placement Method

Small bobcat 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

The average slope taken from first and last cross-section is 7.5%. The range of ravine stream slopes of the whole reach is 8 - 13%. The middle reach is shallower at 3.5 - 4%.

2) Sediment Type

Not applicable. Sediment is not being moved around or removed from the site.

3) Material Movement

The current without project condition is that the ravine has significantly eroded into Lake Michigan. There would be no significant movement of fill material after construction. Placement of cobble riffles within the restored ravine stream will induce sediment accretion upstream of the riffles and direct water flow to the center of the restored channel. Stone selected for establishment of cobble riffles are sized to withstand flood stage hydraulics and no longer allow for the ravine to incise.

4) Physical Effects on Benthos

Existing benthos directly beneath where the riprap/boulder/cobble 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 riverine hydraulics 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 720-feet of silt fencing and ~2-acres of biodegradable erosion control fabric.

b. Water Circulation, Fluctuation, and Salinity Determinations

1) Water

The proposed fill activity would have no significant negative impacts to water chemistry, water clarity, color, odor, taste, dissolved gas levels, nutrients, or increased eutrophication as a result. Improvements in water clarity, color, dissolved oxygen levels, and levels of eutrophication will be noted in the long-term after placement of the riffles in Ravine 8.

2) Current Patterns and Circulation

NA

3) Normal Water Level Fluctuations

The proposed fill activity would have no significant impact on normal water level fluctuations upstream or downstream of Ravine 8.

4) Salinity Gradients

Not applicable to freshwater environments.

5) Actions Taken to Minimize Impacts

No special measures would be taken to minimize the temporary impacts on water circulation and fluctuation associated with the proposed activity.

c. Suspended Particulate/Turbidity Determinations

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

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

2) Effects on Chemical and Physical Properties of Water Column

There would be negligible effects to light penetration or dissolved oxygen levels during construction. There are no known toxic metals, organics, or pathogens in the construction area. The placement of clean fill will not introduce metal, organic, or pathogens to the project area. Aesthetics would be improved in the long-term after instream habitat heterogeneity is established in the channel.

3) Effects on Biota

Only beneficial effects on aquatic biota are expected to result from the restoration activities and minor increase in turbidity or suspended particulates associated with the proposed fill and sediment movement activity is most likely less than that of summer thunderstorm event.

4) Actions Taken to Minimize Impacts

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

d. Contaminant Determination

The proposed fill material would not introduce any new contaminants into Lake Michigan or Ravine 8, 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 of riverine hydraulics and instream roughness, 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 macroinvertebrate richness and abundance.

5) Effects on Aquatic Sites

a) Sanctuaries and Refuges – none present; no significant impact
b) Wetlands – increase in hydrophytic vegetation
c) Mud Flats – none present; no significant impact
d) Vegetated Shallows – increase in submergent aquatic macrophytes
e) Coral Reefs – not applicable to freshwater environments
f) Riffle and Pool Complexes – would increase along the entire ravine

6) Threatened and Endangered Species

Coordination with the Illinois Department of Natural Resources (IDNR) was initiated with a project Scoping Letter dated November 15, 2011. The USACE has concluded in this report that the project is not

likely to adversely affect state listed species. It is expected that the Illinois DNR will provide clearance in response to the public/agency release of the NEPA document.

Coordination with the USFWS was initiated with a project Scoping Letter dated November 15, 2011. The USACE has concluded in this report that the project is "not likely to adversely affect federal species", which precludes the need for further consultation for this project. It is expected that the USFWS will provide a letter of "No Objection" in response to the public/agency release of the NEPA document.

7) Other Wildlife

No other wildlife would be significantly impacted by the proposed activity.

8) Actions Taken 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.

f. Proposed 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 Lake Michigan or Ravine 3L and would comply with all applicable water quality standards.

3) Potential Effects on Human use Characteristics

No significant impacts to municipal and private water supplies, water-related recreation, aesthetics, recreational, or commercial fisheries are expected. No known National Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves are present. There are no significant adverse effects expected.

g. Cumulative Effects on the Aquatic Ecosystem

The proposed project would restore aquatic habitat structure and function. There are no significant adverse effects expected.

h. Secondary Effects on the Aquatic Ecosystem

No significant impacts on the Lake Michigan or Ravine 3L ecosystem are expected as a result of the proposed activity.

III. Findings of 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.

G2. 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 G5.

B. Joint Application Form

The joint application for this notification is provided in Section G5

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 discing 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 less than 1-acre (~.2-acres) of ravine stream, which has already been modified to install a sanitary sewer system. The impact is beneficial since the stream's hydraulic and structural habitat would be restored to presettlement conditions. Also, the stream would run free to the lake which would allow for fishes to use this ravine again. 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 **Figures 01** and **02** in the Feasibility Report and **Plates 01, 02, 05** and **07** for project mapping.

I. Site Coordinates

Decimal Degrees - Longitude (-87.786) Latitude (42.188)

J. Site Documentation

See **Section 3 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 **Section 3 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 ravine slopes, stream and bluff are considered wetlands since ground water discharge and hydrophytic plants are quite evident. See **Plates 03** and **04** for Florist Quality Assessment. The temporary disruptive impact is from restoring the stream channel, which is less than 1-acre.

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 F**.

N. Engineering Drawings

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

O. Schedule

φ	30 Day Public Review Start	15 Mar 2013
φ	30 Day Public Review Ends	15 Apr 2013
φ	Final FS Report for Approval	30 Apr 2013
φ	Division Approval of FS Report	15 May 2013
φ	Design Complete	12 Aug 2013
φ	Open Bids	15 Sep 2013
φ	Contract Award	18 Sep 2013
φ	Notice to Proceed	18 Oct 2013
φ	Construction Complete	18 Oct 2017

P. Soil Erosion Sediment Control Plan

Since the affected area of disturbance is less than 1-acre, erosion and sediment release are 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 stormwater piping, cobble riffles and 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

Coordination with the Illinois Department of Natural Resources (IDNR) was initiated with a project Scoping Letter dated November 15, 2011. Correspondence and clearance with the ILSHPO is provided in Section G4 in a letter dated 29 November 2012.

T. Applicable Watershed Plans

Alliance for the Great Lakes. October 2009. Stresses and Opportunities in Illinois Lake Michigan Watersheds Strategic Sub-Watershed Identification Process (SSIP) Report for the Lake Michigan Watershed Ecosystem Partnership.

This report is organized around three aspects of the Lake Michigan land and water ecology: the water quality of Lake Michigan and the streams and rivers feeding into it, the level of erosion in ravines along the coast of the lake, and the range and quality of habitat in the region. Water quality and habitat were analyzed in terms of sub-watershed boundaries, whereas ravine erosion was analyzed ravine-by-ravine. The immediate goals of the study are to 1) prioritize sub-watersheds based on their potential to negatively impact water quality or 2) the quality and extent of habitat within their boundaries; and 3) to rank ravines based on their potential for erosion. The larger goal of the study is to serve as a tool for LMWEP, municipalities and other interested groups, such as private landowners, to make informed decisions about where to focus restoration efforts and resources in order to improve the ecology of the Lake Michigan region.

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 City of Highland Park.

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.

The small ravine stream would be restored to presettlement conditions. There are no intentions of relocating or channelizing the stream. 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.

The small ravine stream would be restored to presettlement conditions. The manipulation of the stream's hydraulics or hydrology to create an impoundment for anthropogenic uses is not indented out come. The small earthen plug at the end of the ravine would be removed as well to allow fish passage and free flowing conditions. 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.

The ravine, bluff and dune areas of the project would be restored to presettlement conditions in terms of stream hydraulics and native plant community composition. The manipulation of the stream's hydraulics or hydrology to create an impoundment for anthropogenic uses is not indented out come. 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 City of Highland Park.

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 is 01 October 2013.

G3. DRAFT FONSI

Finding of No Significant Impact
Ravine 8 Ecosystem Restoration

Background

The non-Federal sponsor, the City of Highland Park, has requested that the Chicago District, USACE initiate a study under Section 506 Water Resources Development Act 2000, Great Lakes Fishery and Ecosystem Restoration to ascertain the feasibility of techniques to restore the ecological integrity of Ravine 8. This study evaluates the feasibility and environmental effects of restoring the ravine and adjacent bluff and existing foredunes. The scope of this study addressed the issues of altered hydrology and hydraulics, native plant community preservation, invasive species, connectivity, rare wetland communities, native species richness and encourages public education (not sure how it encourages public education). The Feasibility Report and Integrated Environmental Assessment assessed and identified problems and opportunities, identified and evaluated measures, and recommended the most cost effective and feasible solution to the ecological problems currently existing within the area of study.

The overall problem within the Ravine 8 study area is the holistic decrease in biodiversity including species richness, ecosystem complexity and genetic variation. Biodiversity wasis decreased as a response to the loss of hydrogeomorphic function, fluvialgeomorphic function, littoral processes and land use change; collectively a reduction in abiotic complexity. Specific problems include:

- Altered hydraulics and littoral drift from manmade infrastructure
- Altered coastal geomorphology from manmade infrastructure and land use
- Altered coastal geomorphology from non-native plant species colonization
- Altered stream hydraulics from urbanization and infrastructure configuration within the watershed
- Altered fluvialgeomorphic processes from urbanized watershed and ill-advised in-ravine infrastructure
    - Channel incision
- Altered hydrology, hydraulics and geomorphology from manmade dam at mouth of ravine
- Altered geomorphology from invasive plant and tree species
    - Large amounts of unnatural woody debris
    - Unnatural erosion

Brief Summary of Findings

Six plans were generated from the 4 measures during plan formulation. Six plans were cost effective, which means that no one plan provided the same benefits as another plan that was less costly. Two plans were revealed as “best buys”, which are deemed the most cost efficient of the 6 plans generated. The environmental assessment identified the direct, indirect and cumulative effects of a set of measures that were part of these six alternative plans including the No Action plan. The National Ecosystem Restoration (NER)/Preferred plan is Plan 3.

The NER/Preferred Plan

The National Ecosystem Restoration (NER) Plan is the preferred plan, which is Plan 3. This plan consists of restoring the ravine as close as possible to presettlement conditions in terms of stream hydraulics and native plant communities. Specific features include the following:

(HB) In-Ravine Pipe Conveyance – This measure would curtail the quantity of water flowing through the ravine by encapsulating it in a subsurface pipe. Removing the unnatural quantities of storm water from the ravine would allow for natural sized substrates to be replaced that were lost. First, a 24-inch pipe would be crafted and installed to receive water from the main discharge culvert and pass all of the flow through the system directly onto the beach. The pipe does not need to be jacked since the ravine bottom is open from the sanitary sewer replacement the City of Highland Park completed in the summer of 2012. Once the pipe is into position, natural materials indicative of the ravine would be used to bury the pipe and provide the base for the restored ravine stream. Special considerations would be given to this design to prevent both the sanitary and storm sewer pipes from wicking away natural and critical surface and ground water flows. This measure precludes the use of abnormally large boulders, which in turn returns the ravine to a more natural state and allows for great species richness colonization.

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Discussion of Environmental Compliance

The NER /Preferred Plan presented is in compliance with appropriate statutes and executive orders including the Endangered Species Act of 1973 as amended; the Fish and Wildlife Coordination Act of 1934 as amended; Executive Order 12898 (Environmental Justice); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management); and the Rivers and Harbors Act of 1899 as

amended; the Clean Air Act of 1970 as amended and the National Environmental Policy Act of 1969 as amended.

Environmental Justice EO12898

To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands. The preferred plan would not have any adverse effects to any populations including minority and low-income populations.

Clean Air Act

Due to the small scale, short duration and relatively unpolluted nature of the restoration project, it is assumed that the project is below the de minimis level of PM 100 tons per year. As a reference, other USACE projects that are much grander in scale and earthwork have General Conformity Act emissions well below the PM 100 tons per year.

Section 401 & 404 of the Clean Water Act

A Section 404 analysis was completed for the preferred plan. Features addressed by the 404 include the fill materials for stream restoration where cobble, gravel, sand and clean clays would be placed to mimic natural substrates. No adverse effects to water quality or aquatic habitat were determined.

Section 401 Water Quality Certification is granted under the U.S. Army Corps of Engineers, Chicago District Regulatory Branch Regional Permit 5, Wetland & Stream Restoration and Enhancement. All aspects and project features fall within the guidelines of this Regional Permit. All applicable information and analyses required to receive 401 Water Quality Certification were included as part of the study document. No adverse effects to water quality or aquatic habitat were determined.

USFWS Coordination

Coordination with the USFWS commenced with a project scoping letter dated 15 November 2012. The recommended plan was determined to have “no effects” on Federally listed threatened or endangered species or their habitats, which precluded Section 7. The USFWS has provided a “Letter of No Objection” to the project dated __ ____ ____.

State of Illinois Historic Preservation Act

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 4701) and 36 C.F.R. Part 800, the staff of the Illinois State Historic Preservation Officer (Illinois SHPO) has conducted an analysis of the materials dated 15 November 2012. Based upon the documentation available, the staff of the Illinois SHPO has not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects. Therefore the SHPO has no objection to the project. All areas affected by ground disturbance under this project have already been previously disturbed; therefore an archaeological survey is unnecessary and is consistent with the SHPO letter dated 29 November 2012.

Public Interest

An Environmental Assessment (EA) was prepared for the project and sent to Federal, State and local agencies along with the general public for review. A 30-day Public Review period was held from 15 March 2012 to 07 April 2012 for the Environmental Assessment. Significant comments from the Federal, State or local agencies or the public were addressed and are attached to this FONSI. All comments and correspondence are attached to this FONSI.

Conclusion

In accordance with the National Environmental Policy Act of 1969 and Section 122 of the River and Harbor and Flood Control Act of 1970, the U.S. Army Corps of Engineers has assessed the environmental impacts associated with this project. The purpose of this EA is to evaluate the impacts that would be associated with the restoration of the 5-acres at Ravine 8. The proposed project has been determined to be in full compliance with the appropriate statutes, executive orders and USACE regulations.

The assessment process indicates that this project would not cause significant effects on the quality of the human environment. The assessment process indicates that this project would have only beneficial impacts upon the ecological, biological, social, or physical resources of this area, and would provide environmental benefits to the Lake Michigan coastal zone and the Great Lakes as a whole. The findings indicate that that the proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, I have determined that an Environmental Impact Statement (EIS) is not required.

Frederic A. Drummond Jr. Date: _____
Colonel, U.S. Army
District Commander

G4. Agency Coordination

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

REPLY TO
ATTENTION OF

Planning Branch
Environmental Formulation Section

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

15 NOV 2012

Dear Mr. Westlake:

The Chicago District is preparing a National Environmental Policy Act (NEPA) document on impacts of an ecosystem restoration project in the City of Highland Park, Lake County, Illinois. As part of the scoping process the Chicago District would appreciate your comments. A map of the project area is enclosed.

The Ravine #8 Project area is comprised of a small watershed ravine draining into Lake Michigan. This ravine restoration project will naturalize the ravines' existing heavily modified hydraulics. The project will also include the removal of non-native invasive plants and the restoration of native plant communities. Work will follow Highland Parks steep slope ordinance and will be limited to the bluffs, dunes, ravine slopes and the base of the ravine where a sanitary sewer line is currently located.

I am particularly interested in your comments regarding impacts to aquatic habitat and threatened or endangered species. Please comment 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,

ISI

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

Enclosure

Bullock PM-PL-E 11/14/12
Fleming PM-PL-E 11/14/12
Buczak PM-PM LAB 11/14/12
Davis PM-PL SJD 11/14/12

Illinois Historic Preservation Agency

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

Lake County PLEASE REFER TO: IHPA LOG #003112112
Highland Park
Along Lake Michigan, East of Lake Avenue, Between Prospect Avenue & Laurel Avenue
COEC
Ecosystem Restoration project

November 29, 2012

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

G5. 404/401 Joint Application Form

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

REPLY TO ATTENTION OF

Planning Branch
Environmental Formulation Section

Mr. Al Keller
Illinois Environmental Protection Agency
Division of Water Pollution Control
Facility Evaluation Unit
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

RE: Section 404/401 Water Quality Certification Regional Permit – Ravine 8 Ecosystem Restoration

Dear Mr. Keller,

Enclosed is documentation for work associated with the USACE Chicago District's Ravine 8 Ecosystem Restoration project. The documentation details the requirements set forth by Regional Permit 5 Category II for Wetland & Stream Restoration and Enhancement, under which this project qualifies. This application is being submitted solely to the ILEPA since there are no project features that require permits from Illinois Department of Natural Resources, Office of Water Resources.

The proposed project involves the restoration of ravine habitat via removing urban induced stormwater flows, reestablishing geomorphology of the stream, removing a fish passage barrier, removal of invasive plant species and reestablishing ravine, bluff and dune native plant communities. Measures to be covered by Regional Permit 5 Category II include the work restore stream flows and geomorphology. Complete details are included in the enclosed application and supporting documents.

If you have any questions regarding the permit application or the project, please contact Frank Veraldi at 312-846-5589 or Kirston Buczak, Project Manager, at 312-846-5552.

Sincerely,

DRAFT

Susanne J. Davis
Chief of Planning
District Commander

Enclosures

PM-PL-E
PM-PL-E
PM-PM
OC
DE

JOINT APPLICATION FORM FOR ILLINOIS

ITEMS 1 AND 2 FOR AGENCY USE

1. Application Number	2. Date Received

3. and 4. (SEE SPECIAL INSTRUCTIONS) NAME, MAILING ADDRESS AND TELEPHONE NUMBERS

3a. Applicant's Name:	3b. Co-Applicant/Property Owner Name (if needed or if different from applicant):	4. Authorized Agent (an agent is not required):
POC Kirston Buczak Company Name (if any) : USACE, Chicago District Address: 111. N Canal St., #600 Chicago, IL 60606 Email Address: Kirston.A.Buczak@usace.army.mil	Company Name (if any): Address: Email Address:	Company Name (if any): Address: Email Address:
Applicant's Phone Nos. w/area code Business: 312-846-5552 Residence: Cell: Fax:	Applicant's Phone Nos. w/area code Business: Residence: Cell: Fax:	Agent's Phone Nos. w/area code Business: Residence: Cell: Fax:

STATEMENT OF AUTHORIZATION

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ Applicant's Signature

_____ Date

5. ADJOINING PROPERTY OWNERS (Upstream and Downstream of the water body and within Visual Reach of Project)

Name	Mailing Address	Phone No. w/area code
a. see location map		
b.		
c.		
d.		

6. PROJECT TITLE:

7. PROJECT LOCATION:

LATITUDE: 42.18800 °N

LONGITUDE: -87.78600 °W

UTMs

Northing:

Easting:

STREET, ROAD, OR OTHER DESCRIPTIVE LOCATION	LEGAL DESCRIPT	QUARTER	SECTION	TOWNSHIP NO.	RANGE
Lake Street					

☒ IN OR ☐ NEAR CITY OF TOWN (check appropriate box)

Municipality Name: Highland Park

COUNTY	STATE	ZIP CODE
Lake	IL	60035

WATERWAY: Ravine 8 Stream

RIVER MILE (if applicable):

Revised 2010

☐ Corps of Engineers ☐ IL Dep't of Natural Resources ☒ IL Environmental Protection Agency ☐ Applicant's Copy

8. PROJECT DESCRIPTION (Include all features):

see Section I. of the 404(b)(1) Analysis

9. PURPOSE AND NEED OF PROJECT:

see Section I. of the 404(b)(1) Analysis

COMPLETE THE FOLLOWING FOUR BLOCKS IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

10. REASON(S) FOR DISCHARGE:

To restore stream hydraulics and geomophology to a more natural and functional state.

11. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS FOR WATERWAYS:

TYPE: see Table 1 of Appendix G

AMOUNT IN CUBIC YARDS:

see Table of Appendix G

12. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (See Instructions)

~ 0.2 acres

13. DESCRIPTION OF AVOIDANCE, MINIMIZATION AND COMPENSATION (See instructions)

the work would be confined to the channel bed only. Water quality to Lake Michigan would improve by disallowing the Ravine to continue to unnatural erode into the lake.

14. Date activity is proposed to commence: 30 July 2013

Date activity is expected to be completed: 30 Jully 2014

15. Is any portion of the activity for which authorization is sought now complete? Yes [ ] No [X]

NOTE: If answer is "YES" give reasons in the Project Description and Remarks section. Indicate the existing work on drawings.

Month and Year the activity was completed

16. List all approvals or certification and denials received from other Federal, interstate, state, or local agencies for structures, construction, discharges or other activities described in this application.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial

17. CONSENT TO ENTER PROPERTY LISTED IN PART 7 ABOVE IS HEREBY GRANTED. Yes [ ] No [ ]

18. APPLICATION VERIFICATION (SEE SPECIAL INSTRUCTIONS)

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities.

Signature of Applicant or Authorized Agent	Date
Signature of Applicant or Authorized Agent	Date
Signature of Applicant or Authorized Agent	Date

☐ Corps of Engineers ☐ IL Dep't of Natural Resources ☒ IL Environmental Protection Agency ☐ Applicant's Copy

Revised 2010

SEE INSTRUCTIONS FOR ADDRESS

LOCATION MAP

see Report Plates for Mapping

****

Section 5 Adjacent Property Owners

CITY OF HIGHLAND PARK
54 LAUREL AVE
HIGHLAND PARK, IL 60635

SILVERSTEIN, MERLE
80 LAUREL AVE
HIGHLAND PARK, IL 60635

EMALFARB, A HAL
100 LAUREL AVE
HIGHLAND PARK, IL 60635

HIRSH, L JACQUELINE
1895 LAKE AVE
HIGHLAND PARK, IL 60635

GUTNAYER, KATHLEEN & GLENN
1845 LAKE AVE
HIGHLAND PARK, IL 60635

GLAZER, E FREDERIC
1840 CRESCENT CT
HIGHLAND PARK, IL 60635

LEV, LUCY & YURY
1850 CRESCENT CT
HIGHLAND PARK, IL 60635

ROSALIE SNITZER, TRUSTEE
ADDR 1880 CRESCENT CT
HIGHLAND PARK, IL 60635

ANGELA & MICHAEL BERMAN, TRUSTEES
1893 CRESCENT CT
HIGHLAND PARK, IL 60635

PLAN VIEW

see Report Plates for Mapping

FOR AGENCY USE ONLY

Revised 2010

☐ Corps of Engineers ☐ IL Dep't of Natural Resources ☒ IL Environmental Protection Agency ☐ Applicant's Copy