



September 30, 2013

Mr. Kris Lah and Ms. Louise Clemency
U.S Fish & Wildlife Service, Chicago Ecological Services
1250 S. Grove, Suite 103
Barrington, IL 60010-5091

Re: Hine's Emerald Dragonfly Habitat Conservation Plan

Dear Mr. Lah and Ms. Clemency:

On behalf of ComEd, Cardno JFNew is submitting this draft Low-Effect Hine's Emerald Dragonfly Habitat Conservation Plan (HCP) and screening form for your review. As you know, this document represents the culmination of years of cooperation, planning and studies to develop a multi-species HCP for a portion of the lower Des Plaines River valley. The overriding biological goal of this HCP is to meaningfully contribute to the conservation of federal and state listed species. This HCP includes Hine's Emerald Dragonfly critical habitat as designated in 2007 (and revised in 2010) by the U.S. Fish and Wildlife Service and also addresses the following species:

- Federal and Illinois endangered Hine's emerald dragonfly (*Somatochlora hineana*)
- Illinois endangered Blanding's turtle (*Emydoidea blandingii*)
- Illinois endangered spotted turtle (*Clemmys guttata*)
- Illinois threatened black-billed cuckoo (*Coccyzus erythrophthalmus*)
- Federal threatened and Illinois endangered lakeside daisy (*Hymenoxys acaulis*)
- Federal and Illinois endangered leafy prairie clover (*Dalea foliosa*)

The purpose of this HCP is to evaluate the impacts of ComEd's proposed activities on the covered species listed above and their habitats, and to propose measures for avoiding, minimizing or mitigating for potential incidental take of these species and their habitats.

This HCP shall serve as the basis for the U.S. Fish and Wildlife Service and Illinois Department of Natural Resources decisions regarding the issuance of Incidental Take Permits for ComEd under Section 10(a)(1)(B) of the Federal Endangered Species Act and issuance of an Incidental Take Authorization under the Illinois Endangered Species Protection Act (520 ILCS 10/3), respectively. This HCP includes the required description of effects of the anticipated take on affected species and habitat, and the measures proposed to avoid, minimize and mitigate resulting impacts.

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I would appreciate your comments back to me by October 15, 2013. Feel free to contact me or Sara Race if you have any questions or would like to discuss.

Sincerely,

A handwritten signature in blue ink that reads 'Marcy R. Knysz'.

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File: 1301050

DRAFT Low-Effect Habitat
Conservation Plan for the Hine's
Emerald Dragonfly, Blanding's Turtle,
Spotted Turtle, Black-billed Cuckoo,
Lakeside Daisy and Leafy Prairie
Clover

Project # 1301050



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Document Information

Prepared For Commonwealth Edison
Project Name Low-Effect Habitat Conservation Plan for the Hine's Emerald Dragonfly, Blanding's Turtle, Spotted Turtle, Black-billed Cuckoo, Lakeside Daisy and Leafy Prairie Clover
Project Number 1301050
Project Manager Marcy Knysz
Date September 2013

Prepared for:



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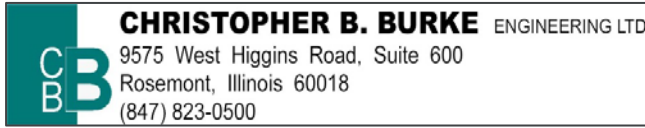
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U.S. Fish and Wildlife Service
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Title of Proposed Action: Low-Effect Habitat Conservation Plan for issuance of an Incidental Take Permit (Endangered Species Act Section 10(a)(1)(B)) for the Hine's emerald dragonfly; and Illinois

Endangered Species Protection Act (520 ILCS 10/) authorization for the Hine's emerald dragonfly, Blanding's turtle, spotted turtle and black-billed cuckoo in Will, Cook and DuPage Counties, Illinois¹.

Unit Proposing Action:

U.S. Fish and Wildlife Service
Chicago Illinois Field Office
1250 South Grove, Suite 103
Barrington, Illinois 60010

Federal Legal Mandate for Proposed Action: Endangered Species Act of 1973, as amended, section 10(a)(1)(B) as implemented by 50 CFR 17.22 for endangered species.

State Legal Mandate for Proposed Action: Illinois Endangered Species Protection Act (520 ILCS 10/).

Document Review and Guidance:

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¹ There are no Federal prohibitions under the Endangered Species Act (ESA) for the take of listed plants on non-Federal lands, unless taking of those plants is in violation of State law. However, before the U.S. Fish and Wildlife Service (USFWS) issues a permit, the effects of the permit on listed plants must be analyzed because section 7 of the ESA requires that issuance of an Incidental Take Permit must not jeopardize any listed species, including plants.

Table of Contents

1	INTRODUCTION and BACKGROUND.....	1
1.1	HCP Planning Process.....	2
1.2	Biological Goals and Objectives of the HCP.....	3
1.3	Regulatory and Legal Framework for Plan.....	3
1.3.1	Federal Endangered Species Act.....	4
1.3.2	National Environmental Policy Act.....	5
1.3.3	Illinois Endangered Species Protection Act.....	6
1.3.4	Illinois Natural Areas Preservation Act.....	7
1.3.5	Clean Water Act Permits.....	7
1.4	Planning and Permit Area.....	7
1.5	Critical Habitat Units.....	7
1.6	Species to be Covered by Permit.....	8
2	ENVIRONMENTAL SETTING and BIOLOGICAL RESOURCES.....	10
2.1	Environmental Setting.....	10
2.1.1	Climate.....	10
2.1.2	Topography and Geology.....	10
2.1.3	Hydrology: Groundwater, Wetlands, Surface Water.....	11
2.1.4	Vegetation.....	12
2.1.5	Wildlife.....	13
2.1.6	Existing Land Use.....	14
2.2	Species of Concern in the Planning Area.....	14
2.2.1	Hine's Emerald Dragonfly.....	14
2.2.2	Blanding's Turtle.....	18
2.2.3	Spotted Turtle.....	20
2.2.4	Black-billed Cuckoo.....	21
2.2.5	Leafy Prairie Clover.....	22
2.2.6	Lakeside Daisy.....	25
3	PROJECT DESCRIPTION and ACTIVITIES.....	28
3.1	Project Description.....	28
3.2	Activities Covered by Permit.....	28
3.3	Emergency Response.....	29
4	ALTERNATIVES ANALYSIS.....	30
4.1	No Action Alternative.....	30
4.2	Transmission Alternatives.....	30
4.3	Distribution Alternatives.....	31
4.4	ComEd's Preferred Alternative.....	31
5	POTENTIAL BIOLOGICAL IMPACTS, IMPACT ANALYSIS and MITIGATION.....	33
5.1	Hine's Emerald Dragonfly.....	33
5.1.1	Activities and Impact Analysis.....	33
5.1.2	Measures to Avoid and Minimize Impacts.....	33

5.1.3	Calculation of Incidental Take	38
5.1.4	Impact of Take	40
5.1.5	Effects on Critical Habitat.....	42
5.1.6	Compensatory Mitigation	46
5.2	Blanding's and Spotted Turtles	47
5.2.1	Activities and Impact Analysis.....	47
5.2.2	Measures to Avoid and Minimize Impacts	47
5.2.3	Calculation of Incidental Take.....	48
5.2.4	Impact of Take	48
5.2.5	Compensatory Mitigation	48
5.3	Other Covered Species	49
5.3.1	Other Covered Species Activities and Impact Analysis.....	49
5.3.2	Other Covered Species Measures to Avoid and Minimize Impacts.....	49
5.3.3	Other Covered Species Calculation of Incidental Take	50
5.3.4	Other Covered Species Impact of Take.....	50
6	MONITORING, REPORTING AND ADAPTIVE MANAGEMENT	51
6.1	General Requirements	51
6.2	Monitoring.....	51
6.3	Reports	52
6.4	Prior Notification	52
6.5	Adaptive Management	53
7	FUNDING.....	55
8	CHANGED and UNFORESEEN CIRCUMSTANCES	56
8.1	Federal "No Surprises" Assurances	56
8.2	Changed Circumstances	56
8.3	Unforeseen Circumstances	56
8.4	Circumstances Addressed in this HCP	57
8.4.1	Climate Change in the Chicago area	57
8.4.2	Change in Listing Status of a Species in the Permit Area	59
8.4.3	Change in Habitat Range.....	60
8.4.4	Fire	61
8.4.5	Drought	62
8.4.6	Severe Wind/Tornadoes	63
8.4.7	Invasion of a New Non-plant Species	64
8.4.8	Accidental Harmful Human Activity.....	64
8.4.9	Vandalism or Other Destructive or Illegal Human Activity	65
8.4.10	Disease	65
8.4.11	Oil Spills or Natural Gas Pipeline Leaks	66
8.4.12	Train Derailment.....	67
8.4.13	Addition of Electric Lines.....	68
9	PLAN IMPLEMENTATION	70
9.1	Responsibilities.....	70
9.2	Permit Duration.....	70

9.3	Amendments	70
9.3.1	Minor Amendments	70
9.3.2	Major Amendments	70
9.3.3	Treatment of Changes Resulting from Adaptive Management or Changed Circumstances	71
9.4	Suspension/Revocation.....	71
9.5	Permit Renewal	71
10	REFERENCES.....	73
11	ACRONYMS	82

Appendices

Appendix A Figures

Figure 1.:	Planning Area
Figure 2.:	Land Ownership and Jurisdiction in Planning Area & Surrounding Area
Figure 3.:	HCP Permit Area
Figure 4.:	Groundwater & Recharge Areas
Figure 5.0-5.7:	Wetlands Located on ComEd Properties within Permit Area
Figure 6.:	1938-1939 Aerial Photography
Figure 7.:	Historic Vegetation Map of Planning Area
Figure 8.:	Current Land Use of Planning Area & Groundwater Recharge Areas
Figure 9.0-9.7:	HED Habitat Map
Figure 10.:	Parcels with Recently (2002-2012) Documented Occurrence of Blanding's Turtle
Figure 11.:	Parcels with Recently (2002-2012) Documented Occurrence of Spotted Turtle
Figure 12.:	Parcels with Recently (2002-2012) Documented Occurrence of Leafy Prairie Clover
Figure 13.:	Parcels with Recently (2002-2012) Documented Occurrence of Lakeside Daisy
Figure 14.:	Parcels with Recently (2002-2012) Documented Occurrence of Black-billed Cuckoo
Figure 15.0-15.5:	Distance from Work Area to HED Larvae Occupied Rivulets & HED Larvae Habitat Areas

Appendix B Mapping Protocol

Appendix C Additional Tables

Table C-1:	Annual adult HED observations at Middle Parcel
Table C-2:	Annual adult HED observations at Long Run/ComEd Parcel
Table C-3:	Annual adult HED observations at River South
Table C-4:	Summary of Recorded Individual Leafy Prairie Clover Plants found in the Permit Area and Adjacent Areas from 1990-2005

Tables

Table 1-1 Permit and Planning Areas	2
Table 2-1: Known HED Occurrences in Planning Area, as of 2011	15
Table 5-1: HED Habitat Types and Acreages.....	39
Table 5-2: Calculation of Wetland Impacts	40
Table 5-3: Calculation of Critical Habitat Unit Impacts	46

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1 INTRODUCTION and BACKGROUND

This document represents the culmination of years of cooperation, planning and studies to develop a multi-species Habitat Conservation Plan (HCP) for a portion of the lower Des Plaines River valley (Figure 1, Appendix A). The overriding biological goal of this HCP is to meaningfully contribute to the conservation of the federal and state listed (threatened and endangered) species found in the Permit Area (geographic area where the Incidental Take Permit (ITP) applies) as shown on Figure 3 in Appendix A. This HCP includes Hine's Emerald Dragonfly (HED) critical habitat as designated in 2007 (and revised in 2010) by the U.S. Fish and Wildlife Service (USFWS) and also addresses the following species (collectively referred to as the covered species):

- Federal and Illinois endangered Hine's emerald dragonfly (*Somatochlora hineana*)
- Illinois endangered Blanding's turtle² (*Emydoidea blandingii*)
- Illinois endangered spotted turtle (*Clemmys guttata*)
- Illinois threatened black-billed cuckoo (*Coccyzus erythrophthalmus*)
- Federal threatened and Illinois endangered lakeside daisy (*Hymenoxys acaulis*)
- Federal and Illinois endangered leafy prairie clover (*Dalea foliosa*)

The purpose of this HCP is to evaluate the impacts of Commonwealth Edison's (ComEd) proposed activities on the covered species listed above and their habitats (including federally-designated critical habitat), and to propose measures for avoiding, minimizing or mitigating for potential incidental take of these species and their habitats.

History of the HCP

Since the discovery of the HED in the lower Des Plaines River valley and its designation as a federally listed endangered species in January 1995, it has been challenging for individual landowners and land managers to meaningfully contribute to USFWS Recovery Plan goals for the HED. To overcome this obstacle, agencies and landowners initiated a habitat conservation planning process. Hanson Material Service (HMS), Midwest Generation (MWGen) and ComEd initially came together as "Lead Partners" to develop a joint HCP document to address HED conservation and land use needs. The lead partners engaged with a number of additional public and private landowners in the development of a plan, including: Chicago-Romeoville Airport, Forest Preserve District of Will County (FPDWC), Forest Preserve District of Cook County (FPDCC), Forest Preserve District of DuPage County (FPDDC), Lockport Township Park District, Lewis University, Village of Romeoville, Village of Homer Glen, City of Lockport and Village of Lemont. In December of 2012 ComEd, with input and support from the USFWS, opted to prepare and submit a low-effect HCP independently.

Many contributors have shared years of research and data and have helped develop the technical understanding that has served as the foundation for this HCP. As with most rare species, the scientific understanding of the biology and ecology of the species included in this HCP may change over time. This HCP was designed, to the extent possible, to allow for the inclusion of new information as it becomes available.

² Potential for federal listing in the foreseeable future (K. Lah, pers. comm. 2013).

The area of land that is subject to this HCP has been divided into two areas:

- Planning Area (approximately 2,901 acres): geographic area that includes each of the 7 Critical Habitat Units (CHUs) as determined by the USFWS; the Planning Area also includes all of the Permit Area (Figure 1, Appendix A).
- Permit Area (approximately 549 acres): geographic area where the ITP applies (Figure 3, Appendix A).

1.1 HCP Planning Process

The HCP planning process followed a multi-step approach that served as a decision-making tool. A summary of the key steps included:

1. Evaluation of stressors affecting the covered species and their habitats under existing land uses and activities proposed by ComEd.
2. Incidental take analysis for alternative scenarios.
3. Creation of plans to avoid, minimize and mitigate for stress and/or incidental take under existing and proposed activities.
4. Development of a low-effect HCP document to allow business activities to continue and to allow ComEd to enter into binding agreements with the USFWS and Illinois Department of Natural Resources (IDNR) on incidental take issues.

ComEd is one of the largest landowners in Illinois, with approximately 90,000 miles of power lines in an 11,400 square-mile territory, serving 3.8 million customers. ComEd operates and maintains approximately 549 acres of right-of-way (ROW) and easements within the Planning Area (Table 1-1 below).

Table 1-1 Permit and Planning Areas

Critical Habitat Unit (CHU)	Planning Area (Acres)	Permit Area (Acres)
1	351	81
2	439	155
3	366	62
4	575	79
5	293	66
6	430	15
7	447	90
TOTAL	2,901 acres	548 acres

Within the Permit Area, ComEd completed critical reviews of the known and possible stressors on each of the covered species and their known or potential habitat found on land which ComEd owns, manages or conducts business. During this process, ComEd coordinated with the USFWS, U.S. Army Corps of Engineers (USACE) and the IDNR, who provided guidance with respect to federal and state regulations, laws and procedures. Information was also shared with experts (i.e., hydrologists and biologists) to ensure sound analyses and conclusions.

Detailed Recovery Plans by federal and Illinois conservation agencies have been prepared for the HED and the leafy prairie clover (USFWS 2001; Zercher 2001; USFWS 1996). There are no Recovery Plans for the Blanding's turtle or the spotted turtle in Illinois, but significant research on their local populations and ecology, along with recovery efforts elsewhere, have been used to help determine the conservation needs for these species in this HCP. The Planning Area represents the western most extent of the range of the spotted turtle in North America, and is the only known location where it co-occurs with the Blanding's turtle in Illinois (Harding 1997; personal communication with B. Semel, IDNR 2010). In the

absence of Recovery Plans, guidance from researchers (M. Dreslik and D. Mauger) with local knowledge and experience with the turtles' ecologies has played a crucial role in conservation planning for these species in this HCP.

1.2 Biological Goals and Objectives of the HCP

Section 10(a)(2)(A) of the ESA requires that an HCP specify the measures that the permittee will take to minimize and mitigate to the maximum extent practicable the impacts of the taking of any federally listed animal species as a result of activities addressed by the HCP.

As part of the USFWS Five Point Policy, HCPs must establish biological goals and objectives (65 Fed. Reg. 35242, June 1, 2000). The purpose of the biological goals is to ensure that the operating conservation program in the HCP is consistent with the conservation and recovery goals established for the species. Recovery Plan goals for each species are discussed in Section 2.2. However, this HCP is not required to result in the recovery of an ESA-listed species or contribute to the recovery objectives outlined in their respective USFWS recovery plans, but meets the goals below.

Biological goals for this HCP are:

- To meaningfully contribute to the conservation of the federal and state listed (threatened and endangered) species found in the Permit Area;
- Avoid and minimize take of covered species and impacts to their potential habitat to the maximum extent practicable; and
- Restore potential habitat after work is completed to maintain pre-existing habitat attributes.

The biological objectives that will be implemented to achieve these goals are:

- Implement avoidance and minimization measures to prevent take of species and impact to their habitat;
- Implement a monitoring program to track the progress of AMMs;
- Work cooperatively with adjacent landowners and regulatory agencies;
- Implement a Standard Operating Procedure to ensure compliance with federal, state and local regulations and ordinances to avoid and minimize impacts to federal and state listed (threatened and endangered) species and Critical habitat;
- Restore disturbed areas post construction to pre-construction conditions;
- Control erosion and sedimentation from planned work (where appropriate); and
- Control woody invasive plant species where necessary to maintain reliability for providing electrical service.

1.3 Regulatory and Legal Framework for Plan

This HCP serves as the basis for the USFWS and IDNR decisions regarding the issuance of ITPs for ComEd under Section 10(a)(1)(B) of the federal ESA and issuance of an Incidental Take Authorization (ITA) under the Illinois Endangered Species Protection Act (IESA) (520 ILCS 10/3), respectively.

Section 9 of the ESA prohibits the take of threatened or endangered species, with take defined as “the attempt or action to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect” such species. However, Section 10(a)(1)(B) authorizes exceptions for take that may occur incidentally to otherwise lawful activities within the provision of an HCP. This HCP includes the required description of effects of the anticipated take on affected species and habitat, and the measures proposed to avoid, minimize and mitigate resulting impacts (see Chapter 5). The requirements of an HCP and issuance of a permit under the federal ESA Section 10(a)(2) and the IESA are included in this HCP and are listed below:

1.3.1 **Federal Endangered Species Act**

The ESA and its implementing regulations prohibit the take of any fish or wildlife species that is federally listed as threatened or endangered without prior approval pursuant to either Section 7 or Section 10(a)(1)(B) of the ESA. The ESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Federal regulation 50 CFR 17.3 further defines the term harm in the take definition to mean any act that actually kills or injures a federally listed species, including significant habitat modification or degradation.

Section 10(a) of the ESA establishes a process for obtaining an ITP, which authorizes non-federal entities to incidentally take federally listed wildlife or fish subject to certain conditions. Incidental take is defined by ESA as take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” Preparation of a conservation plan, generally referred to as a HCP, is required for all Section 10(a) permit applications. The USFWS and the National Marine Fisheries Service (NMFS) have joint authority under the ESA for administering the incidental take program. NMFS has jurisdiction over anadromous fish species, and USFWS has jurisdiction over all other fish and wildlife species in the United States.

Section 7 of the ESA requires all federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any species listed under the ESA, or to result in the destruction or adverse modification of its habitat. Technically, the issuance of an ITP is an authorization for take by a federal agency. Consequently, in conjunction with issuing an ITP, the USFWS must conduct an internal Section 7 consultation on the proposed HCP. The internal consultation is performed after an HCP is developed by a non-federal entity (i.e., ComEd) and submitted for formal processing and review. Provisions of Sections 7 and 10 of the ESA are similar, but Section 7 requires consideration of several factors not explicitly required by Section 10. Specifically, Section 7 requires consideration of the indirect effects of a project, effects on federally listed plants and effects on critical habitat (the ESA requires that USFWS identify critical habitat to the maximum extent that it is prudent and determinable when a species is listed as threatened or endangered). The internal consultation results in a Biological Opinion prepared by the USFWS regarding whether implementation of the HCP will result in jeopardy to any listed species or will adversely modify critical habitat.

Section 10 Process

The Section 10 process for obtaining an ITP has three primary phases: (1) the HCP development phase; (2) the formal permit processing phase; and (3) the post-issuance phase.

During the HCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An HCP submitted in support of an ITP application must include the following information:

- Impacts likely to result from the proposed taking of the species for which permit coverage is requested.
- Measures that will be implemented to monitor, minimize and mitigate impacts.
- Funding that will be made available to undertake such measures.
- Procedures to deal with unforeseen circumstances.
- Alternative actions considered that would not result in take.
- Additional measures the USFWS may require as necessary or appropriate for purposes of the HCP.

The USFWS has established a special category of HCP, called a low-effect HCP, for projects with relatively minor or negligible impacts. Based on criteria for determining whether a low-effect HCP is appropriate, as described below and in the HCP Handbook, and with guidance from the USFWS, ComEd believes this HCP qualifies as a low-effect HCP under Section 10.

Low-effect HCPs are appropriate for projects that will have minor or negligible effects on federally listed, proposed, or candidate species and their habitats that are covered by the HCP and minor or negligible effects on other environmental resources. Implementation of low-effect HCPs and their associated ITPs,

despite authorization of some small level of incidental take, individually and cumulatively have a minor or negligible effect on the species covered by the HCP. The determination of whether an HCP qualifies for the low-effect category is based on the anticipated impacts of the project prior to implementation of the mitigation plan. The purpose of the low-effect HCP is to expedite handling of HCPs for activities with inherently low impacts; this category of HCP is not intended for projects with significant potential impacts that are subsequently reduced through mitigation programs.

The HCP development phase concludes and the permit processing phase begins when a complete application package is submitted to the appropriate permit issuing office. A complete application package for a low-effect HCP consists of an HCP, a permit application and fee from the applicant. The USFWS must also publish a Notice of Receipt of a Permit Application in the Federal Register; prepare a Section 7 Biological Opinion; prepare a Set of Findings, which evaluates the Section 10(a)(1)(B) permit application in the context of permit issuance criteria (see below); and prepare an Environmental Action Statement, a brief document that serves as the USFWS's record of compliance with the National Environmental Policy Act (NEPA) for categorically excluded actions. An implementing agreement is not required for a low-effect HCP. A Section 10 ITP is granted upon a determination by USFWS that all requirements for permit issuance have been met. Statutory criteria for issuance of the ITP specify that:

- The taking will be incidental.
- The impacts of incidental take will be minimized and mitigated to the maximum extent practicable.
- Adequate funding for the HCP and procedures to handle unforeseen circumstances will be provided.
- The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild.
- The applicant will provide additional measures that USFWS requires as being necessary or appropriate.
- USFWS has received assurances, as may be required, that the HCP will be implemented.

If, after an opportunity for public comment, the Secretary at USFWS finds that the criteria for issuance of the ITP have been met, the Secretary shall issue the permit. The ITP shall contain such terms and conditions as the Secretary deems necessary or appropriate to determine compliance, including, but not limited to, reporting requirements.

During the post-issuance phase, the permittee implements the HCP and the USFWS monitors compliance and the long-term progress and success of the HCP. The public is notified of permit issuance by means of the Federal Register.

1.3.2 National Environmental Policy Act

NEPA requires that federal agencies analyze the environmental impacts of their actions (in this instance, issuance of an ITP) and include public participation in the planning and implementation of their actions. NEPA compliance is obtained through one of three actions:

1. Preparation of an environmental impact statement (generally prepared for high-effect HCPs);
2. Preparation of an Environmental Assessment (generally prepared for moderate effect HCPs); or
3. Preparation of a categorical exclusion (allowed for low-effect HCPs).

The NEPA process helps federal agencies make informed decisions with respect to the environmental consequences of their actions and ensures that measures to protect, restore and enhance the environment are included, as necessary, as a component of their actions. Low-effect HCPs, as defined in the HCP Handbook, are categorically excluded under NEPA, as specified by the Department of Interior Manual 516DM2, Appendix 1, and Manual 516DM6, Appendix 1.

1.3.3 Illinois Endangered Species Protection Act

The IESA (520 ILCS 10/3) states that it is unlawful for any person:

1. To possess, take, transport, sell, offer for sale, give or otherwise dispose of any animal or the product thereof of any animal species which occurs on the Illinois List [a list of species of animals and plants listed by the Endangered Species Protection Board as endangered or threatened];
2. To deliver, receive, carry, transport or ship in interstate or foreign commerce plants listed as endangered by the federal government without a permit therefore issued by the Department [Department of Natural Resources] as provided in Section 4 of this Act [Illinois Endangered Species Protection Act];
3. To take plants on the Illinois List without the express written permission of the landowner; or
4. To sell or offer for sale plants or plant products of endangered species on the Illinois List.

The IDNR may authorize, under prescribed terms and conditions, any taking otherwise prohibited if that taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. A conservation plan, that includes the following information, shall be submitted to the IDNR:

1. A description of the impact that the proposed taking is likely to have on one or more species on the Illinois list;
2. The steps the applicant or other parties will take to minimize and mitigate that impact and the funding that will be available to implement those steps, including but not limited to bonds, insurance, or escrow;
3. What alternative actions to the taking the applicant considered and the reasons why those alternatives will not be used;
4. Data and information to assure that the proposed taking will not reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois;
5. An implementing agreement that specifically names and describes the obligations and responsibilities of all the parties that will be involved in the taking as authorized by the permit; and
6. Any other measures that the IDNR may require as being necessary or appropriate for purposes of the plan.

The IDNR may authorize the incidental taking if it finds that the taking will meet all of the following requirements:

1. The taking will not be the purpose of, but will be only incidental to, the carrying out of an otherwise lawful activity;
2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking;
3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided;
4. Based on the best available scientific data, the IDNR has determined that the taking will not reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois; and
5. The public has received notice of the application and has had the opportunity to comment before the IDNR has made any decision regarding the application.

If an applicant is party to an HCP approved by the USFWS pursuant to Section 10 of the ESA, the IDNR may authorize taking that is incidental to the carrying out of an otherwise lawful activity. Authorization shall be issued only if the provisions of the HCP are found to meet the requirements of 520 ILCS 10/3.

1.3.4 Illinois Natural Areas Preservation Act

A separate protection system exists in Illinois under the authority of the Illinois Natural Areas Preservation Act [525 ILCS 30/] for areas with a nature preserve designation. There are six protected nature preserve areas within the Planning Area:

- Lockport Prairie
- Keepataw Preserve
- McMahon Woods
- Black Partridge Woods
- Romeoville Prairie
- Long Run Seep

The six nature preserves all fall within the boundaries of forest preserves or IDNR properties. ComEd has easements within these properties, but ComEd is excluded from this Act because of their pre-existing easement agreements with the land owner. In addition, ComEd owned ROW has not been designated as a nature preserve.

The Illinois Natural Areas Preservation Act mandates more restrictive state regulations that do not authorize any take to species on these sites, nor adverse modification to their habitat. This HCP is not intended to cover any activities resulting in take on these properties. ComEd will continue to work with and notify the Illinois Nature Preserve Commission (INPC) if any special use permits related to the Illinois Natural Areas Preservation Act are required for management activities or other authorized activities on their land.

1.3.5 Clean Water Act Permits

The HED and the turtles covered by this HCP are dependent upon wetlands. As such, this HCP also serves as the basis for decisions regarding the issuance of a Section 404 Permit by the USACE. ComEd has worked with the USACE to integrate their regulatory review and approval.

1.4 Planning and Permit Area

The Planning Area (approximately 2,901 acres) is located within the lower Des Plaines River valley and contains seven federally designated CHUs for the HED (75 Fed. Reg. 21394-21453). The Planning Area contains springs, seeps, rare dolomite prairie communities and other wetland habitats currently used by the HED, Blanding's and spotted turtles, black-billed cuckoo, lakeside daisy and leafy prairie clover. The Planning Area also includes historic and potentially restorable habitat that may be used in the future by the covered species with the implementation of the conservation and mitigation measures included in this plan. In addition to ComEd, HMS, MWGen, FPDCC, FPDDC, IDNR and the FPDWC own and/or manage land located within the Planning Area (Figure 2, Appendix A).

The Permit Area (approximately 549 acres) includes the ComEd ROW, easements and access roads that are located within the Planning Area (Figure 3, Appendix A).

1.5 Critical Habitat Units

Critical habitat is defined in Section 3 of the ESA as:

1. The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and

2. Specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species (USFWS 2007).

During the process of determining which areas to propose as critical habitat, the USFWS considered physical and biological features (Primary Constituent Elements (PCEs)) that are essential to the conservation of the species and, within areas occupied by the species at the time of listing, may require special management considerations and protection.

In 2010, the USFWS finalized the designation of critical habitat for the HED (USFWS 2010). In Illinois, there are seven CHUs for the HED located along the lower third of the lower Des Plaines River valley near Lockport. ComEd maintains and operates transmission and distribution lines in all 7 CHUs (Figure 3, Appendix A). The following is a brief description of each CHU:

CHU 1: Approximately 351 acres located in Will County, east of Route 53, north of Caton Farm Road, south of Route 7 and west of the Des Plaines River. CHU 1 is comprised of natural areas associated with Lockport Prairie Nature Preserve, ComEd ROW, Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) property and the MWGen rail line.

CHU 2: Approximately 439 acres located in Will County, south of 135th Street, east of Route 53, north of Route 7, and west of the Des Plaines River. CHU 2 includes ComEd ROW as well as HMS-owned properties known as Middle Parcel, North Parcel, Far North Parcel, River Parcel, River South Parcel and Fitzpatrick Seep.

CHU 3: Approximately 366 acres located in Will County and comprised of Romeoville Prairie Nature Preserve and ComEd ROW.

CHU 4: Approximately 575 acres include Keepataw Forest Preserve and ComEd ROW in Will County, and Black Partridge Forest Preserve and ComEd ROW in Cook County.

CHU 5: Approximately 293 acres located in DuPage County and associated with Waterfall Glen Forest Preserve and ComEd ROW.

CHU 6: Approximately 430 acres located in Cook County and include McMahan Woods Nature Preserve and ComEd ROW.

CHU 7: Approximately 447 acres located in Will County and includes HMS-owned properties known as the "ComEd" and Long Run parcels, IDNR's Long Run Seep Nature Preserve and ComEd easements (located on the east side of the Des Plaines River, south of 135th Street, and west of New Avenue).

1.6 Species to be Covered by Permit

The selection process for the species covered in this HCP was established and initially completed in 2006. The records of occurrence within the Planning Area for federal and Illinois listed species from the previous ten years (1996-2006) were reviewed. The process involved collaboration and coordination between agencies and land owners to review recent and historical data included in the Illinois Natural Heritage database. The process was repeated again in 2012 and applied to a new Planning Area to update the list of species covered in the HCP.

Based on this research, HMS, MWGen and ComEd (previously referred to as the "Lead Partners" working on a coordinated HCP) compiled a short list of species for agency review. The three companies worked with USFWS and IDNR to reach a consensus that this HCP will only cover federally listed animal and plant species and state listed animals that had a record of occurrence within ten years within the Planning Area. Species that had not been recorded in the Planning Area in a decade or more (i.e., since 1996) were not included. The three companies and the agencies also agreed that this HCP was to focus on the HED, as it is the only federally listed animal species in the Planning Area. The final listing of covered species, reviewed and approved by USFWS and IDNR in 2006, included the HED, Blanding's turtle, spotted turtle and leafy prairie clover.

In 2012, the list of covered species for the HCP was updated because the Planning Area had been expanded to include all 7 CHUs and the Illinois list of endangered and threatened species had been

revised since the initial list was agreed upon in 2006. The update was completed by obtaining the current list of state listed species in the vicinity of the revised Planning Area (from the Illinois Natural Heritage database through the IDNR) and applying the same set of criteria as was used in 2006. As a result, two additional species, the black-billed cuckoo and the lakeside daisy were added to the list of covered species. This list was agreed upon by the IDNR at a meeting on February 28, 2012. The federally listed species for the HCP were confirmed by the USFWS at previous meetings, including the decision to address the Blanding's turtle at the federal level.

DRAFT

2 ENVIRONMENTAL SETTING and BIOLOGICAL RESOURCES

2.1 Environmental Setting

The Planning Area is approximately 2,901 acres, and its boundaries include all seven CHUs. Property within the Planning Area is owned by public agencies and private entities. Public agencies include MWRDGC, FPDC, FPDDC, FPDWC and IDNR. The FPDC, FPDDC, FPDWC and IDNR are conservation agencies that manage land with goals that include supporting biodiversity and other natural resources, scientific research and public education. The MWRDGC owns numerous vacant properties along the Des Plaines River and canals for flood control and water conveyance. Private industry partners include HMS, MWGen and ComEd. HMS properties include production facilities with surface aggregate mines, roads, conveyors, sorting and screening operations, an office, and a shipping port on the canal. HMS' facilities also include land inherited with a landfill, fly ash deposits, a redi-mix concrete plant, as well as other operations and uses. MWGen owns and operates a power plant within the Planning Area as well as a rail line used to deliver coal to this plant and two others. ComEd owns and maintains electrical transmission and distribution lines/structures that also pass through the Planning Area.

2.1.1 Climate

The lower Des Plaines River valley is situated in Will County, Illinois, which has a temperate, humid, continental climate. The State Climatologist Office for Illinois has summarized climate data from the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (Illinois State Water Survey 2012). Climatic normals for the Lewis University Airport weather station (Romeoville Weather Forecast Office) are based on a thirty year average from 1981 to 2010. The warmest month of the year is July with an average high temperature of 84.0 °F, whereas January is the coldest month of the year with an average low temperature of 15.8 °F. Average annual precipitation is 40.1 inches per year with July being the wettest month averaging 4.7 inches of precipitation. Average annual snowfall is 32.3 inches per year, the majority of which falls in December and January (average of 9.3 and 10.8 inches per month respectively).

It is possible that climate change will influence the area occupied by the covered species over the term of the HCP. The Chicago Climate Action Plan (2008) states that temperatures have risen by 2.6 °F since 1980 and that 15 of the last 20 years have experienced above average annual temperatures. Potential climate change impacts relevant to this HCP include longer growing seasons, range and distribution changes for plants and animals, earlier onset of plant blooming and animal migration in spring, variation in the timing, intensity and amount of precipitation, later freeze dates and earlier ice-off dates. The extent of these possible effects on the HCP and covered species are addressed in more detail in Chapter 8.

2.1.2 Topography and Geology

A portion of the Des Plaines River valley from just southwest of Chicago's Midway Airport to Joliet is notable for its glacial history and resultant landscape. The Planning Area lies on the eastern flank of a Paleozoic bedrock structure known as the Kankakee Arch, which separates the Illinois Basin and Michigan Basin. As a result of this structure, the bedrock has an easterly dip, resulting in exposure of the oldest formations along the Des Plaines River. The near surface bedrock formations are sedimentary rocks formed in ancient, shallow to deep seas. In the area of the Des Plaines River valley, this is primarily Silurian Period dolomite bedrock of the Niagara Series. Covering the bedrock are deposits of dolomite flagstones, cobble and gravel deposited by outlet flow from glacial Lake Chicago. On the lower terrace is a layer of alluvium deposited by the Des Plaines River. Vertical cliffs were carved by torrential meltwaters from this most recently glaciated portion of Illinois.

Areas within the lower Des Plaines River valley have well-drained glacial outwash soils that support seeps, fens and springs. Areas of exposed dolomite create a harsh environment that supports a number of hardy plants. While the low gravel ridges parallel to the river stay dry, the floodplain environments stay wet for long periods. The highly resistant surface rocks and "tight" layering of underlying dolomite limestone rocks have a seasonally high water table and limit infiltration. Therefore, seasonally wet or inundated conditions are common in some areas. The fens, marshes and wet prairies that occur in low

spots add to the variety of habitats and resultant biodiversity. Rare dolomite prairies, which occur within the river valley, have almost completely disappeared from other areas of the Midwest (Suloway, et al. 1996). Groundwater recharge areas for the seeps extend beyond the Des Plaines River geologic valley and into glacial till deposits (Figure 4, Appendix A). Throughout its current range, the HED is typically known to occur in areas where dolomitic limestone is near the surface and groundwater is emerging as seeps or springs (USFWS 2001, 75 FR 21394-21453). Like much of the Chicago area, natural land cover in the Planning Area has been extensively altered through increasing urbanization. Expanding development, as well as the encroachment of invasive plant species, continues to be a major stressor on the dolomite prairie habitat and the HED (IDNR 2005).

2.1.3 Hydrology: Groundwater, Wetlands, Surface Water

Groundwater

Several recent studies have investigated groundwater hydrology within the vicinity of and surrounding the Planning Area. GRAEF (formerly Graef, Anhalt, Scholemer and Associates (GAS)) (2004b, 2005a, 2005b, 2008) previously completed studies of Lockport Prairie Nature Preserve recharge zones, water balance measurements and modeling using measured discharge from springs and flow investigations throughout the preserve to understand surface and shallow groundwater hydrology. Similar investigations and modeling have been completed by HMS for River South and HMS' "ComEd" and Long Run properties (STS/AECOM 2009; AES 2012).

These investigations also explored at shallow and deep groundwater relationships and their role in maintaining the springs. These investigations and findings report a direct relationship between bedrock fractures and their alignment through the lower Des Plaines River valley to the location where they intersect the valley bluff wall, slope, and toe in the Planning Area. Infiltration in the recharge zones supplies the shallow aquifers that feed the springs, seeps, and wetlands known to support the HED and the covered turtle species.

Based on these studies, GRAEF hydrologists estimated the probable groundwater recharge zones for the primary springs found in Lockport Prairie (Figure 4, Appendix A) (GAS 2004b and 2005a). Using this information and regional groundwater information, GRAEF also estimated a recharge zone for River South (GAS 2005b). To do this, they used a "flow net analysis" to determine the direction of groundwater flow. This analysis used regional groundwater contours information to determine the local groundwater flow patterns. GRAEF delineated three zones for both Lockport Prairie and River South: 1) the recharge area, 2) the recharge area buffer and 3) lands adjacent to the recharge area, which is referred to as the 2-mile buffer. The recharge area defines the area of the drainage basin in which water infiltrating into the ground has the greatest potential for supplying water to the parcel. The recharge area buffer defines the farthest estimated recharge area that may provide some limited groundwater to Lockport Prairie and River South. The 2-mile wide buffer was calculated based on the surface area required to contribute to an average municipal supply well.

In addition, a recharge zone was evaluated and mapped for HMS' "ComEd" and Long Run Parcels (CHU 7) on the east side of the Des Plaines River by AECOM (2011). The limits of the recharge area were evaluated using a flow net analysis on the Silurian Aquifer potentiometric surface contours. The estimated recharge area is very large (22.7 square miles) and extends southeast from the parcels approximately 11 miles (AECOM 2011, Figure 4, Appendix A). This is several times the size of the recharge zones for Lockport Prairie (CHU 1) and River South (CHU 2) on the west side of the river.

According to these studies, development activities, such as residential and commercial development, road construction and maintenance, landfills, mining, municipal and private wells, or any other activities that increase impervious surfaces or alter surface drainage patterns could affect the quantity and quality of groundwater reaching HED habitats if they occur within these recharge areas or buffers (GAS 2005a; GAS 2008; USFWS 2005).

Wetlands

Wetlands are continually changing in the area, including within the protected and managed nature preserves. In the time that the HED has been under careful investigation, some of the highest quality wetlands (i.e., sedge meadows) and potential HED habitat have been invaded by aggressive weedy species, such as cattails (Mierzwa 2008). Unmanaged cattail thatch reduces access required by

ovipositing adult HED and have also changed the foraging patterns used by HED. Invasive plant species, such as common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.), purple loosestrife (*Lythrum salicaria*), and buckthorn (*Rhamnus* spp.), present a great risk to wetland biodiversity and HED habitat. These species can reduce biodiversity through aggressive competition, shade suppression, thatch build-up, and dewatering (Chicago Region Biodiversity Council 1999; Zedler and Kercher 2004).

Other activities that may contribute to the degradation of wetlands in the Planning Area include:

- historic agricultural ditches through wetlands
- nutrient/pollutant (i.e., deicing materials) loading in stormwater runoff
- erosion and sedimentation
- groundwater impacts from land use and development activities

ComEd followed the methods and procedures outlined in the U.S. Army Corps of Engineers Wetland Delineation Manual (USACE 1987) and the Corps Regional Supplement to the Corps of Engineers Wetland Delineation Manual Midwest Region (Version 2.0) 2010 to conduct wetland delineations and determinations on their property. Figures 5.0-5.7 in Appendix A show current delineated (per the procedures noted above) or field verified (field or aerial investigation without a formal wetland delineation) wetland areas on ComEd's property and easements. ComEd will either complete or update wetland delineations on all ComEd property and easements located within the Permit Area by the end of 2015. Wetland delineations are also updated on a 5-year rotation cycle.

Surface Water

Most of the Planning Area is located within the lower Des Plaines River valley which is part of a 378 square mile watershed including portions of Cook, Will and DuPage Counties. The mean annual precipitation for the basin is approximately 35 inches. The Planning Area is located close to the minimum elevation (538 feet msl) of the watershed near its southern tip near Joliet (IDNR 2000).

The Des Plaines River is the main river system present in the valley. Waterways within the Permit Area include the Illinois and Michigan (I&M) Canal, Chicago Sanitary and Ship Canal, Calumet-Saganashkee (Cal-Sag) Channel, Long Run Creek, and Fiddyment Creek. The I&M Canal, Chicago Sanitary and Ship Canal and the Cal-Sag Channel were excavated to allow shipping by barge. The I&M and Chicago Sanitary and Ship Canals generally parallel the Des Plaines River. Long Run and Fiddyment Creek are located east of the Des Plaines River and flow into the I&M Canal.

Aside from Long Run and Fiddyment Creek, there are no named tributaries to the Des Plaines River within the Planning Area. However, surface flows, stormwater runoff and groundwater travels to the Des Plaines River via small rivulets (sometimes called streamlets) that flow through wet dolomite prairies, marshes and floodplain forests.

The slope of the watershed is 1 foot per mile over much of its length. The watershed slope does get steeper from Lockport to Joliet where it is approximately 5.25 feet per mile. The valley above Lockport is surrounded by 80-100 foot bluffs located approximately 1,500 to 2,500 feet to the east and west of the Des Plaines River (IDNR 2000).

2.1.4 Vegetation

Historic Conditions and Trend

According to early aerial photographs (Figure 6, Appendix A), maps and original land survey records (INHS 2002), the Planning Area historically contained extensive grassland that transitioned to open wetlands. Some wooded riparian areas with scattered oak savanna and small forest groves were also present.

The pre-settlement vegetation in and surrounding the Planning Area was primarily prairie, woodlands and wetlands (Figure 7, Appendix A). Over time, a majority of the land was converted from pre-settlement prairies, woodlands and wetlands to agricultural uses and residential, industrial and other commercial development. (Figure 8, Appendix A).

Current Vegetation

Vegetation found in and surrounding the Planning Area ranges from remnant high quality natural areas (i.e., Lockport Prairie, Romeoville Prairie and River South) to disturbed, degraded and developed areas. The disturbed areas include large areas that have been used for decades as surface disposal of fly ash wastes, landfills, spoil areas, ditches, dikes, old railroad beds, power lines, railroads and fence lines. Most of these disturbed lands are dominated by weedy and invasive plant species and provide little or no breeding and foraging habitat for the HED.

Both native and non-native plant communities are found within the Planning Area. Native plant communities include dolomite prairie, sedge meadow and emergent marsh (cattail or bulrush), wetland shrubland, upland woodland and young floodplain forest. Non-native communities include marsh (common reed), wet meadow (reed canary grass), turf, Eurasian meadow/old field and upland shrubland (European buckthorn).

Even the remnant natural areas (i.e., Lockport and Romeoville Prairies) have experienced some level of direct and/or indirect impacts from the initial agricultural conversion, such as livestock grazing, and subsequent development activities. In addition, invasive plants, both woody and herbaceous, continue to threaten these remnant communities, particularly their diversity, composition, structure and ecological function. Groundwater-fed natural wetlands dominated by graminoid (grass-like) plants (i.e., marsh, sedge meadow and dolomite prairie) with underlying dolomitic bedrock, are the remnant communities that provide habitat to the HED (USFWS 2005).

2.1.5 Wildlife

Changes in vegetation and wildlife habitat within the Planning Area have been considerable over time, with the exception of the few remaining natural area remnants. Consequently, these areas are now dominated by common urban wildlife species. Most of the native wildlife diversity of the region and in the Planning Area has declined or has been extirpated, with exceptions for those species that flourish in urban environments (Chicago Region Biodiversity Council 1999; Chicago Wilderness Consortium 2006; Greenberg 2002). Species such as white-tailed deer and raccoons have increased dramatically in abundance in recent decades in urban and suburban areas due to their ability to adapt within metropolitan environments (Etter 2002; Gehrt 2004). Animals such as Virginia opossums and striped skunks also compete well in disturbed settings (Gehrt 2004). Most of the native wildlife that was present in the pre-settlement ecosystems in the Planning Area is now found at low levels of abundance (Chicago Region Biodiversity Council 1999; Chicago Wilderness Consortium 2006). However, rare and declining native species can still be found in the largest remnant natural areas (i.e., nature preserves and HMS properties) in the Planning Area.

Hundreds of bird species protected by the federal Migratory Bird Treaty Act spend at least some portion of the year within the Planning Area, which provides suitable breeding habitat and important migratory stopover habitat. Birds known to occur within the Permit Area include waterfowl, shorebirds, raptors, waterbirds and landbirds. Common waterfowl species include Canada goose, wood duck, mallard, American black duck, blue-winged teal and bufflehead. Common waterbirds include double-crested cormorant, great blue heron, great egret and sora. Raptors within the Planning Area include sharp-shinned hawk, Cooper's hawk, red-tailed hawk, bald eagle, American kestrel and great horned owl. Shorebirds expected to occur within the Planning Area during some portion of the year include killdeer, greater yellowlegs, lesser yellowlegs, solitary sandpiper, spotted sandpiper, American woodcock and Wilson's snipe. Landbirds within the Planning Area include downy woodpecker, hairy woodpecker, eastern wood peewee, willow flycatcher, red-eyed vireo, blue jay, American crow, tree swallow, black-capped chickadee, white-breasted nuthatch, house wren, American robin, gray catbird, cedar waxwing, yellow warbler, black-and-white warbler, American redstart, ovenbird, common yellowthroat, scarlet tanager, northern cardinal, indigo bunting, song sparrow, field sparrow, chipping sparrow, savannah sparrow, swamp sparrow, brown-headed cowbird, red-winged blackbird, common grackle, Baltimore oriole, house finch and American goldfinch.

The bald eagle, which is afforded protection by the federal Bald and Golden Eagle Protection Act, is known to occur near the Planning Area. A pair of bald eagles has been nesting on an island within the

Des Plaines River since 2010 and bald eagles use the river corridor for foraging. Golden eagles are not known to nest or winter within or near the Planning Area.

2.1.6 Existing Land Use

The existing land use in the Planning Area is a highly fragmented mix of residential and industrial development, agriculture and public and privately-held open space (Figure 8, Appendix A).

2.2 **Species of Concern in the Planning Area**

This section provides a summary of each of the HCP covered species.

2.2.1 Hine's Emerald Dragonfly



U.S. Fish & Wildlife Service

Photo Source: "Hine's Emerald Dragonfly (*Somatochlora hineana*).¹" USFWS: Hine's Emerald Dragonfly Fact Sheet. N.p., n.d. Web. 25 Apr. 2013. http://www.fws.gov/midwest/endangered/insects/hed/hins_fct.html

Species Description

The HED is a moderately large species of dragonfly with a wingspan of 3.5 to 3.7 inches and a body length of 2.3 to 2.5 inches. The body is dark brown to dark metallic green with a pair of yellow lateral strips on each side and bright green eyes (Vogt and Cashatt 1994, USFWS 2001). HED larvae are light to dark brown aquatic nymphs with an approximate length (excluding antennae) of 0.08 inches. They are typically densely covered in setae, which gives them a "hairy" appearance.

Life History and Habitat

The HED is a relatively long-lived species, requiring 3-5 years as aquatic larvae to develop (Soluk and Satyshur 2005). The larvae have the capability to move about a terrestrial environment, a characteristic that may set them apart from other aquatic insect larvae (Soluk et al. 1999). HED larvae are restricted to wetland habitats (i.e., marshes, seeps and sedge meadow) with thin soils over dolomite bedrock (USFWS 2001, USFWS 2005, Nuzzo 1995, and Mierzwa et al. 1998). Larvae eat smaller insects and shed their skin many times. Larvae then crawl out of the water and shed their skin a final time, emerging as flying adults.

Adults use wetlands as well as a mixture of adjacent uplands. Adults will also fly over and forage in open upland areas such as meadows and old fields (Vogt and Cashatt 1994), but will avoid large areas of open water and dense shrub thickets or forested areas (USFWS 2005). In addition, they have been documented to travel several miles (Mierzwa et al 1995). There is some evidence that females use upland habitat during non-breeding times to avoid interactions with males (Soluk 2005; Foster 2001). Adult flight season in Illinois can start as early as late May and ends in early October (Vogt and Cashatt 1994; Soluk et al. 1996; Mierzwa et al. 1997), with the peak of adult emergence normally occurring in July. The breeding season lasts from early June to late August in Illinois (USFWS 2001; Vogt and Cashatt 1994, 1997). Females oviposit in shallow water of rivulets and channels or in mud, marsh or sedge meadows.

Single females may deposit more than 500 eggs (USFWS 2005). It is thought that the eggs overwinter and hatch in the spring (Soluk and Satyshur 2005). Adults typically live at least two weeks and can live up to six weeks (Soluk et al. 1996; Mierzwa (editor) 1995; USFWS 2001).

HED ecology is linked with the ecology and behavior of the burrowing “devil” crayfish (*Cambarus diogenes*) and possibly other species of burrowing crayfish. The burrows of the devil crayfish provide refuge for HED larvae both from dry conditions in mid to late summer, and during the winter (Soluk et al. 2000; Pintor and Soluk 2006).

Range and Location

The HED was first described from sites in northwestern Ohio (Williamson 193; Vogt and Cashatt 1994), although it is currently thought to be extirpated from Ohio and Indiana. In 2001, the HED was known to be in northern Michigan (3 counties); eastern Wisconsin (3 counties); southeast Missouri (2 counties); and the lower Des Plaines River valley in Illinois (3 counties) (USFWS 2001). The species is now known to be found in three additional counties in Michigan, eight additional counties in southeast Missouri, and one additional county in Wisconsin (Cashatt 2008, 2009, 2010, 2012). The HED is known to occur at several sites in Illinois, shown in Table 2-1 below (USFWS 2005; Mierzwa and Webb 2012a; Soluk and Worthington 2010). The Illinois sites occur along an approximately 18-mile length of the lower Des Plaines River valley (13 miles) and the Cal-Sag Channel (5 miles) with the largest populations in the southern part of the area (Figures 9.0-9.7, Appendix A).

Table 2-1: Known HED Occurrences in Planning Area, as of 2011

Site Name	CHU	Land Manager	HED Occurrence (by lifecycle stage)
Crest Hill Sewage Treatment Plant	N/A	City of Crest Hill	Adult and larval
Lockport Prairie Nature Preserve	1	FPDWC	Adult and larval
Middle Parcel	2	HMS	Adult and historic larval
River Parcel	2	HMS	Adult
River South Parcel	2	HMS	Adult and larval
Romeoville Prairie	3	FPDWC	Adult
Black Partridge Forest Preserve	4	FPDCC	Adult
Keepataw Preserve	4	FPDWC	Adult and larval
Waterfall Glen Forest Preserve	5	FPDDC	Adult and larval
McMahon Woods and Fen Nature Preserve	6	FPDCC	Adult and larval
Long Run Seep Nature Preserve	7	IDNR	Adult and larval
HMS' "ComEd" and Long Run Parcels	7	HMS	Adult and larval

Current and historic HED habitat locations within the Planning Area are shown on Figure 9 in Appendix A. Historic habitat is an area that was occupied or provided suitable habitat in the past, but no longer provides suitable habitat. Both adult-use and larval-production areas are indicated on this figure. The Habitat Mapping Protocol (Appendix B) describes the protocol used to map HED adult and larval habitat, which was developed by HMS, MWGen and ComEd in consultation with USFWS and leading HED biologists (K. Mierzwa and D. Soluk). In addition to the areas shown on the map and identified in the table above, HED adult species have been documented outside of the Planning Area at Dellwood Park and Lockport Prairie East.

Population Size and Genetics

“Population” is defined as a group of individuals of the same species, co-existing at the same time and in the same geographic area and capable of interbreeding (Purves et al 1998). For the purposes of the USFWS HED Recovery Plan, the lower Des Plaines River valley is considered one population. The USFWS HED Recovery Plan defines a subpopulation as a local population occurring at a specific geographic site, such as Lockport Prairie Nature Preserve. A subpopulation may include more than one local population (i.e., separate and specific larval habitat) when adult habitat ranges cover a number of

these nearby specific breeding sites. This co-mingling of adults from different larval sites allows for genetic exchange between the sites.

Tables C-1, C-2 and C-3 in Appendix C provide a summary of the recorded foraging-flying adult HED in HMS' Middle, "ComEd", Long Run and River South Parcels (Mierzwa and Webb 2012a and 2012b). Data indicate population numbers have been generally lower in recent years in these parcels. Although conditions that could influence the data, such as weather, may vary from year to year. The populations at Middle and River South Parcels were generally lower between 2005 and 2011 than they were in previous ten years (1995-2004). Based on the results of the most recent surveys (2011) in Middle and River South Parcels, current adult populations are estimated to be 4 and 71 individuals in these parcels, respectively. The current adult population in HMS' "ComEd" and Long Run Parcels is estimated to be about 5 individuals based on the 2011 survey results. Adult surveys have been completed since 2007 along the I-355 bridge alignment and other locations (i.e., Keepataw Preserve and Waterfall Glen) associated with mitigation for the I-355 extension project, but no estimates of population size have been calculated for these locations (Soluk et al. 2008, 2009, 2010, 2011, 2012). In addition, recent adult surveys have been completed along rail lines within the Planning Area, but population estimates were not calculated as part of these studies (Soluk and Worthington 2010; Mierzwa et al. 2010).

The current HED population size in Illinois (lower Des Plaines River valley) was estimated by Soluk and Mierzwa (2012) to be 2,063 with the larval population estimated to be in the range of 1,000 – 3,000. For this study, all larval survey data collected in the most productive sites in Illinois was compiled and analyzed to generate larval population estimates at each site (and each breeding location within each site) and to provide an estimate for the entire HCP Planning Area. Data used in the analysis were collected in Lockport Prairie Nature Preserve, Long Run Seep Nature Preserve, Keepataw Forest Preserve and HMS' River South, Middle, Long Run and "ComEd" Parcels. Most of the population (~88%) is found in Lockport Prairie and River South. In addition, this data was compared to adult data from HMS' parcels collected in the same years to check and help calibrate total (larval and adult) population estimates. Using the calibration model, the adult population was estimated to be 165 adults. A population size of 2,063 is at the low end of the range of Minimum Viable Population (MVP) numbers that have been estimated for insects (1,650-103,635) (Traill et al. 2007). This range is based on estimates from studies of only five different insect species, which did not include the HED.

The Illinois HED population is of great importance to the viability of the entire species because it is the most genetically diverse of all HED populations (Purdue et al. 1996 & USFWS 2001). There are seven known haplotypes of HED. Six of these occur in Illinois and are found in the Planning Area. More recent genetic analysis of HED found in Illinois, Wisconsin and Michigan indicate that there are three distinct genetic populations in the areas sampled (Soluk et al. 2011). This analysis reveals that the genetic population structure of the HED reflects their spatial relationship with those found in Door County, Wisconsin and the Upper Peninsula of Michigan forming one population, HED in Cedarburg Bog, Wisconsin forming another, and those in the lower Des Plaines River valley, Illinois forming a third. Although the Illinois population is a distinct genetic population, ecologically it functions as a meta-population, with individuals found at different breeding locations forming subpopulations (USFWS 2005; D. Soluk, personal communication, 2012). The measures put in place by this HCP are designed to preserve and enhance the Illinois population and its habitat.

Conservation Status

The HED is a federally and state listed endangered species that survives at only a few locations in Illinois, Wisconsin, Missouri, Michigan and Ontario. The first recorded occurrence of this species in Illinois was a collection from 1983 that was not confirmed until 1987 (Cashatt and Vogt 1990). The HED was listed as state endangered in Illinois in 1991 (Illinois Administrative Code. 1992. Illinois List of Endangered and Threatened Fauna, 17 Illinois Administrative Code 1010. 1992. Illinois Register 16 (1):107), listed as federally endangered in January 1995 (USFWS 1995) and a Recovery Plan was published in September 2001 (USFWS 2001). The species also is listed as state endangered in Ohio, Michigan, Missouri and Wisconsin. The International Union for the Conservation of Nature (IUCN) also lists the HED as endangered (Moore 1997; USFWS 2001), and The Nature Conservancy lists this species as globally imperiled (USFWS 1995).

Threats

The principal threat to the HED in Illinois is habitat degradation and alteration. Residential and commercial development, mining, roadway and pipeline construction, landfills and filling of wetlands could reduce suitable habitat for the HED (USFWS 2001). Changes in surface and subsurface hydrology could adversely affect larval and breeding habitat by changing water temperature, flow, chemistry and volume (USFWS 2005). Groundwater, which also drives wetland hydrology, could be impacted by various development activities, such as mining or use of municipal and private wells (GAS 2008; USFWS 2005). Other development activities that increase impervious surfaces and alter surface drainage patterns could also result in reducing the suitability of habitat or the loss of larval and breeding habitat (USFWS 2005). Contamination of groundwater or surface water from landfills, pesticide, road salts and other chemicals is also a concern (USFWS 2005). Transportation and roadways are also a threat to this species, both from direct mortality and from habitat destruction or fragmentation. Adult mortality from direct impacts with vehicles or trains has been documented and may reduce HED population sizes (Steffens 1997, 1998; Soluk et al. 1998b; USFWS 2001; Soluk and Moss 2003). Land use practices, fire suppression and agricultural development have also reduced available habitat as well as the abundance of insects for prey across its range.

USFWS HED Recovery Plan

The objective of the USFWS HED Recovery Plan is to assure the long-term viability of HED populations (USFWS 2001). When this is achieved, the HED may be removed from the federal list of endangered and threatened wildlife and plants. The overall goal of this HCP is to positively contribute to the objective of the USFWS HED Recovery Plan. The USFWS HED Recovery Plan provides criteria for reclassifying the HED from endangered to threatened and criteria for removing the HED from the federal list (i.e., delisting). The criteria for delisting are provided below.

Goals of the USFWS HED Recovery Plan (criteria for delisting):

Goal 1: Each of the two recovery units, northern (Wisconsin and Michigan) and southern (Illinois and Missouri), contain a minimum of three populations of at least three subpopulations, each containing a minimum of 500 reproductive adults for 10 consecutive years.

Goal 2: Within each subpopulation there are at least two breeding habitat areas, each fed by separate springs and seeps.

Goal 3: For each population, the habitat supporting at least three subpopulations should be legally or formally protected and managed for HEDs using long-term protection mechanisms such as watershed protection, deed restrictions, land acquisition or nature preserve dedication.

Goal 4: Mechanisms protecting the upgradient groundwatershed should also be in place.

The USFWS HED Recovery Plan identifies three potential subpopulations in Illinois. However, the USFWS' Biological Opinion for the I-355 South Extension identifies ten habitat sites in the lower Des Plaines River valley that make up the Illinois population and together function as a metapopulation (USFWS 2005). Two of these sites, FPDWC's Lockport Prairie and HMS' River South property, contain the largest HED subpopulations in the state. Each of these two sites, as well as Long Run Seep Nature Preserve (together with HMS' "ComEd" and Long Run properties) support separate subpopulations.

Addressing USFWS HED Recovery Plan Goals

This low-effect HCP will contribute to the USFWS HED recovery plan goals in the following ways:

Goal 1: This low-effect HCP will protect, restore and enhance habitat of the Illinois HED population, the largest and most important population in the Southern Recovery Unit. The HCP will accomplish this by completing the majority of the planned work in the late fall through early spring months, minimizing work in wetland areas and removing invasive woody vegetation within the ComEd ROW/easements in all of the CHUs.

Goal 2: There are at least 2 separate breeding areas, each fed by separate springs in the habitat of each subpopulation that are located in the Planning Area. These include: HMS' River South, Fitzpatrick Seep area; "ComEd" and Long Run Parcels in conjunction with Long Run Seep Nature

Preserve and Lockport Prairie Nature Preserve. These areas are controlled by FPDWC, but ComEd will help protect the HED through avoidance and minimization of impacts.

Goal 3: Lockport Prairie and Romeoville Prairie are currently under protection by FPDWC as well as the INPC. Long Run Seep is under protection by the IDNR and INPC. HMS' properties, including Fitzpatrick Seep, River South Parcel, HMS' "ComEd" Parcel and Long Run Parcel, are proposed to be protected (through appropriate legal measures) as part of a separate HCP. ComEd ROWs and easements may not be specifically held under formal land protection contracts, but will be managed with guidelines for conservation for operational usage that is intended to benefit HED and adjacent HED habitat while maintaining operational activities. This will result in the protection and conservation of all CHUs, 3 of which support most (vast majority) of the HED population in Illinois.

Goal 4: Not addressed in this low-effect HCP.

2.2.2 Blanding's Turtle



Photo Source: "U.S. Fish & Wildlife Service - CITES CoP16 Blanding's Turtles." U.S. Fish & Wildlife Service - CITES CoP16 Blanding's Turtles. N.p., n.d. Web. 25 Apr. 2013. <http://www.fws.gov/international/cites/cop16/blandings-turtle.html>

Species Description

The Blanding's turtle is medium-sized (up to 9.4 inches) with a domed, smooth, dark carapace speckled with small, pale yellow spots. The most distinguishing characteristics are the bright yellow coloring on the underside of its neck, a notched upper jaw and a hinged plastron. The plastron is yellow with large dark blotches on the edge of each plastral scute, but, in older turtles, the entire plastron may be black. Males are larger than females, have longer tails with the cloacal opening located behind the edge of the carapace, concave plastrons for mating and a dark upper jaw. Females have a shorter tail with the cloacal opening located at the edge of the carapace, a flat plastron and some light striping on their upper jaw.

Life History and Habitat

The Blanding's turtle is a semi-aquatic species that spends most of its time in wetland habitat but moves long distances over land to reach nesting locations or to move between wetland complexes. The home range of Blanding's turtles studied at Chain of Lakes State Park (Lake and McHenry Counties, Illinois) have been found to be up to 5.7 acres (Rowe and Moll 1991), while at Lockport Prairie (Will County, Illinois) juveniles were found to have a home range of 12.3 acres, adult females 31.5 acres, and adult males 26.2 acres (Banning et al. 2006). The Blanding's turtle habitat includes the clean waters of marshes, ephemeral wetlands, vegetated ponds, wet prairies, sedge meadows, oxbows, fens and slow moving waters in sloughs and rivers. Adjacent uplands containing open grasslands or old fields in sandy soils are commonly used as nesting habitat. Blanding's turtles are primarily carnivorous, feeding on crayfish, snails, insects, crustaceans, worms, small fish, frogs and aquatic plants. It is a long-lived species; individuals require 14 to 21 years to reach sexual maturity and can live up to 75 years. They typically have high adult survival rates, but low reproductive success and small clutch sizes. Females nest

in late May and June and may lay one clutch of 3-17 eggs. The eggs are often preyed on by raccoons, foxes, skunks, domestic dogs and other small mammals. Reproductive success, as well as the survivorship of juvenile and adult turtles, is important for maintaining stable populations (Congdon et al. 1993). The turtles typically winter underwater, partially buried in soft substrate.

Range and Population

The Blanding's turtle range is concentrated in the Great Lakes region, extending from southern Ontario and northwestern Pennsylvania, through Ohio, Indiana, Michigan, Illinois, Wisconsin and southern Minnesota and is found in Nebraska, Iowa and extreme northeastern Missouri. Figure 10 in Appendix A shows the parcels with known recent (2002-2012) Blanding's turtle occurrences in the Planning Area. The Blanding's turtle has been found recently in a number of parcels throughout the lower Des Plaines River valley, including: Lockport Prairie, Romeoville Prairie, Keepataw Preserve, Black Partridge Preserve, Waterfall Glen, HMS' North, Far North, River North, "ComEd" and Long Run Parcels and the adjacent ComEd ROWs. Lockport Prairie, Romeoville Prairie and Keepataw Prairie Preserve are the only sites within the Planning Area where formal studies and surveys have been performed (Banning et al. 2006; Banning & Dreslik 2009; Dreslik and Phillips 2006).

In Lockport Prairie, 42 Blanding's turtles are estimated to occur (Banning et. al 2006). A Population Viability Analysis (PVA) was completed in 2006. The PVA showed that over the next 50 years, the population of Blanding's turtles at Lockport Prairie Nature Preserve has a 27.5% chance of extinction and is currently experiencing a negative growth rate (Banning et al. 2006).

Although no formal Blanding's turtle studies have been performed on HMS properties, the Blanding's turtle has been found on their parcels in recent years. In April 2012, a Blanding's turtle was found in the southeast corner of HMS' "ComEd" Parcel along the access road that runs along its boundary with Long Run Parcel (J. Mengler, personal communication, 2012). In May 2011, an adult female was found crossing the HMS' facility entrance road (between Middle and North Parcels) about 100 meters east of Route 53 (K. Mierzwa, personal communication, 2011). In 2009, the Illinois Natural History Survey (INHS) completed a turtle study in Romeoville Prairie Nature Preserve during which time a Blanding's turtle was radio tracked to the ComEd easement and HMS' Far North Parcel, south of the preserve (Banning and Dreslik 2009). In 2008, an INHS biologist found a road-killed female Blanding's turtle along Route 53 near the east-west ComEd ROW and HMS' North and Middle Parcel boundaries (M. Dreslik, personal communication, 2008). Prior to these sightings, the last observation of a Blanding's turtle on HMS property was reported over ten years ago (Mierzwa, 1996). A single adult Blanding's turtle was also observed crossing the road east of the existing quarry, near the southeast end of Middle Parcel in 1994, and a juvenile Blanding's turtle was observed on River South Parcel in 1995.

Conservation Status

The Blanding's turtle was listed in Illinois as a state threatened species in 1998 (Dreslik and Philips 2006) and changed to state endangered in 2009 (IESPB 2009). Blanding's turtle was petitioned in 2012 for federal listing (http://www.biologicaldiversity.org/campaigns/amphibian_conservation/map.html).

Threats

The greatest threats to the species are loss and fragmentation of both wetland and nesting habitat, predation, collecting and automobile strikes (WDNR 2006 & Congdon et al. 2008).

Addressing Blanding's Turtle Recovery Goals

The Blanding's turtle is not currently federally listed, and thus a federal Recovery Plan has not been prepared for the species. The Blanding's turtle is state listed in Illinois, and it is ComEd's understanding that a state Recovery Plan is being developed. ComEd anticipates that the proposed activities will support this plan.

2.2.3 Spotted Turtle



Photo Source: "U.S. Fish & Wildlife Service - CITES CoP16 Spotted Turtles." U.S. Fish & Wildlife Service - CITES CoP16 Spotted Turtles. N.p., n.d. Web. 25 Apr. 2013. <http://www.fws.gov/international/cites/cop16/spotted-turtle.html>

Species Description

The spotted turtle is a small turtle (up to 4.7 inches) with a smooth broad dark carapace dotted with small yellow spots. The head is spotted or uniformly dark and the limbs are dark above and yellow to orange below. The plastron is not hinged. It is yellow or orange with a black blotch covering a portion of each scute. In some males or old females the black pigment may cover nearly the entire plastron. Mature males usually have a tan chin, brown eyes, a slightly concave plastron and an elongated and compressed carapace. Mature females have a yellow or orange chin, orange eyes, a flat plastron and a rounder carapace.

Life History and Habitat

The spotted turtle is a semi-aquatic species that spends most of its time in wetland habitat, but often moves into uplands as it travels between wetland complexes. Spotted turtles are known to aestivate on land or in aquatic habitats for long periods during times of drought and during the warmest times of the summer. Spotted turtles inhabit shallow vegetated wetlands with a soft substrate, including shallow marshes, sedge meadows, cattail marshes and wet dolomite prairies. Females nest in open, sunny locations with moist well-drained soils in sedge meadows and wet prairies. Turtles winter in muskrat or other small mammal burrows or in shallow water in the soft organic substrate. Spotted turtles are omnivorous, feeding on crayfish, worms, snails, insects, crustaceans, aquatic plants and algae. They are a long-lived species, requiring 7 to 14 years to reach sexual maturity. Females nest from May to July and may lay one clutch of 3-5 eggs. Spotted turtles studied in Lockport Prairie in the Des Plaines River valley had home ranges that averaged between 6.4 acres (females) to 13 acres (males) (Banning et al. 2006). Common predators include raccoons and muskrats.

Range and Location

Nationally, the spotted turtle range is concentrated in two main areas: the Great Lakes region and along the eastern seaboard. The Great Lakes region extends from northeastern Illinois into the western and southern lower peninsula of Michigan, northern Indiana and Ohio, western Pennsylvania and southern Ontario. In Illinois, the spotted turtle is limited to the lower Des Plaines River valley. Figure 11 in Appendix A shows the parcels within the Planning Area with known spotted turtle occurrences between 2002 and 2012. These include Lockport Prairie and Romeoville Prairie Nature Preserves. Spotted turtles have been studied in these two preserves, as well as Keepataw Preserve and Black Partridge Preserve. However, like the Blanding's turtle, suitable habitat occurs in the Planning Area outside of these preserves. Eighty-one spotted turtles are estimated to occur in Lockport Prairie (Banning et. al 2006).

Conservation Status

The spotted turtle is listed as a state endangered species in Illinois and was petitioned in 2012 for federal listing (http://www.biologicaldiversity.org/campaigns/amphibian_conservation/map.html). It is also considered a critical species for state conservation according to the Illinois Comprehensive Wildlife Conservation Plan (IDNR 2005). A critical species is defined in the previously referenced plan as "Illinois' species in greatest need of conservation that need to be managed within the natural division, if they are to be effectively conserved in Illinois".

Threats

The greatest threats to the spotted turtle are habitat loss and fragmentation due to invasive species, changes in hydrology, urban development and collection for the pet trade industry.

Addressing Spotted Turtle Recovery Goals

The spotted turtle is not currently federally listed, and thus a federal Recovery Plan has not been prepared.

2.2.4 Black-billed Cuckoo



Photo Source: "Maps, Models, and Tools for Bird Conservation Planning - Modeling Avian Abundance: Results - Bobolink." Maps, Models, and Tools for Bird Conservation Planning - Modeling Avian Abundance: Results - Bobolink. N.p., n.d. Web. 25 Apr. 2013. http://www.umes.usgs.gov/terrestrial/migratory_birds/bird_conservation/bcr23_blackbilled_cuckoo.html

Species Description

The black-billed cuckoo is a slender, greyish brown bird with a long, white-tipped tail, and a slender all-black bill (Sibley 2009). The tail spots on the black-billed cuckoo also tend to be much less prominent than the large, bright tail spots on the yellow-billed cuckoo. The black-billed cuckoo tends to be very secretive, especially during the breeding season, and is more often heard than seen. However, its call is quite similar to the closely related yellow-billed cuckoo and can easily be misidentified (Huges 2001).

Habitat and Life History

The black-billed cuckoo is a woodland bird that tends to prefer dense, shrub/scrub, alder thicket, grassland-shrub, pine barrens, northern hardwood, bottomland hardwoods and deciduous habitats where it feeds mostly on large insects and caterpillars (Mueller 2012, Kleen et al. 2004). The breeding range extends from southern Canada, south to Tennessee and from western Montana to the east coast of the U.S. and into northern Maine. Although suitable breeding habitat is common across most of the Midwest, the overall population trend continues to decline (Sauer et al. 2005). The black-billed cuckoo tends to build their nests low in trees with thick cover and shrub/scrub habitats (usually less than 7 feet above ground). Eggs are laid in late May to mid-August. Average clutch size is two to three eggs. Eggs hatch

after 10 to 13 days of incubation and fledging occurs 7 to 9 days later (Huges 2001). Similar to other cuckoos, the black-billed cuckoo will parasitize other bird's nests; however, this behavior is not as common in the black-billed cuckoo compared to its European relatives.

Range and Location

Several sources document black-billed cuckoos as occurring near the Planning Area. According to Mankowski (2010), the black-billed cuckoo has been identified in five counties with post-year 2000 reports. These reports indicate probable or confirmed nesting with a range that stretches from north to south across nearly all of central Illinois. Kleen et al. (2004) lists two confirmed breeding accounts and three probable breeding accounts in southern DuPage County. The Illinois Natural Heritage Database has an element occurrence record in southern DuPage County near CHU 5, and the IDNR has mapped suitable habitat associated with the element occurrence (Figure 14, Appendix A). Based on aerial interpretation, it appears that this habitat consists mostly of deciduous woodland with associated shrub/scrub habitat. Statewide, the black-billed cuckoo population is estimated to be 6,600. According to IDNR, the population is trending towards a slight decrease in overall numbers (IDNR 2005).

Conservation Status

The black-billed cuckoo is listed as a threatened species at the state level in Illinois. It is also considered a critical species for state conservation according to the Illinois Comprehensive Wildlife Conservation Plan (IDNR 2005).

Threats

Threats to black-billed cuckoo populations are not well understood (Mueller 2012). Although suitable breeding habitat is still common in the Midwest, locally, suitable nesting habitat such as orchards, hedgerows, shrubby field edges are declining (Mankowski 2010). In addition to local habitat loss, it is likely that spraying for gypsy moth larvae negatively affects other caterpillar populations, thus decreasing prey availability (Anderson 2006). Black-billed cuckoos may be exposed to high amounts of pesticides through preying on caterpillars and insects that have been sprayed with pesticides, which in turn may lead to health and reproductive impacts. According to the Illinois Comprehensive Wildlife Conservation Plan (IDNR 2005), additional threats to the species include habitat fragmentation, alteration of habitat composition, disturbance to hydrology relating to water level and availability, invasive species, predators and direct mortality from structures (dams, towers, windows, etc.) or infrastructure (road, utility lines, etc.).

Addressing Black-billed Cuckoo Recovery Goals

The black-billed cuckoo is not currently federally listed, and thus a federal Recovery Plan has not been written for the species.

2.2.5 Leafy Prairie Clover



Photo Source: "Leafy Prairie-Clover (*Dalea foliosa*).¹" USFWS: Leafy Prairie Clover Fact Sheet. N.p., n.d. Web. 25 Apr. 2013. <http://www.fws.gov/midwest/endangered/plants/leafypra.html>

Species Description

The leafy prairie clover is easily distinguished from most other *Dalea* species east of the Mississippi River on the basis of the leaflet number, which ranges from 9 (Barneby 1977) to 31 (Gleason and Cronquist 1963) but typically is between 20 and 27 (Fernald 1950). Leafy prairie clover is a glabrous, stout herb, with one to several stems 8 to 31 inches long arising from a hardened root crown. Leaves are alternate and oddly pinnately compound. Flowers have a lavender-purple calyx with five petals. Flowers grow on dense conic to cylindrical heads that are between 0.15 to 3.5 inches long and 0.24 to 0.4 inches wide (DeMauro and Riddle, unpublished data) with short peduncles, 0 to 0.08 inches long.

Life History

LPC is a short-lived herbaceous perennial that has no capacity for vegetative spread (Baskin and Baskin 1973; Schwegman and Glass, unpublished data). In March, new ramets (stems) begin to grow from buds on the root crown just below the soil surface. By July, these ramets are 15.7 to 25.6 inches tall (Baskin and Baskin 1973). A single ramet will develop one or more inflorescence buds in late June. Flowering begins in late July, peaks in mid-August, and can continue until late August. Flowers are hermaphroditic and protandrous (Wemple 1970). Leafy prairie clover seeds ripen by early October and disperse from the erect dead ramets from late fall to early spring (Baskin and Baskin 1973). Potential dispersal vectors include wind, gravity, birds and small mammals. Dormant seeds are capable of forming a persistent seed bank. Seeds from Illinois populations readily germinate without scarification (R. Betz, Northeastern Illinois University, personal communication, 1992). Germination occurs in April and by late May the seedlings have several leaves (Baskin and Baskin 1973). Spring fires appear to stimulate germination and establishment, possibly by the removal of accumulated duff and creation of more openings where buried seeds can germinate and survive.

Habitat

Leafy prairie clover is found only in open limestone cedar glades, limestone barrens, and dolomite prairies that have shallow, silt to silty-clay loam soils over flat and often highly fractured limestone or dolomite with frequent expanses of exposed bedrock at surface elevations typically between 550 and 700 feet). These habitats experience high surface and soil temperatures, generally have low soil moisture, are wet in the spring and fall, and become dry in summer (Quarterman 1989; DeMauro 1986; White 1978).

Although leafy prairie clover plants can persist in partial shade, the species' preferred habitat is open sun with a soil depth from 1.6 to 17.7 inches (DeMauro, unpublished data; Baskin and Baskin 1973), but is most abundant in 3.9 to 11.8 inches of soil. Leafy prairie clover occurs in the relatively mesic and wet-mesic portions of the soil moisture gradient, typically in association with dry washes. The wet-mesic component is probably critical to population persistence, particularly in drought years. Leafy prairie clover may be reduced or excluded from areas supporting dense perennial grasses or woody vegetation due to competition and shading (Quarterman 1989; Smith and Wofford 1980).

Population and Range

The center of the leafy prairie clover range is the limestone cedar glades of central Tennessee and northern Alabama, where the species is considered likely endemic (Baskin and Baskin 1973). The Illinois population is restricted to dolomite prairies on river terraces in the northeastern part of the state (Kurz and Bowles 1981). Several leafy prairie clover populations have been monitored in properties containing appropriate mesic to wet-mesic dolomite prairie habitat within and immediately adjacent to the Planning Area. These include Lockport Prairie Nature Preserve, Romeoville Prairie Nature Preserve, Lockport Prairie East, Keepataw Preserve (FPDWC 2012), and HMS' "ComEd" Parcel (Radke et al. 2004a, 2004b) (Figure 12, Appendix A). Leafy prairie clover is also found in Long Run Parcel and Dellwood Park West Nature Preserve which is located immediately south of Lockport Prairie East. Some populations in these locations are found within the ComEd ROW easements. No other populations are currently known in the Planning Area.

Table C-4 in Appendix C provides a summary of the monitoring results of population estimate and stem count surveys performed by FPDWC staff for Romeoville Prairie, Lockport Prairie, Lockport Prairie East and Keepataw Nature Preserves (FPDWC 2012). This table also includes the number of plugs that were planted in Lockport Prairie East, Romeoville Prairie and Keepataw Prairie which began in 2008. It is

important to note that prior to 2007, the district counted all plants at each site and after 2007 the district created plots and counted plants located within each plot. Consultants for HMS (Radke et al. 2004a, 2004b) completed surveys for the leafy prairie clover on HMS' "ComEd" Parcel. They estimated the population to be 290 plants in 2003 and counted 3,345 plants in 2004. Estimates from 2003 were based on the number of ramets counted with the assumption of 4 ramets per plant. In addition, USFWS collected leafy prairie clover seed on this parcel in 2006 and 2007. Although they were not conducting a population survey, they estimated the population to be greater than 1000 plants in both years (M. Redmer, personal communication, 2012). Additional leafy prairie clover populations have been found in HMS' "ComEd" Parcel since the surveys (AES 2012) and one has been found at the far north end of Long Run Parcel (J. Mengler, personal communication, 2011), but no stem counts or population estimates were completed. No other populations are known to occur within the Planning Area.

Conservation Status

The leafy prairie clover was listed as federally endangered in 1991 (USFWS 1991). The species is listed as endangered at the state level in Tennessee (Somers et al. 1989) and Illinois (Illinois Endangered Species Protection Board 1990).

Threats

Threats to the leafy prairie clover include habitat loss, competing invasive species, shade suppression by woody species and fire suppression. Most of the following information is summarized from the USFWS Leafy Prairie Clover Recovery Plan for the leafy prairie clover prepared by the USFWS (1996). Additional sources are cited in the text, where applicable.

USFWS Leafy Prairie Clover Recovery Plan

A Recovery Plan exists for the leafy prairie clover (USFWS 1996). The end goal of the plan is delisting of the species. The recovery strategy includes enhancement and maintenance of population viability through habitat protection, management and population restoration. Delisting for the Illinois population will occur when a minimum of 3 populations ranked as high viability are protected and managed for 10 consecutive years.

USFWS Leafy Prairie Clover Recovery Plan Goals

1. Identify and prioritize protection, management and restoration needs for all viable populations for each geographic region. The USFWS Leafy Prairie Clover Recovery Plan identifies Lockport Prairie, Romeoville Prairie and Keepataw Forest Preserve. The populations found on HMS' "ComEd" and Long Run Parcels are not mentioned in the plan.
2. Evaluate potential Illinois recovery sites. Two sites within the Planning Area are considered high potential recovery sites: Lockport Prairie East and Waterfall Glen Forest Preserve.
3. Initiate and complete preserve design and implement the protection and management required to meet recovery criteria.
 - a. Develop preserve designs with protection and management of leafy prairie clover as a priority.
 - b. Implement protection by seeking the highest level of protection possible for a parcel (i.e., designation as an Illinois Nature Preserve).
 - c. Develop a management plan for a parcel and include leafy prairie clover.
 - d. Implement management plans, including prescribed burning, exotic species control, protection from overuse and illicit activities and herbivore damage.
 - e. Increase population through enhancement of current populations or establish new populations.
4. Develop and implement population monitoring programs.
5. Conduct research to enhance recovery efforts.
6. Develop materials to inform the public about the status of the species and USFWS Leafy Prairie Clover Recovery Plan objectives.

Addressing USFWS Leafy Prairie Clover Recovery Goals

ComEd's HCP addresses the biological goals and objectives of the USFWS Leafy Prairie Clover Recovery Plan through avoidance and minimization, management of the ROW and general environmental awareness.

2.2.6 Lakeside Daisy



Photo Source: "Threatened, Endangered, and Proposed (TEP) Plant Profile." *Celebrating Wildflowers*. N.p., n.d. Web. 25 Apr. 2013. http://www.fs.fed.us/wildflowers/rareplants/profiles/tep/tetraneuris_herbacea/index.shtml

Life History and Habitat

The lakeside daisy is a clump-forming, herbaceous perennial plant that produces solitary, daisy-like flowers on stout, hairy stalks. The leaves form dense basal rosettes that arise from a short, thick, branching base (caudex) with a similarly short, thick taproot. The narrow, one-nerved, dark green leaves, which may range to about 6.3 inches in length, are lanceolate (lance-shaped) to oblanceolate (narrower at the base), and in addition to being somewhat thick in texture, are strongly punctate (dotted with glands). Flowers are borne solitarily on relatively stout, softly hairy peduncles that elongate through the flowering period, ranging from about 4-16 inches in height when seeds are dispersed. The bright yellow, daisy-like flower heads, as in similar composites, are inflorescences composed of both disk (central) and ray (outer) florets. The ray florets are 3-toothed on the margin. The fruits are small, hairy achenes.

Range and Location

This plant is found in dry, rocky prairie grasslands underlain by limestone. It requires open sites with full sun. Although it grows in Great Lakes states and along the Canadian shore of Lake Huron, it is named for Lakeside, Ohio, near one of its best known sites.

Population Size

The two known lakeside daisy sites in Will County were established with 1,100 transplants into appropriate habitat in 1988 (Lockport Prairie Nature Preserve and Romeoville Prairie Nature Preserve, Figure 13, Appendix A). Populations at these sites continue with low to moderate success (USFWS 2010).

Conservation Status

The lakeside daisy was listed as federally threatened in 1988. Most of the following is summarized from the Recovery Plan for the Lakeside daisy prepared by the USFWS and the Michigan Natural Features Inventory, Michigan Department of Natural Resources - Forest, Mineral, and Fire Management Division (1990). Additional sources are cited in the text, where applicable.

Threats

The final rule (53 FR 23742) listing lakeside daisy as threatened identified the threats to the survival of the species as habitat destruction, succession of overgrowth by woody species, over-collecting for gardens, inadequacy of existing regulatory mechanisms and the species' self-incompatibility. The most significant threats range-wide are habitat destruction and succession of woody species.

According to the lakeside daisy Recovery Plan:

Disease and predation were not listed as threats to the lakeside daisy at the time of listing (53 FR 23742), though herbivory was included as an ecological threat to both natural and restored populations in the Recovery Plan (USFWS 1990). Predation, namely deer and rabbit herbivory, of this plant has appeared to increase within the introduced populations in Lockport Prairie Nature Preserve and Romeoville Prairie Nature Preserve in Will County, Illinois (K. Lah, pers. comm. 2006). Alternatively, inflorescences at these sites have been found on the ground next to rosettes, indicating trampling by wildlife or internal parasites, i.e., cutworms or insects, within the plants (Juanita Armstrong, Natural Resource Land Manager, FPDWC, Illinois, pers. comm. 2010). These factors pose a threat to lakeside daisy populations since rosettes are not able to regenerate if herbivory on leaves is too intense (USFWS 1990), or if significant damage to the plants is caused by other sources.

Populations are also threatened by human use of the habitat, including ATV access, which can destroy plants and habitat. Non-native invasive species, such as oxeye daisy (*Leucanthemum vulgare*), spotted knapweed (*Centaurea stoebe*) and smooth brome (*Bromus inermis*) are threatening lakeside daisy with their introduction through ATV access (S. Huebner, pers. comm. 2008; 2009). To protect this population, regular maintenance is required to remove non-native invasive species and woody encroachment.

Climate change may be a serious threat for a rare, endemic plant species like the lakeside daisy. The habitat for the lakeside daisy currently spans a narrow range of habitat types (i.e., dry limestone prairies and grass and sedge dominated communities) which are globally rare. According to regional precipitation and temperature models, increased temperatures and increased rainfall may alter the habitat for the lakeside daisy in such a way that the plant cannot adapt or invasive plants may encroach (Union of Concerned Scientists 2009). It is not known how the lakeside daisy will be impacted by temperature or precipitation increases.

The largest population of lakeside daisy in the United States is situated in Ottawa County, Ohio, on the coastline of Lake Erie, and no refugia are available nearby for this plant. Therefore, climate change poses a serious threat to the lakeside daisy due to the severely restricted habitat and range of the species.

USFWS Lakeside Daisy Recovery Plan Goals

The biological goals and objectives of the USFWS lakeside daisy Recovery Plan include:

1. Lakeside daisy can be considered for delisting when:
 - a. 475 acres of essential habitat containing the population center at the Marblehead Quarry, Ottawa County, Ohio are acquired and managed,
 - b. 465 acres of additional essential habitat at the Marblehead Quarry is protected through easements, restrictive covenants, or leases,
 - c. lakeside daisy is restored to a minimum of one large, stable population in each of 2 geographically distinct, protected sites of suitable size within the variety's historic range in Illinois, and
 - d. restored populations of lakeside daisy are maintained for 15 consecutive years, with monitoring to continue for an additional 10 years.

Addressing Lakeside Daisy Recovery Goals

ComEd's HCP addresses the biological goals and objectives of the USFWS Lakeside Daisy Recovery Plan through avoidance and minimization, management of the ROW and general environmental awareness.

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3 PROJECT DESCRIPTION and ACTIVITIES

3.1 Project Description

ComEd's activities within the Permit Area include continuing power line maintenance; routine inspections; performing switching operations; repairing, replacing, removing and re-locating power lines and structures; and managing vegetation under power lines for reliability issues. All distribution and transmission structures located in CHUs 1-7 will be either 1) relocated outside of critical habitat or 2) replaced in kind over the next 20 years (from the date of the ITP) as part of normal operations and/or planned replacement. Although all structures in CHUs 1-7 have been included as part of the covered activities in this HCP, ComEd does not anticipate replacing each structure, but has provided them as a reference for planning and to determine appropriate mitigation. Existing and proposed paths will be used to access structures, and matting will be used in wetland areas to minimize impacts. Proposed work includes plans for access to all structures and facilities within the Permit Area. Emergency work is addressed in the Changed and Unforeseen Circumstance Chapter (8) of the HCP.

3.2 Activities Covered by Permit

Planned work includes all maintenance required for ComEd facilities. This includes the following:

1. Access by foot or operational vehicles along existing trails or paths to structures or lines in non-wetland areas.
2. Access by operational vehicles on matting in wetland areas, outside of HED larvae habitat areas.
3. Access on foot without equipment or vehicles in wetland areas.
4. Access on foot with equipment to structures that need repair in wetland areas.
5. Access by amphibious vehicles at wetland locations with water levels deeper than 12 inches (access would exclude the timeframe of October 15 – March 15 to avoid overwintering turtles).
6. Installation and removal of silt fence or other temporary sediment controls.
7. Delivery and staging of heavy equipment or construction materials in upland areas.
8. Installation and removal of matting by cranes in wetland areas.
9. Crossing HED larval rivulets on foot or with bridge constructed from matting.
10. Crossing wetlands (in non-larval habitat) with ARGO wide track vehicle to reach a structure.
11. Relocation, removal or replacement of each structure throughout the entire Permit Area (this includes disassembly and removal of the operating equipment, cutting the structure, and removal of the structure via helicopter).
12. Use of a helicopter to conduct inspections, maintenance, repairs and structure removal. Where possible, helicopter work will be scheduled outside the HED adult flying season (May 15 through September 15).
13. Installation of structures in new locations (non-larval habitat).
14. Maintaining existing roads and access paths.
15. Utilizing an Unmanned Aerial Vehicle (UAV) (also known as an Unmanned Aircraft System (UAS)), shown to the right, to remotely inspect ComEd structures and equipment. These units are typically less than 4 feet across, fly between 25 and 35 mph and weigh only a few pounds.
16. Removing woody vegetation on foot, using hand equipment such as brush cutters and chainsaws.
17. Mowing woody vegetation with mower weighing +/- 14,000



Unmanned Aerial Vehicle
Photo provided by ComEd

pounds in upland and wetland areas (except CHUs 1 and 2).

18. Utilizing brush hogs or similar equipment in upland areas.
19. Stockpiling or burning piles of cut vegetation in uplands.
20. Spot applying herbicides on cut-stumps within wetlands (outside of 65 feet from a known occupied HED habitat).
21. Foliar spot treatment of invasive woody species and tall-growing woody vegetation within wetlands (outside of 65 feet from a known occupied HED habitat).
22. Boom spraying herbicide over woody vegetation in upland areas or non-sensitive wetland areas (outside of the HED flight season) with amphibious vehicles or ATVs.

Planned work is expected to be completed in the late fall through winter months (October 15 – April 15). Although no adult HED will be present during this time period, larval HED will be present in limited wetland habitat that has been identified and mapped based on the best available information. Access to structures for planned work is proposed from either upland paths, proposed paths, the rail line or paths created with matting (in wetland areas).

3.3 Emergency Response

In addition to the covered activities described above, it is likely that during the term of the ITP, ComEd will have to respond to emergency situations on its distribution and transmission system, where an immediate response is often critical. Emergency response activities generally include those activities that are not part of the normal Operation and Maintenance routine or construction. These activities are unscheduled, may occur at any time of the year or day, and are generally conducted when there is an imminent or current threat to life, the electric system, property and/or the environment. These activities may include, but are not limited to, appropriate responses to a tornado, vandalism or other destructive or illegal human activity, fire, natural disaster, train derailment, oil spill or natural gas pipeline leak. The activities associated with an emergency response vary depending upon the specific characteristics of that particular emergency and the surrounding vicinity. In light of the inability to predict when these emergency response activities may be required, where they may occur in relation to HCP covered species, and the magnitude of such activities, emergency response activities are not included as covered activities under this HCP. Instead, in the event an emergency situation occurs involving the ComEd distribution and transmission system within the permit area that may affect covered species, ComEd will notify the USFWS of such emergency circumstances as soon as practicable to determine if additional mitigation is required. Emergency responses are covered in the Changed and Unforeseen Circumstances Chapter of this HCP (Chapter 8).

4 ALTERNATIVES ANALYSIS

This section outlines the alternatives considered and associated consequences of each action, if utilized. Since January 2006, ComEd has been exploring and evaluating a variety of operational strategies for conducting business on their property within the Permit Area. In addition, ComEd explored strategies to minimize known stressors to the covered species and their existing habitat.

Impact estimates provided in the HCP were determined with the assumption that all existing transmission and distribution structures would need to be replaced within the Permit Area (from the date of the ITP). ComEd determined that all structures (distribution and transmission) located in CHUs 1-7 may be either 1) replaced in kind over the next 20 years (from the date of the ITP) as part of normal operations and/or planned replacement or 2) relocated outside of critical habitat (preferred alternative). Although all structures in CHUs 1-7 have been included as part of the impact of take estimate in the HCP, ComEd does not anticipate replacing each structure, but has provided them as a reference for planning and to determine appropriate mitigation.

4.1 No Action Alternative

The no-action alternative involves the continuation of current activities that do not result in take of a covered species or modification of critical habitat. Any current activities that would result in take or modification of critical habitat would be discontinued under the no-action alternative. The no-action alternative for ComEd includes no ITP, no HCP, no AMMs and no work that would negatively affect HED habitat. Therefore, no maintenance or repairs to lines or structures would occur if access to the lines or structures or the necessary work could impact a covered species, thus the poles would eventually fall down. Woody vegetation management performed on foot would continue as it does not impact HED individuals or their habitat. Under this no-action alternative, critical habitat for the HED and the other covered species on ComEd properties within the Permit Area will likely continue to decline due to lack of management.

If activities requiring an ITP are determined to be necessary to comply with Illinois Commerce Commission (ICC), Federal Energy Regulatory Commission (FERC) and North American Electric Reliability Corporation (NERC) regulations to prevent disruption of service, ComEd will have to consult with USFWS and work out a solution, or choose to comply with other regulators without USFWS consent. In the case of downed power lines occurring in areas that contain or effect species habitat, ComEd will make repairs to protect human health and safety despite possible non-compliance with the ESA.

During the vegetation assessment performed in 2006 along ComEd ROW within CHUs 1, 2, 3, 4 and 5, Christopher B. Burke Engineering, Ltd. (CBBEL) observed that the overall vegetation quality of the ROW was relatively low. Limited areas of high quality pockets were interspersed in the ROW. Solecki (1997) states that the small size and isolation of many prairies and savannas and their accompanying high proportion of edge habitat leaves them susceptible to invasive plant species. Therefore, higher quality vegetation areas within a majority of ComEd ROW are anticipated to decline in quality based on the continued establishment and spread of invasive species (i.e., common reed and reed canary grass) without herbaceous vegetation management. Based on the habitat requirements noted in Section 2.2.1, the decrease of high quality vegetation will ultimately reduce the amount of HED habitat in the area.

4.2 Transmission Alternatives

ComEd has determined that only the H-frame wood transmission line located within CHUs 1 and 2 requires immediate replacement. The transmission H-frames were installed in 1947 and currently exhibit end of life characteristics. ComEd has completed minimal maintenance activities over the past five years to maintain the reliability of the structures, but has not completed normal maintenance operations due to presence of HED and environmentally sensitive areas. Maintenance includes the installation of several steel trusses (c-trussing) at the base of identified deteriorated wood poles, replacement of damaged insulator assemblies and minimal vegetation management (completed on foot with hand tools).

ComEd transmission engineers considered several options for the north-south H-frame transmission line located within CHUs 1 and 2.

Rejected Transmission Alternative 1 – Replacement of wood poles with steel monopoles: All wood H-frame structures would be removed and replaced with steel monopoles. This alternative would result in significantly more disturbance to critical habitat because additional ground boring would be required to install the foundations of the monopole structures. Additional ground disturbance could adversely impact the HED by directly taking individual larvae and/or degrading their habitat.

Rejected Transmission Alternative 2 – Maintain existing pole lines: This alternative includes continued limited maintenance of the north-south H-frame transmission line. This alternative is not feasible because the line is at the end of life expectancy. In addition, leaving the structures in place may impact HED habitat if poles fall down and block drainage to rivulets.

Preferred Transmission Alternative – Move the north-south transmission H-frame line located within CHUs 1 and 2 outside HCP area: The H-frame transmission line located within the most sensitive areas of CHUs 1 and 2 would be relocated outside of the HCP area. This includes disassembling and removing the operating equipment, cutting the structure and removing the structure. The remainder of the transmission structures (except the existing steel monopoles) would be replaced in kind throughout the entire Permit Area.

4.3 Distribution Alternatives

ComEd distribution engineers considered several options CHUs 1 and 2 for operation and maintenance of the distribution lines within the Permit Area; these options are discussed below.

Rejected Distribution Alternative 1 – Move all distribution lines outside the CHUs and Permit Area: The distribution lines would be relocated outside of the CHUs and HCP areas. This includes disassembly and removal of the operating equipment, cutting the structure and removal of the structure (not via helicopter). This alternative is not feasible due to the large amount of easements and land that would need to be acquired (and the costs associated with such land acquisition) to install a new distribution line.

Rejected Distribution Alternative 2 – Maintain existing pole lines: This alternative is not feasible because the distribution lines are nearing the end of life expectancy and some of the structures are nearly impossible to access and repair due to their location in sensitive areas. In addition, leaving the structures in place may impact HED habitat if poles fall down and block drainage to rivulets.

Preferred Distribution Alternative 3 – Replace existing poles in kind and move specific poles away from limited access areas along the north-south ROW (within CHUs 1 and 2): Limited access areas have been defined as those areas located within of the vicinity of an occupied HED larval rivulet. Distribution poles are currently located within these limited access areas. This alternative includes replacing all poles in kind, except poles located within limited access areas. Poles in limited access areas would be relocated outside of the limited access area (but remain within CHUs 1 and 2). In this alternative, the distribution line and poles would remain in CHUs 1 and 2, and planned work would continue in this area.

Pole replacement would be completed as necessary in the winter when the ground is frozen. ComEd would use matting to access structures in wetland areas. In non-wetland areas, ComEd would access the distribution lines using pre-determined access paths shown on the internal-use maps prepared for ComEd employees and contractors who work in the Permit Area.

4.4 ComEd's Preferred Alternative

Based on the transmission and distribution engineering analyses, ComEd hopes to relocate their transmission line located within CHUs 1 and 2 and may potentially replace all other transmission structures located within CHUs 3-7 in kind. ComEd may potentially replace distribution poles in kind and potentially move specific distribution poles away from HED limited access areas along the north-south ROW (within CHUs 1 and 2).

All planned work would be performed in the winter. It is understood that areas where seeps are located will likely not completely freeze during the winter months. In these locations and in other wetland areas, ComEd will use matting to access structures. In non-wetland areas, ComEd will access the transmission and distribution lines using pre-determined access paths. Shrubs and trees will be cleared as needed to access structures. The overall potential impacts to covered species from the preferred alternative are modest and avoidance will be practiced in an effort to minimize impacts to the maximum extent practical.

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5 POTENTIAL BIOLOGICAL IMPACTS, IMPACT ANALYSIS and MITIGATION

5.1 Hine's Emerald Dragonfly

The principal threat to the species in Illinois is habitat degradation and alteration. This includes direct loss of habitat, such as filling of wetlands, as well as indirect alterations of habitat, such as changes in surface and sub-surface hydrology. Alteration of hydrologic regimes could adversely affect the larval and breeding habitat of the species by changing water temperature, flow, chemistry and volume. Quarries, road construction, municipal and private wells, addition of impervious surfaces and alteration of surface drainage patterns could all cause reductions in the suitability of habitat or the outright loss of suitable larval and breeding habitat. Transportation and roadways are also a threat to this species, both from direct mortality and habitat destruction or fragmentation. Land use practices, fire suppression and agricultural development have also reduced available habitat as well as the abundance of insects for prey across its range. The following details the anticipated impacts from ComEd's covered activities on the HED within the Permit Area.

5.1.1 Activities and Impact Analysis

ComEd operates and maintains approximately 549 acres of ROW and easements within the Permit Area. ComEd is seeking permit coverage for activities associated with operation and maintenance of structures and power lines located within CHUs 1-7 as described in Chapter 3.

Emergency activities that may result in impact to HED larval habitat will be addressed further in the changed circumstances section of this HCP (Chapter 8). In general, a situation would be considered an unplanned activity if applicable avoidance and minimization measures could not be implemented or greater impacts occur than is currently anticipated. This primarily refers to accessing structures during emergency situations. For example, should access along the preferred route (i.e., the existing railroad) not be available during an emergency situation access through a wetland may be necessary. If matting was not available, the situation would be considered a changed circumstance. This situation may result in vehicles driving through wetland areas parallel to the rail line, and potentially through known occupied larval habitat. In reality, the likelihood of this situation occurring is very unlikely because ComEd has implemented a series of measures that will alert ComEd staff (including the Operation Command Center during emergency situations) that the work area is located within a sensitive area requiring special approval from ComEd's Environmental Services Department. This information is relayed throughout ComEd via internal mapping software, hard copy maps utilized in the field, required annual training, Environmental Service Department's intranet site, signs located in the field and ComEd's standard operating procedure.

The majority of planned work is expected to be completed in the late fall through early spring months (October 15 – April 15). Although no adult HED will be present during this time period, larval HED will be present in limited wetland habitat that has been identified and mapped based on the best available information (Figures 9.0-9.7, Appendix A). Access to structures for planned work is proposed from either upland paths, the rail line or paths created with matting (in wetland areas, excluding HED larval habitat). If access from the rail line is not allowed, matting will be used in wetland areas. If necessary, a bridge that spans the rivulet and adjacent HED larval habitat (4.3 feet minimum width) will be constructed from matting, or equivalent practice.

5.1.2 Measures to Avoid and Minimize Impacts

ComEd is required by the Federal Energy Regulatory Commission (FERC) to perform maintenance and maintain access to its facilities. As part of the operational activities discussed in this HCP, ComEd will implement preventative measures to avoid and minimize all impacts to the environment, including take of protected species. ComEd will implement the following AMMs for planned work:

1. Implement a Standard Operating Procedure (SOP) that includes guidelines for access and working in HED areas, including the use of matting for access in wetland areas. Matting is commonly used to minimize wetland impacts and is ComEd's choice for providing access paths and work areas in

wetlands. If improved matting or access technologies are developed, they will be considered for use and submitted to the USFWS for review. ComEd has successfully completed projects throughout the Chicagoland region with matting. The use of matting in wetland areas in the vicinity of HED larvae occupied rivulets and HED larvae habitat areas (Figures 15.0-15.5, Appendix A) is not anticipated to cause indirect impacts to water flow such as change in flow direction or reduction of flow. To ensure this, hydrology will be monitored through visual observation during mat installation and throughout construction. Matting will not be laid within HED larvae occupied rivulets or HED larvae habitat areas. Rather, a bridge will be used to span the habitat.

2. Planned work shall be performed between October 15 and April 15 to avoid periods when the HED is most active.
3. All work located within a CHU will be coordinated through ComEd's Environmental Services Department and a wildlife biologist/wetland biologist will be available for on-site consultation as needed.
4. Vehicle use will be restricted outside of existing or pre-determined pathways. Access will be allowed only by foot outside of existing and pre-determined pathways. Pathways may change depending on specific site conditions.
5. Vehicles will be limited to 8 mph while driving on existing access roads within CHUs to minimize impact to adult HED.
6. Field crews will be instructed to enter by foot to inspect and climb poles to complete maintenance, when possible. Every effort will be made to limit encroachment into wetland areas, to the extent practicable. Crews will enter the wetland areas only where a structure must be accessed. If a rivulet needs to be crossed, a bridge (i.e., air bridge, stacks of matting or wood timbers) shall be used to span the rivulet. Matting will not be placed directly within HED larvae occupied rivulets or HED larvae habitat areas.
7. Workers will take precautions with all fuels used in operations to avoid spills and provide proper spill cleanup.
8. Proposed access routes to the work area, configuration of the work area and presence of wetlands and Waters of the U.S. will be reviewed and assessed prior to commencement of work. If necessary, ComEd's Environmental Services Department and their consultants will walk areas with contractors prior to work being completed within the CHUs.
9. The use of a helicopter will be considered when transmission work is necessary in highly sensitive areas (i.e., Lockport Prairie and River South). Helicopter work will be scheduled outside the HED adult flying season (May 15 through September 15). Use of a helicopter will be determined based on risk, weather, cost, availability and applicability to proposed work.
10. Amphibious vehicles (i.e., ARGO wide track) will be used outside of HED larval habitat areas (and hydrologically connected areas) to minimize disturbance to the ground. ARGO wide track vehicles exert 0.67 pounds per square inch (PSI). An ARGO wide track vehicle puts less pressure on the ground than a human walking (around 6 PSI), and its low gearing nearly eliminates the possibility of uprooting vegetation. These factors, plus the high ground clearance make for very low environmental impact.
11. ComEd's Environmental Services Department will notify USFWS at least two weeks prior to starting planned work in CHUs, with the exception of routine site inspections completed by foot, access via an existing road and mowing (outside of HED larval habitat areas).
12. ComEd will maintain woody vegetation as needed for reliability within the ComEd ROW. Most of the woody vegetation consists of invasive species.
13. Mowing and brush hogs will be used in upland and wetland areas, except HED larval habitat areas.
14. Herbicide applications will be prohibited within 65 feet of areas hydrologically connected to HED larval habitat areas, with the exception of cut stump treatments, unless approved by USFWS. Herbicide applications performed near HED larval rivulets will be monitored by a wetland biologist.

15. Within 65 feet of areas hydrologically connected to HED larvae occupied rivulets and HED larvae habitat areas, brush will not be cut to the ground; instead brush will be cut to within 7-8 inches of the ground so that herbicide applications will not migrate into HED larval habitat.
16. The only accepted herbicide within the 65 foot buffer will be one formulated for aquatic use, such as Rodeo®. No surfactants or adjuvants of any kind will be added to the commercial herbicide formula that has been approved for aquatic use. Herbicide will be applied to cut-stump immediately (i.e., within 30 minutes) of cutting and will be dripped onto the stump with the head of the nozzle touching the stump. Herbicides will not be applied within 72 hours of forecasted precipitation events.
17. Stockpiles of cut brush and trees will not to be placed in HED larvae occupied rivulets, HED larvae habitat areas, leafy prairie clover or lakeside daisy locations or within mapped wetland areas.
18. ComEd will maintain signage at each entry location to the ROW in critical habitat. Signage would inform ComEd crews and contractors that they are entering a sensitive area and reminding them of their responsibilities to this HCP (see examples below).



Photo of ComEd signage located in CHU1 just north of Division Street at Lockport Prairie Nature Preserve.

19. When utilized, mats will be placed and removed within 48 hours of completed work. In addition, mats will be wiped down or washed prior to transport to the site in order to avoid the spread of invasive species.
20. Internal awareness will continue to be provided to field crews and supervisors. The awareness will discuss the covered species and protocol for approaching structures in sensitive habitats.
21. The Environmental Services Department will meet with other ComEd departments to discuss the HCP and proposed work for the upcoming year. These other departments include distribution, transmission and vegetation management.
22. ComEd's Operation Command Center will act as a filter to notify workers that no access to areas within a CHU will be granted until approved by the Environmental Services Department, unless the situation is an emergency (see Changed and Unforeseen Circumstances, Chapter 8).
23. Informational materials, including brochures, literature, maps and species photos will be available to field crews and supervisors through ComEd's intranet. Environmental Services Department has their own intranet for staff to obtain additional information.
24. All departments at ComEd will utilize maps, either electronic or hard copy, when completing work within the CHUs. Maps will show CHUs with notes stating that ComEd's Environmental Services Department must be contacted prior to entry. Wetland locations will also be noted on the ComEd Internal Use Maps. Limited access areas have been designated as areas where a ComEd line crosses over known HED larvae occupied rivulets and HED larvae habitat areas. Access to those locations is restricted.

25. ComEd's Environmental Services Department will coordinate with regulatory agencies, concerned parties, customers and adjacent property owners to keep them aware of planned work and emergency work in and adjacent to CHUs.
26. In 2012, ComEd's Environmental Services Department notified easement holders and tenants of the presence of the CHUs and the need to adhere to all environmental regulations.

Public Education and Outreach Program

ComEd, in conjunction with HMS and MWGen, designed and implemented a public education and outreach program with Biodiversity Project, a nonprofit, environmental communications organization. This group of "lead partners" wrote in 2008 and received in 2009, a planning grant for up to \$370,163 from the USFWS, managed by the IDNR. The partners used this grant money to help fund the studies for this HCP, HCP writing and planning and implementing projects performed by regional partners to support HED conservation efforts. This grant program funded projects that focused on groundwater infiltration, stormwater BMPs and restoration to benefit HED habitat. By the end of September 2013, this grant program has funded \$260,733.

Summaries of the projects are listed below:

- Village of Homer Glen, \$18160: Restoration of Long Run Creek, which flows through Long Run Seep Nature Preserve. The project included three phases. First, a photographic and physical survey of the creek was completed. Second, creek blockages were removed using municipal employees, volunteers and community service groups. Third, a pilot planting program that will promote infiltration while reducing sedimentation and flooding was implemented. Homer Glen collaborated with the Long Run Creek Watershed Planning Committee on this project.
- Village of Lemont, \$31,743: Planning and retrofitting an existing sod-based stormwater detention pond. This grant funded the design, implementation and long-term stewardship of approximately 2.5 acres of naturalized detention in Bambrick Park. Previously turf, this basin was naturalized in the summer of 2010 and will be maintained by Pizzo and Associates for three years.
- Village of Romeoville, \$31,835: Redesigning an industrial area retention basin outflow structure adjacent to Romeoville Prairie. This project improved the outflow structure to prevent the frequent overflow of the basin. The water from this basin feeds Romeoville Prairie so the improvement allows for better regulation of flow and enhances water quality to the prairie.
- Lockport Township Park District, \$14,341: Creation and installation of an HED educational play-piece with educational signage in Brent Hassert Park. To support public education on the HED and preservation habits, the park is designing a dragonfly play piece that will be a constant reminder that the park was designed to help improve the HED habitat. The educational signage could include information on the BMPs used in the park, information on the HED and what people can do to help protect it.
- Forest Preserve District of Will County, \$18,117 (project managed by HMS): Groundwater studies for Lockport Prairie Nature Preserve. This study, suggested by representatives from the Illinois State Geologic Survey and USFWS, will enhance the models used in groundwater studies from the Lockport Prairie Nature Preserve to provide more accurate information on the hydrology of the area.
- Forest Preserve District of Will County, \$40,000: This project extended invasive species removal and control already initiated at Dellwood Prairie West onto Lockport Prairie East to begin the restoration and enhancement of these rare natural community remnants. The FPDWC hired contractors to remove invasive trees and shrubs across roughly 35 acres through cutting and burning to eliminate competition and allelopathic conditions for desirable native species, with follow up herbicide applications to suppress re-sprouts. Invasive and weedy herbaceous species were also treated with herbicides to allow native populations to re-colonize appropriate habitat areas.
- Lewis University, \$68,537: Collect rainwater from the roof of the Power House at Lewis University in Romeoville, Illinois. The system was designed and installed to collect approximately 200,000

gallons of water per year. This water will be used for irrigation and cooling tower make-up water. This project will reduce Lewis University's dependence on the aquifer by approximately 200,000 gallons per year. The aquifer's water level has been declining in recent years. This aquifer is vital to the natural habitat in and around the Romeoville area. It also serves the Lockport Prairie Nature Preserve, one of the few remaining habitats for the HED and other rare plant and insect species.

- Illinois Nature Preserves Commission (INPC), \$15,000: The INPC manages the Long Run Creek Nature Preserve, which contains rare and high quality dolomite prairie necessary to the survival of the HED. The Nature Preserve and the quality of the prairie is threatened by aggressive invasive species. The INPC has developed plans for eradicating the invasive threats and restoring and maintaining the pristine dolomite prairie. This grant funded this sensitive work in the 2013 season.
- Village of Lemont, \$18,000: The Village of Lemont is a coordinating partner in the development of the Long Run Creek Watershed Plan. The Watershed Plan requires a public education and outreach plan; the Village is using this grant to go above and beyond the federal requirements in this plan, to develop a strategic campaign and to implement a pilot project identified in the education plan. The pilot project will focus on homeowners in the watershed, and behavior changes they can make that will ultimately increase infiltration and support HED habitat needs.
- Lower Des Plaines Ecosystem Partnership (LDPED), \$5,000: The LDPEP is facilitating the development of the Long Run Creek Watershed Plan, which is funded by a Section 319 grant from the Environmental Protection Agency. The LDPEP was awarded \$5,000 to be used as pledged match money. The Watershed Plan is an important comprehensive plan for Long Run Creek, which supports significant HED habitat. The Watershed Plan will guide and encourage the local jurisdictions in the watershed to adopt practices and ordinances that protect the waterway and adjacent habitat.

The other program funded by this grant included an education and outreach program designed and implemented with Biodiversity Project. The major target audience for this public education and outreach program were homeowners, municipal staff and construction professionals in the Planning Area. The supporting partners in the recharge areas play an important role in maintaining the groundwater that feeds the HED larval habitat. The education and outreach program focused on actions that will help increase the amount of water infiltration in the recharge areas.

The homeowner outreach was performed primarily through direct, person-to-person conversations at public events attended by Biodiversity Project staff. The goal of the homeowner outreach was not just education on the species, but to also help citizens make behavior changes that would increase the water quality and recharge quantity from their homes with the understanding that clean, plentiful water is important for the dragonfly and the community at large. The direct homeowner outreach at events included an educational booth displayed at festivals, farmers markets and community events featuring:

- Three large displays showing the local area, habitat locations, information about the HED and actions homeowners can take to help.
- Brochures containing similar information about what people can do, including information on learning more about rain gardens, pesticide use and rain barrels.
- A craft project for kids to attract families to the booth and engage them while staff talked to the adults.
- A pin or magnet for people to take home with an HED illustration.

Additional public outreach included:

- Information for supporting project partners and municipalities to include on their websites and in municipal newsletters.
- Newspaper articles picked up by local papers about the re-grant program, the HED and prairie tours.

- Brochures distributed through supporting project partners and other organizations.
- Educational tours of Lockport Prairie Nature Preserve, led by biologists and FPDWC staff focusing on the endangered species and habitat.

Outreach to developers was primarily performed via a toolbox developed for supporting project partners and municipalities, which includes material they can distribute in their planning and permitting departments. The toolbox focuses on the BMPs identified by Applied Ecological Services, Inc. (AES) as the most beneficial in the recharge area (i.e., vegetated swales, buffer strips, naturalized detention, porous pavement, open spaces and native landscaping). The toolbox included:

- Case studies and factsheets of BMPs that are important for the recharge area.
- PowerPoint presentation on the HCP and HED.
- Communication recommendations about the HED, BMPs and recharge area.
- Online resources for additional information on BMPs.
- Image bank of covered species.
- Articles for municipal newsletters.

ComEd has also been involved with other public efforts in the area, including attendance and participation at many of the Lower Des Plaines Ecosystem Partnership meetings, and delivering two presentations with USFWS highlighting the HCP project. The Lower Des Plaines Ecosystem Partnership is a nonprofit organization that serves as an umbrella group that supports conservation efforts in the lower Des Plaines River watershed. ComEd also maintains a working relationship with the FPDWC.

The public has been engaged at various levels during the development of this HCP process with education and other outreach, such as public announcements of proposed activities in the Planning Area.

5.1.3 Calculation of Incidental Take

After evaluating planned activities and avoidance and minimization measures, ComEd identified potential direct and indirect impacts to the HED and its habitat. This section provides ComEd's anticipated take estimates for HED habitat. All estimates of larval and adult HED habitat acreages are based on the current HED habitat map derived from the most currently available GIS data (HED Critical Habitat Map, 2011). The location of HED habitat is shown on Figures 9.0-9.7, Appendix A and is categorized as follows:

- HED Larvae Occupied Rivulets – Rivulets that contain all HED Larval PCEs, have been sampled at least one time between 1996 and 2011, and have been documented as supporting HED larvae during one or more sampling events. Average width of rivulet channels is 1.0 foot; however, lateral movement of larvae outside of the rivulet channel is assumed to extend up to 1.6 feet on either side for a total occupied width of 4.2 feet.
- HED Larvae Habitat Areas – Larval habitat areas lack well defined rivulet channels, but are influenced by subsurface flow or upwelling. These areas contain all HED Larval PCEs, have been sampled at least one time between 1996 and 2011, and have been documented as supporting HED larvae during one or more sampling events.
- Unoccupied Rivulets – Rivulets that contain all HED Larval PCEs, have been sampled at least one time between 1996 and 2011, but have not yet been documented as supporting HED larvae.
- Historic HED Larvae Habitat Areas – Areas that contained all HED Larval PCEs at one time, and were documented as supporting HED larvae prior to 1996. These areas no longer contain all HED Larval PCEs, have been sampled one or more times between 1994 and 2011, but have not been documented as supporting larvae since 1996.
- HED Adult Habitat Areas – Adult habitat areas contain both of the HED Adult PCEs. The areas include all open wetland and adjacent open upland habitats within CHUs. Developed and hard-scape areas (i.e., roads, railroads, parking lots, industrial sites and fly ash fill) are excluded.

A description of the process used to determine and map HED habitat is located in Appendix B. A summary of HED habitat types and their respective acreages are shown in Table 5-1 below.

Table 5-1: HED Habitat Types and Acreages

Critical Habitat Unit	Parcel	Larval Habitat Name*	Occupied Larval Habitat (acres)	Adult Habitat (acres)	CHU Acreage	Historic Larval Habitat (acres)
CHU1	Lockport Prairie	2S	0.62	231.83	350.82	-
CHU1	Lockport Prairie	South of 2S	0.12	-	-	-
CHU1	Lockport Prairie	1 FS	0.03	-	-	-
CHU1	Lockport Prairie	2 FS	0.03	-	-	-
CHU1	Lockport Prairie	1S	0.35	-	-	-
CHU1	Lockport Prairie	1S Upper	0.38	-	-	-
CHU1	Lockport Prairie	2N	0.28	-	-	-
CHU 2	River South	South Meadow	none	222.29	439.36	0.47
CHU 2	Middle Parcel	Middle Parcel	none	-	-	1.56
CHU 2	River South	2.0, 2.5	0.49	-	-	-
CHU 2	River South	Emerald Meadow	0.11	-	-	-
CHU 2	River South	3.0	0.19	-	-	-
CHU 2	River South	5.0	0.13	-	-	-
CHU 2	River South	6.0	0.13	-	-	-
CHU 3	Romeoville Prairie	N/A	none	260.30	365.75	-
CHU 4	Keepataw	KS2T5 PLE	0.05	311.72	574.95	-
CHU 5	Waterfall Glen	N/A	none	202.54	293.18	-
CHU 6	McMahon Woods	McMahon Str 1	0.12	177.23	429.59	-
CHU 6	McMahon Woods	McMahon Str 2	0.08	-	-	-
CHU 7	ComEd Parcel	LPO	0.08	105.55	447.49	-
CHU 7	Long Run Seep	Long Run Seep Str	0.16	-	-	-
Total (acres)			3.36	1,511.46	2,901.13	2.03

*As designated by K. Mierzwa and D. Soluk in various sampling reports.

ComEd evaluated the potential impacts from work related to transmission and distribution structures that are adjacent to HED larvae occupied rivulets and HED larvae habitat areas (Figures 15.0-15.5, Appendix A).

Impacts to Larval Habitat

No direct take of individuals and no direct impacts to HED larval habitat are anticipated as a result of planned activities with the implementation of applicable AMMs. Direct impacts to HED will be avoided by completing planned activities from October 15 to April 15. It is anticipated that seep areas will not freeze. In these locations and in other wetland areas, ComEd will use matting to access structures, if necessary. ComEd will not use matting directly in HED larvae occupied rivulets or HED larvae habitat areas, but plans to build temporary bridges to cross over if needed.

In non-wetland areas, ComEd will access the transmission and distribution lines and equipment using pre-determined access paths shown on the internal-use maps prepared for ComEd employees and contractors who work in this area. Shrubs and trees will be cleared as needed in order to access structures. The overall impacts to HED larval habitat from planned work are negligible and avoidance will be practiced in an effort to minimize impacts to the maximum extent practical. Impacts from unplanned activities will be addressed further in the Changed Circumstances section of this HCP (Chapter 8).

Impacts to Wetlands (outside of HED larvae occupied rivulets and HED larvae habitat areas) ComEd has calculated the total acreage of potential wetland impacts (temporary and permanent) if all structures in the Permit Area are hypothetically replaced under a normal replacement schedule during the permit period. This would include pole, H-frame or tower footing replacement (permanent impacts) and associated impacts from matting (temporary impacts). ComEd does not anticipate replacing any of the steel monopoles located within the Permit Area during the life of the permit. ComEd anticipates that a maximum of 0.094 acre of permanent wetland impact and 46.58 acres of temporary wetland impact would potentially occur if all 346 structures (125 distribution poles and 221 transmission structures) that are located in wetlands are replaced in kind. None of these impacts will take place within HED Larvae Occupied Rivulets or HED Larvae Habitat Areas.

Temporary wetland impacts were calculated based on the matting needed for the work area and access paths (see Table 5-2 below). Permanent wetland impacts were calculated based on the footprint of the structure to be replaced in kind (see Table 5-2 below). Calculations were based on wetland delineations conducted between 2008 and 2012.

Table 5-2: Calculation of Wetland Impacts

Type of Structure	Permanent Wetland Impact Per Structure (square feet)	Temporary Wetland Impact Per Structure (square feet)	# of Structures	Total Permanent Wetland Impact (acres)	Total Temporary Wetland Impact (acres)
Distribution Pole	2	1,200 ¹	125	0.006	3.44
Transmission H-Frame	3	3,375 ²	26	0.002	2.01
Transmission Tower	21	10,000 ³	177	0.085	40.63
Transmission Pole	2	1,200 ⁴	18	0.001	0.50
Total			346	0.094 acres	46.58 acres

¹ Distribution pole work area (matting footprint): 30' x 40' = 1,200 square feet

² Transmission H-frame work area (matting footprint): 45' x 75' = 3,375 square feet

³ Transmission tower work area (matting footprint): 100' x 100' = 10,000 square feet

⁴ Transmission pole work area (matting footprint): 30' x 40' = 1,200 square feet

5.1.4 Impact of Take

All HED habitat sites are found in the lower Des Plaines River valley and all are within or adjacent to the seven designated CHUs (USFWS 2007 and 2010). Based on current HED habitat mapping (Figures 9.0-9.7, Appendix A), this HCP estimates that there are 1,511 acres of adult HED habitat, 3.36 acres of larval HED habitat (includes HED larval occupied rivulets and HED larvae occupied areas) and 2.03 acres of historic larval habitat (Table 5-1). Numerous surveys of adults and larvae have been completed at many of the known habitat locations. Population estimates based on these studies vary widely from year to year and from site to site. The most recent estimate of the adult and larval populations within the river valley, based on a review of nearly all HED studies completed in Illinois, is 165 adults and 2,063 larvae (Soluk and Mierzwa 2012).

This section describes ComEd’s potential impact of take on adult HED and HED larval population. No direct take of individuals is requested for ComEd’s planned work. However, ComEd is seeking coverage for indirect take and also changed and unforeseen circumstances (Chapter 8).

ComEd has proposed conservation measures, which would avoid and minimize potential take. Despite the extensive avoidance and minimization measures that ComEd has taken to reduce potential impacts, proposed work may result in temporary habitat disturbance that may affect a small, immeasurable number of larvae which is not significant to the overall population. Indirect impact to individuals may occur from temporary disturbance of habitat or the hydrologic cycle, removal of vegetation, sedimentation and herbicide/pesticide use. This taking (assuming it is infrequent and accidental) will not appreciably reduce the likelihood of the survival and recovery of the species.

Individual Level

As a result of the above-referenced activities, HED individuals may experience impacts that range from temporary behavioral adjustments to direct mortality. As outlined in Section 5.1.2, ComEd has implemented avoidance and minimization measures (including restricting work and access in HED larvae occupied rivulets and HED larvae habitat areas) to reduce the likelihood of any mortality occurring.

ComEd anticipates take in the form of mortality, harm and harassment which may occur within wetlands as described in Section 5.1.3 above (permanent impacts to approximately 0.09 acre of wetland and temporary impacts to 46.58 acres of wetland). Acts causing mortality, harm and harassment are acts which actually kill or injure fish or wildlife, or significantly modify or degrade habitat that significantly impairs essential behavioral patterns of fish or wildlife. None of these impacts will take place directly within HED larvae occupied rivulets or HED larvae habitat areas, but work in areas adjacent to these sensitive areas may have potential indirect effects on individual HED larvae. The amount of temporary wetland impact (outside of HED larvae occupied rivulets and HED larvae habitat areas) that may occur if all structures were replaced in kind is approximately 8% of the wetland habitat currently located within the 7 CHUs. The amount of permanent wetland impact (outside of HED larvae occupied rivulets and HED larvae habitat areas) that may occur if all structures were replaced in kind is less than 1% of the wetland habitat currently located within the 7 CHUs. Indirect impacts to HED and their habitat due to sedimentation, removal of vegetation, disruption of the hydrologic cycle and herbicide/pesticide application could result in minor, short term effects at the population level. Despite this, a low, but immeasurable amount of take in the form of mortality, harm and harassment can be expected to occur to individuals.

ComEd's vegetation management program includes treating invasive woody plant species with herbicide, which should decrease the frequency for which vegetation management would need to be performed, thus decreasing the frequency and need for ComEd to enter and work in the CHUs. Since much of the control will be invasive woody species, ComEd's vegetation management should lead to long term maintenance or improvement of HED habitat. Due to the short term nature of the work, long-term effects to individuals are not anticipated to occur. In addition, potential impacts to individuals will be greatly reduced (and eventually eliminated) if ComEd is able to remove all, or a portion of, the transmission and distribution lines and associated structures that are located in CHUs 1 and 2.

Population-Level

As described above, there is a slight chance that individual HED larvae may be harmed indirectly as a result of ComEd's activities. For the viability of the species, it is important to know how these potentially adverse effects to individual HED affect the overall health and viability of the population in the lower Des Plaines River valley (IL population of the Southern Recovery Unit). ComEd's Permit Area includes all 7 CHUs, with potential larval HED impacts occurring in CHUs 1 and 2 (Lockport Prairie and River South, two HED habitat areas with the largest estimated populations in Illinois, which account for approximately 88% of the Illinois population).

HED habitat (adult and larval) is found in or near/adjacent to seven federally designated CHUs located in the lower Des Plaines River valley (USFWS 2005, 2007, and 2010, Figure 9, Appendix A). Based on existing vegetation mapping and aerial photo interpretation (protocol can be found in Appendix B), approximately 1,511 acres of adult HED habitat has been mapped within the Planning Area (Figure 9, Appendix A and Table 5-41). Based on field work and data collected by Ken Mierzwa and Dan Soluk, approximately 3.36 acres of HED occupied larval habitat has been mapped within the Planning Area (Figure 9, Appendix A and Table 5-41). There have been numerous surveys of adults and larvae performed at a number of these known habitat locations (Soluk and Mierzwa 2012). Population estimates based on these studies vary widely from year to year and from site to site. The best current estimate of adult and larval population within the lower Des Plaines River valley is 165 adults and 2,063 larvae (Soluk and Mierzwa 2012).

However, ComEd has agreed to avoid potential population-level effects by:

1. Limiting proposed planned work to the winter months (October 15 – April 15);
2. Implementing avoidance and minimization measures (Section 5.1.2); and

3. Avoiding access and work in HED larvae occupied rivulets or HED larvae habitat areas (with the exception of building temporary bridges to span the rivulets if needed).

ComEd does not expect the adverse effects to individual HED will affect the overall health and viability of the HED population within the lower Des Plaines River valley. Since the project will not significantly impact the Illinois population, we believe there will not be any impacts range wide to HED populations in other states.

Genetic-Level Implications

As discussed above, ComEd does not expect impacts to the overall health and viability of the HED population in the lower Des Plaines River valley from planned activities.

Genetic studies of the HED have revealed that the Illinois population is the most genetically diverse of all HED populations (Purdue et al. 1996). There are 7 known haplotypes of HED, 6 of which occur in Illinois (i.e., the lower Des Plaines River valley), and 3 of these are found in subpopulations in Lockport Prairie and HMS' River South Parcel. Preliminary results from more recent studies also indicate that the Illinois population is more genetically diverse than the Wisconsin population. Soluk et al. (2010) found that the Illinois population has a greater number of alleles per locus and higher heterozygosity values than the Wisconsin population. They note that this is remarkable because the Illinois population is estimated to be much smaller (possibly by an order of magnitude) than the Wisconsin population. They suggest that this indicates that adults in the Illinois population are moving among sites to breed which contributes to maintaining high genetic diversity. This is consistent with the USFWS' description in the Biological Opinion for the I-355 South Extension of the Illinois population functioning as a single metapopulation distributed among various sites in the lower Des Plaines River valley (USFWS 2005). A recent genetic study looking at 10 microsatellite loci also confirmed that the Illinois population is one genetic population (Soluk et al. 2011). This study also revealed that the genetic diversity (i.e., heterozygosity) of all sampled HED populations was low compared to other odonates, but that most of the diversity is contained within each population.

These studies reveal the importance of maintaining connectivity between habitat sites in preserving the genetic diversity of the Illinois population. Indirect impacts (sedimentation, removal of vegetation, disruption of the hydrologic cycle) to larval habitat in HMS' River South Parcel and Lockport Prairie Nature Preserve could reduce breeding in those parcels. This could result in a reduced population, lower genetic diversity and reduced fitness of the remaining population. However, it has been shown in the previous sections of the HCP that ComEd's planned work will not adversely affect HED individuals or the HED population. In addition, management of the ComEd ROW, in combination with removing the electrical lines and equipment from CHUs 1 and 2, will maintain connectivity (i.e., movement and dispersal corridors) for adults, ultimately providing them a means to travel between feeding and breeding areas. In the long run, ComEd's vegetation management work will preserve genetic diversity in the lower Des Plaines River valley. Due to this, ComEd concludes that the proposed impacts from covered activities do not pose a significant genetic risk to the HED.

5.1.5 Effects on Critical Habitat

Critical habitat was designated for HED in September 2007 (and revised in April 2010) (USFWS 2007 & 2010). Seven CHUs were designated in Illinois, all in or near the lower Des Plaines River valley and all included in the Planning Area (Figure 1, Appendix A) (USFWS 2007, 2010). In determining which areas to designate as critical habitat, the USFWS identified Primary Constituent Elements (PCEs) which they determined are necessary to meet the biological needs of the species. PCEs are those physical and biological features that are essential to the conservation of the species, and within areas occupied by the species at the time of listing, that may require special management considerations and protection. To be designated critical habitat for the HED, an area must contain sufficient PCEs to support a least one life history function. Seven PCEs were identified for HED habitat: 5 for larval habitat and 2 for adult habitat. These are listed below:

For egg deposition and larval growth and development (larval habitat):

1. Organic soils (histosols, or with organic surface horizon) overlying calcareous substrate (predominantly dolomite and limestone bedrock);

2. Calcareous water from intermittent seeps and springs and associated shallow, small, slow flowing streamlet channels, rivulets, and/or sheet flow within fens;
3. Emergent herbaceous and woody vegetation for emergence facilitation and refugia;
4. Occupied burrows maintained by crayfish for refugia; and
5. Prey base of aquatic macroinvertebrates, including mayflies, aquatic isopods, caddisflies, midge larvae, and aquatic worms.

For adult foraging, reproduction, dispersal and refugia necessary for roosting, resting, escape from male harassment and predator avoidance (especially during the vulnerable teneral stage) (adult habitat):

6. Natural plant communities near the breeding/larval habitat which may include fen, marsh, sedge meadow, dolomite prairie and the fringe (up to 328 feet (100m)) of bordering shrubby and forested areas with open corridors for movement and dispersal; and
7. Prey base of small, flying insect species (i.e., dipterans such as flies, mosquitoes and gnats).

The following statements from USFWS regarding the designation of critical habitat were taken into consideration in determining potential effects on critical habitat from ComEd's activities:

To the greatest extent possible, we avoided including developed areas containing buildings, rail lines, electrical substations, and other urban infrastructure within critical habitat units. Where we have not been able to map out these structures we have excluded them by text. As stated in this rule, critical habitat does not include human-made structures existing on the effective date of a final rule not containing one or more of the primary constituent elements (see definition of "primary constituent elements" in subsequent section). Therefore, manmade structures including utility poles, power lines, rail lines, and the generating station are not included in the critical habitat designation (21398 Federal Register / Vol. 75, No. 78 / Friday, April 23, 2010 / Rules and Regulations).

When determining critical habitat boundaries, we made every effort to avoid including developed areas such as buildings, paved areas, and other structures and features that lack the PCEs for the species. The scale of the maps we have prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of all such developed areas. Any such structures and the land under them inadvertently left inside critical habitat boundaries shown on the maps of this final rule are excluded from this rule by text and are not designated as critical habitat. Therefore, Federal actions limited to these areas would not trigger section 7 consultation under the Act, unless they affect the species or PCEs in critical habitat (Federal Register /Vol. 75, No. 78 / Friday, April 23, 2010 /Rules and Regulations 21409).

The following section identifies each PCE and includes a discussion on whether it exists in the Permit Area, how it will be impacted, how impacts will be avoided and minimized and how impacts will be mitigated.

Larval Habitat PCE

1. Organic soils (histosols, or with organic surface horizon) overlying calcareous substrate (predominantly dolomite and limestone bedrock):

Organic soils overlying calcareous substrate are present in all 7 CHUs and within the Permit Area. Organic soils located outside of larval habitat may be removed for replacement and/or installation of a new structure. The amount of organic soil removed for replacement and/or installation of a new structure ranges from 2 square feet to 21 square feet (see Table 5-2). Any bare soils in wetlands resulting from ComEd activities will be monitored (as required by a USACE permit) and reseeded if necessary. Any removed soil will be replaced if possible. Since planned work will be completed during the winter months (October 15 – April 15) any temporary impacts will remain for one growing season. There will be negligible long-term effects since the area of

soil removal is less than 21 square feet per structure and any disturbed areas will revegetate within one growing season.

2. Calcareous water from intermittent seeps and springs and associated shallow, small, slow flowing streamlet channels, rivulets and/or sheet flow within fens:

This PCE is present within all CHUs, but is only present within the Permit Area for CHUs 1 and 2. Within CHU 1, seeps are located along the western edge of the wetland north and south of Division Street within Lockport Prairie Nature Preserve. These seeps form into known larval habitat as the water flows to the east. Rivulets are present at the eastern edge of the ComEd ROW. The origin of water in the wetland appears to be from seeps and storm events. Near Caton Farm Road there are no seeps or springs and the origin of water is from storm events and stream flow. The wetlands may be seasonally inundated.

Within CHU 2, 4 rivulet systems with regular flow are present. Groundwater seeps located west of the railroad tracks supply most of the water to these rivulets (through culverts or seeping through the ballast). Some groundwater may also discharge east of the tracks and contribute water to these rivulets or other larval habitat areas (i.e., Emerald Meadow) (AECOM 2009; Gary Braun pers. comm. 2011).

ComEd's proposed work is not located within HED larvae occupied rivulets or HED larvae habitat areas (with the exception of building temporary bridges to span the rivulets if needed). Therefore, there will be no short-term or long-term effects because all seeps and rivulets will be avoided.

3. Emergent herbaceous and woody vegetation for emergence facilitation and refugia:

Emergent herbaceous and woody vegetation is present in all CHUs and within the Permit Area. The Permit Area consists of a mosaic of upland and wetland communities, including fen, marsh, sedge meadow and dolomite prairie. Emergent vegetation consists mainly of cattails and reed-canary grass. Woody vegetation in the adjacent uplands is dominated by buckthorn and cottonwood with some hackberry and cherry. Woody vegetation will be removed as necessary to maintain reliability of the electrical lines. Emergent herbaceous vegetation located outside of larval habitat may be temporarily compressed by the use of matting. In addition, emergent herbaceous vegetation located outside of HED larvae occupied rivulets and HED larvae habitat areas may be removed for the replacement/installation of structures.

Herbaceous vegetation that is compressed from the use of matting is expected to recover within one growing season. Any bare soils in wetlands resulting from ComEd activities will be monitored (as required by a USACE permit) and reseeded if necessary. Since the work will be completed during the winter months (October 15 – April 15) any short-term impact will remain for one growing season. There will be negligible long-term effects since the area will revegetate within one growing season.

4. Occupied burrows maintained by crayfish for refugia:

Occupied crayfish burrows are present in all CHUs, but are only present within the Permit Area for CHUs 1 and 2. Occupied crayfish burrows were found in CHUs 1 and 2 during larval sampling performed over the last 17 years (Soluk and Mierzwa 2012). Occupied burrows may be indirectly impacted through potential sedimentation from the use of matting in upstream areas to access structures for line maintenance or structure replacement/removal, but is unlikely. Due to the sensitive nature of CHUs 1 and 2, ComEd currently only performs the minimal amount of vegetation removal necessary to maintain reliability of the electrical lines. These areas are accessed on foot and vegetation cut by hand (matting is not used), thereby reducing any potential sedimentation to larval habitat areas. Negligible short-term effects are anticipated due to the timing of the proposed work (October 15 – April 15). While the ground never completely freezes in areas where there is groundwater, burrows will be closed providing for an opportunity to minimize sedimentation to the burrow systems.

5. Prey base of aquatic macroinvertebrates, including mayflies, aquatic isopods, caddisflies, midge larvae and aquatic worms:

Aquatic macroinvertebrates are very likely present on-site within all CHUs and the Permit Area in areas that contain regular surface water during the growing season (i.e., ponds and emergent areas). No study has been performed specifically to detect the presence of these organisms, although incidental captures have been noted (Mierzwa and Webb 2009). The prey base of aquatic macroinvertebrates may be impacted through sedimentation from the use of matting to access structures for line maintenance or structure replacement/removal. Short-term and long-term effects will be minimal as there is sufficient acreage of emergent marsh that will remain such that the population of potential prey base will be unaffected.

Adult Habitat PCE

1. Natural plant communities near the breeding/larval habitat which may include fen, marsh, sedge meadow, dolomite prairie, and the fringe (up to 328 feet (100 meters)) of bordering shrubby and forested areas with open corridors for movement and dispersal:

This PCE is present within all CHUs and the Permit Area. The Permit Area consists of a mosaic of upland and wetland communities, including fen, marsh, sedge meadow and dolomite prairie. Emergent vegetation consists mainly of cattails and reed-canary grass. Woody vegetation in the adjacent uplands is dominated by buckthorn and cottonwood with some hackberry and cherry. Woody vegetation will be removed as necessary for reliability of the electrical lines. Emergent herbaceous vegetation may be temporarily compressed from the use of matting. In addition, emergent herbaceous vegetation may be removed for the replacement/installation of structures. Vegetation that is compressed from the use of matting is expected to recover within one growing season. Any bare soils in wetlands resulting from ComEd activities will be monitored (as required by a USACE permit) and reseeded if necessary. Since the work will be completed during the winter months (October 15 – April 15) any short-term impacts will remain for one growing season. Long-term effects of herbaceous vegetation removal will be negligible since the area will revegetate within one growing season. Woody vegetation that is removed will no longer provide refugia for adults. The effect on adult habitat is negligible due to the small amount of ComEd ROW compared to the entire potential adult habitat area in the lower Des Plaines River valley.

2. Prey base of small, flying insect species (i.e., dipterans)

Flying insects are very likely present on-site within all CHUs and the Permit Area. No short-term or long-term effects are anticipated as the population of flying insects will not be negatively impacted by ComEd actions.

ComEd's ROW and easements total 549 acres (18%) of the 2,901 acre Planning Area. Table 5-3 below illustrates the amount of critical habitat that would be temporarily and permanently disturbed if all 481 structures were replaced during the permit term. The total temporary land disturbance would be less than 0.01% of the total CHU area (0.13 acres/2,901 acres) and the total permanent land disturbance would be approximately 2% of the total CHU area (66.61 acres/2,901 acres). The impact on PCE's from ComEd's activities is negligible since all temporarily disturbed areas will be restored.

Table 5-3: Calculation of Critical Habitat Unit Impacts

Type of Structure	Permanent Land Disturbance per Structure ¹ (square feet)	Temporary Land Disturbance per structure (square feet)	# of Structures	Total Permanent Land Disturbance (acres)	Total Temporary Land Disturbance (acres)
Distribution Pole (1-18" wood pole)	2	1,200	170	0.008	4.68
Transmission H-Frame (2-18" wood poles)	3	3,375	37	0.003	2.87
Transmission Tower (4-2.5' concrete foundations)	21	10,000	255	0.12	58.54
Transmission Wood Pole (1-18" wood pole)	2	1,200	19	0.0009	0.52
		Total	481	0.13 acres	66.61 acres

¹ Area = $r^2 \times 3.14$

5.1.6 Compensatory Mitigation

HED mitigation activities are based on restoration of specific permanent and temporary wetland impacts associated with ComEd operational activities. Impacts will be avoided by evaluating all access routes to structures located within the Permit Area prior to the commencement of work. In the event that hydrologic changes have occurred within the habitat, a change of route may be required before matting can be installed. ComEd proposes the following mitigation:

Restoration of Disturbed Areas

- ComEd will document pre-construction wetland conditions within CHUs 1 and 2 by a wetland biologist.
- Hydrologic conditions and vegetation within the access and work areas within CHUs 1 and 2 will be evaluated post construction by a wetland biologist for disturbance.
- Soil disturbances that would require repair include rutting and/or a change in hydrologic flow from pre-construction conditions.
- Disturbed wetland areas with bare soils will be restored with seed mix and erosion control blanket (as required by a USACE permit).

In addition to restoring temporary wetland impacts, ComEd is committed to conducting woody vegetation management along the entire ComEd ROW (unless electrical lines and equipment are removed or the ROW is vacated). Management of the ComEd ROW will maintain a movement and dispersal corridor for adults, ultimately providing them a means to travel between feeding and breeding areas. Without this management, the corridor may become dominated by invasive weedy woody vegetation and no longer provide refugia for adult HED. ComEd has been implementing these mitigation measures since 2009.

Measures of Success

ComEd's measures of success will be mainly focused on avoidance and minimization of temporary impacts to HED larval habit from planned work. Standard Operating Procedures (SOP) will be amended and updated throughout the permit period as needed and will be a form of adaptive management.

Long-Term Commitment

ComEd is committed to fulfilling their obligations to this HCP. During the ITP period (two 20-year permits) ComEd proposes to:

- Complete restoration activities as proposed for areas disturbed during planned work.
- Work with third parties if prescribed burn is proposed on adjacent properties. ComEd may opt to conduct burns on their properties with a qualified contractor.
- Evaluate annually and manage woody vegetation on a five-year cycle as part of the vegetation management required for the ROW, including follow-up herbicide applications as allowed by USFWS.
- Complete wetland delineations every five years to assess the size, quality and locations of wetland areas within ComEd ROW and easements in the Permit Area.
- Participate in meetings with adjacent landowners and agencies during the facilitation of the HCP.
- Coordinate efforts with managers of parcels adjacent to ComEd ROW.
- Maintain signage in the field.
- Maintain the most current electronic data in various internal mapping systems.

Benefits of ComEd Mitigation

For the HED, improvement of wetland habitat through the reduction or removal of weedy woody vegetation will likely improve hydrology for adjacent larval habitat and improve adult HED foraging habitat. Management of the ComEd ROW will maintain a movement and dispersal corridor for adults, ultimately providing them a means to travel between feeding and breeding areas. Long-term woody vegetation management will provide long-term habitat for this species.

Education and Outreach Program

ComEd has also been involved with other public efforts in the area, including attendance and participation at many of the Lower Des Plaines Ecosystem Partnership meetings, and delivering two presentations with USFWS highlighting the HCP project. The Lower Des Plaines Ecosystem Partnership is a nonprofit organization that serves as an umbrella group that supports conservation efforts in the lower Des Plaines River watershed.

The public has been engaged at various levels during the development of this HCP process with education and other outreach, such as public announcements of proposed activities in the Planning Area. The USFWS and ComEd will continue to foster the public's participation during the implementation phases of this HCP (and future HCPs) to maintain the public's support and trust.

5.2 Blanding's and Spotted Turtles

5.2.1 Activities and Impact Analysis

As previously outlined in Section 5.1, ComEd is seeking permit coverage for activities associated with structures and power lines located within CHUs 1-7. No direct impacts to Blanding's or spotted turtles are proposed as a result of planned activities (described in Section 3.2) with the implementation of applicable avoidance and minimization measures. However, temporary impacts to turtle habitat (wetlands) may occur and would require restoration and monitoring.

5.2.2 Measures to Avoid and Minimize Impacts

Blanding's and spotted turtles are known to occur in ComEd ROW associated with CHUs 1 – 7 (Figures 10 and 11, Appendix A). ComEd's approach to turtle protection is avoidance. Avoidance of live individual turtles will be important to maintain reproductive age turtle populations. Blanding's turtles are known to be active from March 15 to October 15 in the Midwest (WDNR 2013). In addition to the AMMs discussed in Section 5.1.2, the following growing and dormant season conservation approaches are proposed based on the known activity period of the turtles. The following avoidance and minimization measures will occur between March 15 and October 15:

1. ComEd field personnel (or their contractor) will conduct a comprehensive search for Blanding's turtles and spotted turtles prior to matting placement for operational activities (i.e., repair or replacement of towers, poles, transformers and/or lines in wetlands).

2. Daily inspections will be performed throughout the construction period. Trenches and excavations will be routinely inspected throughout the day to ensure no turtles have become trapped within them. Trenches will be checked prior to being backfilled, covered at the end of each work day and returned to the original grade when the work is completed. Searches for turtles will not be performed if the ground is frozen.
3. Searches shall consist of an initial visual encounter survey to be conducted in the immediate area of mat placement 24 hours prior to the start of work, and again immediately before the matting is placed. Daily searches shall consist of visual and hand searching in the wetland vegetation in the work area and the area immediately surrounding the work area. ComEd staff and/or contractors shall be trained to search for and identify Blanding's and spotted turtles. If a turtle is encountered, work shall stop immediately in the area and the appropriate Forest Preserve District and IDNR shall be notified. ComEd staff and their contractors are not authorized to come into contact with, or relocate turtles.
4. Where applicable, ComEd will install silt fence around the work area to reduce the likelihood of turtle entry. Fencing will be embedded 4-6 inches into the ground to prevent burrowing.
5. ComEd will properly maintain vehicles, check for leaks at the start of each work day and repair leaks if needed before using the vehicle in the CHUs. Contractors will carry absorbent materials with their equipment or have them accessible at the site to contain spills if they occur.
6. ComEd will train field staff and contractors to identify Blanding's turtles and spotted turtles to avoid spraying them with herbicide and hitting them with a vehicle.
7. ComEd will avoid using ATVs in marsh areas except in areas dominated by *Phragmites* or dense cattail.
8. All vehicles will be parked on designated access routes.
9. All vehicle drivers will restrict their speed to 8 mph and will conduct visual surveys for turtles while driving.

5.2.3 Calculation of Incidental Take

ComEd anticipates that a maximum of 0.09 acres of permanent wetland impact and 46.58 acres of temporary wetland impact will potentially occur if all 346 structures (125 distribution poles and 221 transmission structures) that are located in wetlands are replaced in kind. These wetland impacts will occur within potential turtle habitat. ComEd does not believe there will be any direct turtle impacts from the use of matting for access and work areas because turtle searches will be performed before mat installation, with capture and relocation of turtles to suitable habitat. No direct take of individuals is proposed for ComEd's planned work. In addition, given the proposed conservation measures, any potential take would be minimal and difficult to detect. However, low levels of potential take may result from operator error (addressed in Chapter 8) or indirect impacts (discussed below).

5.2.4 Impact of Take

Despite the extensive AMMs that ComEd has taken to reduce the potential impact from operator error and indirect impacts, proposed work may result in temporary habitat disturbance that may affect a small, immeasurable amount of turtles which is not significant to the overall population. Indirect impact to individuals may occur from temporary disturbance of habitat or the hydrologic cycle, vegetation removal and sedimentation. This taking will not appreciably reduce the likelihood of the survival and recovery of the species.

5.2.5 Compensatory Mitigation

The Blanding's and spotted turtles will benefit from restoration activities by living in more diverse communities that may offer more opportunities for prey and food items and potentially easier access to nesting areas. ComEd's turtle AMMs with searches prior to structure work are intended to save adult turtles to maintain the breeding population. In the event take occurs, ComEd will make a financial contribution to the Illinois Wildlife Preservation Fund (allocated specifically for Blanding's turtle research and recovery) or a direct financial contribution to an established Blanding's turtle captive rearing program

(approved by the IDNR). The amount of the financial contribution will be agreed upon by both ComEd and the IDNR and will be commensurate with the amount of take that has occurred.

5.3 Other Covered Species

5.3.1 Other Covered Species Activities and Impact Analysis

Leafy prairie clover

Leafy Prairie Clover populations are known to exist within the immediate vicinity of several ComEd structures within Romeoville Prairie (CHU 3) and HMS' "ComEd" Parcel (CHU 7). ComEd intends to avoid leafy prairie clover to the extent possible. Planned work in the fall through winter is anticipated to have no impact on the species.

Lakeside Daisy

The two known lakeside daisy sites in Will County are located in Lockport Prairie Nature Preserve (CHU 1) and Romeoville Prairie Nature Preserve (CHU 3). ComEd intends to avoid lakeside daisy to the extent possible. Planned work in the fall through winter is anticipated to have no impact on the species.

Black-billed Cuckoo

The Illinois Natural Heritage Database has an element occurrence record in southern DuPage County near CHU 5, and the IDNR has mapped suitable habitat in the area associated with the element occurrence. ComEd intends to avoid the black-billed cuckoo to the extent possible. Planned work in the late fall through winter is anticipated to have no impact on the species as they typically overwinter in South America.

5.3.2 Other Covered Species Measures to Avoid and Minimize Impacts

Leafy Prairie Clover

Planned work in the fall through winter is anticipated to have no impact on the species. Potential impacts during the growing season will be managed by avoiding the area when the plants are known to bloom and pre-determining access routes that will be clearly marked with the assistance of FPDWC and HMS to avoid leafy prairie clover around four transmission towers located at Romeoville Prairie Nature Preserve (CHU 3) and 1 distribution pole located at HMS' "ComEd" Parcel easement (CHU 7). Matting will be used around structures where leafy prairie clover is known at any time work is performed during growing or dormant seasons to reduce the chance of damages caused by vehicle access in wet conditions.

Lakeside Daisy

Planned work in the fall through winter is anticipated to have no impact on the species. Potential impacts during the growing season will be managed by avoiding the area when the plants are known to bloom and pre-determining access routes that will be clearly marked with the assistance of FPDWC. Matting will be used around structures where lakeside daisy is known at any time work is performed during growing or dormant seasons to reduce the chance of damages caused by vehicle access in wet conditions.

Black-billed Cuckoo

ComEd intends to avoid the black-billed cuckoo to the extent possible. Planned work in the late fall through winter is anticipated to have no impact on the species as the birds typically overwinter in South America.

ComEd understands that the presence and operation of energized electrical equipment may cause bird injuries and mortalities, which can cause service interruptions and outages, violations of bird protection laws, damage to property by fires, or raise concerns by our employees, resource agencies, and public stakeholders. As such, ComEd has implemented an Avian Protection Plan (APP).

ComEd's commitment to avian protection and management is intended to ensure compliance with legal requirements, while improving system reliability. ComEd management, employees, and contractors are responsible for managing bird interactions with power lines and substations, and are committed to reducing the potentially detrimental effects of these interactions.

To fulfill this commitment, ComEd will in the course of normal operations:

- Implement and comply with its Avian Protection Plan;
- Ensure its actions comply with applicable laws, regulations, permits, and APP procedures;
- Document bird mortalities, problem equipment, and problem nests;
- Provide information, resources, and training to improve employee and contractor knowledge and awareness of ComEd's APP;
- Where practicable, review, design, and approve retrofits or modifications to structures and lines where bird interactions have been documented in an effort to minimize future bird impacts and improve system reliability; and
- Participate with public and private organizations in programs and research to reduce detrimental effects of bird interactions with power transmission and distribution systems.

By implementing the APP, ComEd customer service, delivery reliability, and regulatory compliance will be enhanced, while reducing risk to migratory birds through proactive and innovative solutions to bird/power facility interactions.

5.3.3 Other Covered Species Calculation of Incidental Take

No take is anticipated for the leafy prairie clover, lakeside daisy or black-billed cuckoo as a result of ComEd's planned activities with the implementation of AMMs as outlined in Section 5.3.2.

5.3.4 Other Covered Species Impact of Take

No take is anticipated for the leafy prairie clover, lakeside daisy or black-billed cuckoo as a result of ComEd's planned activities with the implementation of AMMs as outlined in Section 5.3.2.

6 MONITORING, REPORTING AND ADAPTIVE MANAGEMENT

The USFWS's implementing regulations require ComEd to monitor, report and assess the impacts of the take of covered species that will result from covered activities over the term of the ITP. This chapter describes the monitoring, reporting and adaptive management components of this HCP.

The goal of the monitoring and reporting is to provide a reliable basis for documenting compliance and implementation of the HCP and ITP throughout the permit term. ComEd and the USFWS will also be able to assess the need for implementation of adaptive management measures to improve the HCP's conservation strategy.

6.1 General Requirements

An HCP must describe the steps that an applicant will take to monitor the impacts of the covered activities on the covered species (50 C.F.R. 17.22 (b)(1)(iii)(B) and 17.32(b)(1)(iii)(C)(2)). The USFWS's Five-Point Policy provides that the monitoring program of an HCP include information to:

1. Evaluate compliance;
2. Determine if the biological goals and objectives are being met; and
3. Provide feedback information for an adaptive management strategy, if one is used.

6.2 Monitoring

ComEd will implement a monitoring program in order to determine if the biological goals and objectives of this plan are being met. The following is the list of biological objectives outlined in Section 1.2 and the proposed monitoring activity.

1. Implement avoidance and minimization measures to prevent take of species and impact to their habitat.
 - a. Perform periodic audits by a biologist for work performed in CHUs 1 and 2 (excluding inspections conducted by foot and helicopter use). Review audits annually.
 - b. Conduct turtle searches prior to, and during, installation and removal of matting and silt fence.
 - c. Document pre-construction wetland conditions within CHUs 1 and 2 by a wetland biologist.
 - d. Evaluate hydrologic conditions and vegetation within the access and work areas within CHUs 1 and 2 post construction by a wetland biologist for disturbance.
 - e. Monitor changes in habitats by performing wetland delineations every five years on ComEd property.
 - f. Maintain signage in the field.
 - g. Maintain the most current electronic data in various internal mapping systems.
2. Work cooperatively with adjacent landowners and regulatory agencies.
 - a. Participate in meetings with adjacent landowners and agencies during the facilitation of the HCP.
3. Implement a Standard Operating Procedure to ensure compliance with federal, state and local regulations and ordinances to avoid and minimize impacts to federal and state listed (threatened and endangered) species and critical habitat.
 - a. Review Standard Operating Procedure annually and revise as necessary.

4. Restore disturbed areas post construction to pre-construction conditions.
 - a. Monitor restored areas as required by a USACE permit.
5. Control erosion and sedimentation from planned work (where appropriate).
 - a. Inspect AMMs (i.e., silt fences) during construction to ensure that they are properly installed.
6. Control woody invasive plant species where necessary to maintain reliability for providing electrical service.
 - a. Manage woody vegetation on a five-year cycle as part of the vegetation management required for the ROW, including follow-up herbicide applications as allowed by USFWS. Review cycle annually.
 - b. Provide 2-week notification to USFWS when herbiciding within CHUs.

6.3 Reports

ComEd will file an annual report with the USFWS for the previous calendar year by April 15th that will provide a description of activities covered under the HCP.

The report will include information on the following areas:

1. Brief summary or list of covered activities accomplished during the reporting year (does not include routine inspections conducted on foot, mowing or helicopter use);
2. Annual acreage of land disturbed;
3. Pre-construction documentation, when needed, for covered species;
4. AMMs implemented including the frequency, type and description, if needed;
5. Summary of inspections/audits conducted;
6. Summary of wetland delineations conducted;
7. Summary of woody vegetation management;
8. Summary of meetings held with adjacent landowners and/or regulatory agencies;
9. Summary of Standard Operating Procedure annual review;
10. Take calculation for each species;
11. Summary of restored areas;
12. Description of circumstances that made adaptive management necessary and how they were dealt with;
13. Description of any changed or unforeseen circumstances that occurred and how they were dealt with;
14. Description of any minor or major amendments.

6.4 Prior Notification

As part of ComEd's commitment to facilitate communication with the USFWS regarding activities covered in this HCP and the ITP, ComEd will provide an informational "prior notification" of planned projects (with the exception of routine inspections and mowing) at least 2 weeks prior to project commencement. This prior notification will include: (1) description and location of the project, and (2) notification of whether the projects are in the vicinity of HCP species or their habitat. This notification will be provided electronically to the USFWS HCP contacts at the Chicago Field office at least two weeks prior to the commencement of work. This notification is for informational purposes only and no response is necessary from the USFWS prior to ComEd proceeding with the planned covered activities in accordance with the HCP and ITP.

However, USFWS will have the opportunity to make site-specific recommendations for ComEd's consideration.

6.5 Adaptive Management

Adaptive management is a process by which management practices are incrementally improved through implementation of plans that provide opportunities to learn from experience. A timely change in minimization and mitigation approaches in accordance with new knowledge provides the cornerstone for a successful HCP. As new information from monitoring, research (by others) or day-to-day management becomes available the information will be evaluated in the context of this HCP's goals, objectives and guiding principles.

Based on the best scientific information currently available, it is expected that the HCP's conservation measures will effectively achieve the biological goals and objectives. However, there is some uncertainty associated with some AMMs, as well as with species habitat locations and population estimates within the Planning Area. Results of monitoring may also indicate that some AMMs or mitigation measures are more or less effective than anticipated.

Thus, in addition to monitoring, the HCP includes an adaptive management program designed to gauge the effectiveness of the conservation measures and to propose alternative or modified management measures in response to the monitoring results.

The USFWS defines adaptive management as "a method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future conservation management actions according to what is learned" (65 Fed. Reg. at 35252). Adaptive management is a tool used to address uncertainty in the conservation of certain species included in an HCP. The foundation of an adaptive management strategy is identifying the uncertainty to be addressed. The Five-Point Policy also notes that:

"...often, a direct relationship exists between the level of biological uncertainty for a take species and the degree of risk that an incidental take permit could pose for that species. Therefore, the operating conservation program may need to be relatively cautious initially and adjusted later based on new information, even though a cautious approach may limit the number of alternative strategies that may be tested."

Although the adaptive management strategy anticipates future modifications to implementing the conservation program, the strategy becomes part of the HCP's provisions and, therefore, is integral to the proper implementation of the plan. As such, the adaptive management strategy is subject to the USFWS' "No Surprises" rule and assurances (discussed further in Chapter 8).

Applying and Implementing Adaptive Management

Not every area of uncertainty in a HCP is appropriate to address through adaptive management. Adaptive management is a process for considering alternative strategies for meeting biological goals and objectives and modifying future conservation strategies based on what is learned from monitoring and the implementation of the alternative strategies. Therefore, adaptive management is best suited to address uncertainty in the HCP's conservation framework. Accordingly, the HCP focuses adaptive management on critical biological processes or conservation measures where uncertainty may influence the accuracy or prediction or effectiveness of proposed conservation measures.

If the monitoring results reveal that AMMs or mitigation are not meeting the biological goals and objectives of the HCP, ComEd will implement the alternatives identified in this chapter and, as necessary, develop and implement other strategies to improve the AMMs and/or mitigation efforts being implemented. Consistent with the cyclical design of adaptive management, should a change to AMMs or mitigation be triggered, further monitoring of that revised or new measure would be required to gauge its effectiveness. This will continue until the alternative achieves the desired effectiveness, or it is jointly determined by ComEd and the USFWS that the presumed response cannot be achieved. Whenever adaptive management is deemed necessary, ComEd will:

- Calculate any take that has occurred, if any;

- Identify any mitigation required to compensate for that unanticipated take; and
- Evaluate whether there is a need to further adjust the allowable level of take in the permit; and, if necessary; amend the HCP and/or ITP in accordance with the terms of Chapter 9; and, find that the taking still will not appreciably reduce the likelihood of the survival and recovery of the species in the wild, as required by 16 U.S.C §1539(a)(2)(B)(iv), 50 C.F.R. §§ 17.22(b)(2)(i)(D) and 17.32(b)(2)(i)(D).²

Each of these will be addressed, at a minimum, through ComEd's annual report under Section 6.3.

In any case where an AMM simply fails to provide the anticipated protection and there is evidence from monitoring or other credible sources (i.e., the local USFWS Field Office) documenting failure that results in additional take, the HCP, and if necessary, the ITP may be amended in accordance with Section 9.3. Similarly, if there is evidence that the AMMs perform better than expected, the compensatory mitigation requirements may be reevaluated and reduced by the USFWS, if appropriate.

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7 FUNDING

ComEd anticipates receiving a Section 10 permit from the USFWS under the Federal ESA and the equivalent permit from the IDNR under the Illinois ESA and will provide assurances that adequate funding will be available to successfully implement specific commitments under this HCP. ComEd has sufficient financial assets to implement the terms of this HCP, will be responsible for funding the HCP and understands that failure to provide adequate funding and a consequent failure to implement the terms of this HCP in full could result in temporary permit suspension or permit revocation.

To obtain Section 10 and corresponding state ESA permits, ComEd, prior to obtaining their permit, must provide the USFWS with adequate written assurance that their organization is committed to funding the mitigation, monitoring and reporting required over the life of their individual permit(s).

ComEd's funding commitment is based on funds set aside for mitigation, monitoring and costs associated to internal standard operating procedures that include training, signage, annual meetings and reports. Funding will also be provided for updating the wetland delineation every five years. The following is an outline of ComEd's funding commitment:

1. **Matting:** ComEd commits to utilizing matting around structures to be serviced in wetlands within 65 feet of HED larvae occupied rivulets and HED larvae habitat areas. Matting will also be utilized at Romeoville Prairie ROW and easements in CHU 7 around all structures associated with leafy prairie clover and lakeside daisy prior to initiating work.
2. **Turtle Searches:** ComEd commits to conducting turtle searches prior to and during work within wetlands that require matting.
3. **Internal Awareness Program:** ComEd currently has an internal program that will be adapted to include information on covered species that may be present in the HCP and CHUs; who to contact prior to accessing the HCP and CHUs; and what to do if a covered species is encountered. The program is already a part of ComEd's Annual Operations and Maintenance budget and, therefore, no additional funds will be set aside for this commitment.
4. **Signage:** ComEd commits to maintaining signage at entrances to ComEd ROW and also within environmentally sensitive areas.
5. **Wetland Restoration:** ComEd commits to having a wetland biologist inspect areas where matting is used to determine if restoration efforts are necessary.
6. **Annual Meetings with USFWS and other stakeholders:** ComEd commits to attending an annual meeting with the USFWS and stakeholders, if invited.
7. **Annual Reports:** ComEd commits to submitting annual reports to the USFWS as outlined in Section 6.3.
8. **Wetland Delineation Updates:** ComEd commits to conducting a wetland delineation of ComEd ROW and easements within the CHUs every five years to monitor the changes in habitats. Internal mapping documents will be updated every five years to reflect these changes.
9. **Public Outreach:** ComEd commits to participating in one public meeting each year, if invited.
10. **Changed and Unforeseen Circumstances:** ComEd will negotiate with USFWS and/or other involved parties on an as-needed basis if a changed or unforeseen circumstance directly impacts ComEd's covered activities in the Permit Area once the ITP becomes effective, in accordance with adaptive management objectives.

8 CHANGED and UNFORESEEN CIRCUMSTANCES

ComEd recognizes that circumstances can change during the term of an HCP. Those altered circumstances, some due to natural events or factors outside the control of ComEd, could merit changes in the implementation of this HCP's conservation and mitigation plans. This chapter defines these changed circumstances, along with the triggers and ComEd's planned responses to address these changes' possible effects on a covered species or habitat. Each circumstance, if applicable, delineates what defines a changed circumstance vs. unforeseen. An unforeseen circumstance is one that could not reasonably have been anticipated to occur during the term of the HCP permit.

8.1 Federal "No Surprises" Assurances

The Federal No Surprises Rule, 63 Fed. Reg. 8859 (Feb. 23, 1998) (codified at 50 C.F.R. §§17.3, 17.22(b), 17.32(b)) provides assurances to Section 10 permit holders that, as long as the permittee is properly implementing the HCP and the ITP, no additional commitment of land, water or financial compensation will be required, and no restrictions on the use of land, water or other natural resources will be imposed beyond those specified in this HCP without consent of the permittee. The "No Surprises" Rule has two major components: changed circumstances and unforeseen circumstances.

8.2 Changed Circumstances

The term "changed circumstances" is defined by the Federal "No Surprises" Rule, as follows:

Changed Circumstances means changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the USFWS, and that can be planned for (e.g., the listing of a new species, or a fire or other natural catastrophic event in areas prone to such events) (50 C.F.R. §§ 17.3)."

If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and are provided for in the HCP, ComEd will be expected to implement such measures. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the HCP, USFWS will not require any additional measures beyond those provided for in the HCP, without the consent of ComEd, provided the HCP is being properly implemented. "Properly implemented" means that the commitments and the provisions of the HCP and ITP have been or are being fully implemented by ComEd (50 C.F.R. § 17.3).

ComEd has made efforts to anticipate the impact and minimization, mitigation and monitoring measures necessary to conserve the covered species and their habitats. In addition, incorporation of adaptive management, when needed, is intended to meet and address future uncertainties. Using this approach, ComEd intends to reduce the potential adverse impacts on the covered species and their habitats due to changed circumstances to the extent possible.

8.3 Unforeseen Circumstances

The term "unforeseen circumstances" is defined by the Federal "No Surprises" Rule as follows:

"Unforeseen circumstances means changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the USFWS at the time of the conservation plan's negotiation and development, and that result in a substantial and adverse change in the status of the covered species (50 C.F.R. §§ 17.3)."

The USFWS bears the burden of demonstrating that unforeseen circumstances exist, using the best available scientific and commercial data available. In negotiating unforeseen circumstances, the USFWS will not require the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water or other natural resources beyond the level otherwise agreed upon for the species covered by the HCP without the consent of ComEd (50 C.F.R. §§ 17.22(b)(5)(iii)(A)). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen

circumstances, the USFWS may require additional measures of ComEd where the HCP is being properly implemented only if such measures are limited to modifications within conserved habitat areas, if any, or to the HCP's operating conservation program for the affected species, and maintain the original terms of the plan to the maximum extent possible (50 C.F.R. §§17.22(b)(5)(iii)(B) and 17.32(b)(5)(iii)(B)). Additional conservation and mitigation measures will not involve the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the conservation plan without the consent of ComEd.

Notwithstanding these assurances, nothing in the "No Surprises" Rule "will be construed to limit or constrain the USFWS, any federal agency, or a private entity, from taking additional actions, at its own expense, to protect or conserve a species included in a conservation plan" (50 C.F.R. §§ 17.22(b)(6) and 17.32(b)(6)).

8.4 Circumstances Addressed in this HCP

ComEd is requesting regulatory assurances for the federally listed HED, Blanding's turtle and spotted turtle. In accordance with the "No Surprises" Rule and USFWS regulations, ComEd will be responsible for implementing remedial measures in response to those changed circumstances addressed in this chapter. If a changed circumstance occurs within the Permit Area, USFWS and ComEd will coordinate and determine if additional conservation and mitigation measures are necessary. In such event, the USFWS may determine that additional measures are necessary. Pursuant to the "No Surprises" Rule and regulations, if such measures are addressed in this HCP, implementation is required. If additional measures are deemed necessary to respond to a changed circumstance and such measures are not provided for herein, the USFWS will not require any additional conservation or mitigation measures without the consent of ComEd, as long as this HCP is being properly implemented.

The following circumstances are reasonably anticipated and therefore addressed in this chapter:

- (1) Climate change (in the Chicago area)
- (2) Change in listing status of species in the Permit Area
- (3) Change in habitat range
- (4) Fire
- (5) Drought
- (6) Severe wind/tornados
- (7) Invasion of a new non-plant species
- (8) Accidental harmful human activity
- (9) Vandalism or other destructive or illegal human activity
- (10) Disease
- (11) Oil spill or natural gas leaks
- (12) Train derailment
- (13) Addition of electric lines

8.4.1 Climate Change in the Chicago area

Global climate change has affected and will continue to affect the climate of the Chicago area. Average annual temperatures in the region have increased by 2.6°F since 1980, and are expected to further increase in future decades (CCAP 2008). Models predicted that Chicago's annual average temperature is likely to increase 1-1.5°F over the next few decades and to increase by 3-8°F by the end of the century (depending on the level of greenhouse gas emissions) (CCAP 2008). With these increases, Chicago's summer climate could be similar to that of Springfield, IL, within a couple decades and like that of Knoxville, TN, or possibly Houston, TX, depending on the level of greenhouse gas emissions, by the end

of the century. The possible effect of these changes on the covered species and changed circumstances are discussed below.

Effect on Species and Habitats/Ecosystems

This increase in temperature will affect local species and the ecosystems on which they depend (CCAP 2008). Based on their ability to tolerate the increased temperatures and other related changes in habitat, some species will decline in abundance in the region while others will increase. In addition, some species (from warmer areas) will move into the region while others will move, likely north, out of the region. Locally declining species that cannot disperse or migrate out of the region will decrease in population size or possibly die out. Changes in species composition, especially plants, in local ecosystems will alter habitats and will likely contribute to further changes in animal composition. Climate change is also likely to alter the timing of both plant and animal processes (e.g. flower bloom times and bird migration time), which could alter biological interactions in current ecosystems. Due to the rapid rate of change and barriers to movement from habitat loss and fragmentation, modern climate change is anticipated to result in a loss of biodiversity.

Changed and Unforeseen Circumstances

The Chicago Climate Action Plan uses projections from the Intergovernmental Panel on Climate Change (IPCC) climate change models to predict likely temperature increase in the future under both a low emissions and high emissions (worst case) scenario. According to IPCC models (using both emissions scenarios), the Chicago region annual average temperature is predicted to increase 1-2°C by 2039 and 1.5-5°C by 2069. For the purposes of this HCP, temperature increases beyond these ranges within the predicted time frame will be considered an unforeseen circumstance.

Effect of Climate Change on Other Changed Circumstances

Climate change will include not only an increase in temperature but will also include changes in weather patterns. These changes may affect many of the changed circumstances examined in this section. A summary of these possible effects is provided below.

Summers are expected to become hotter and drier (due to similar amount of rain but with more evaporation). Therefore, unplanned fires may become more frequent and their intensities could be greater. Warmer temperatures could allow new invasive species from warmer climates (e.g. Kudzu) to move into the area; some existing invasive species in the region may favor warmer temperatures. Diseases and insect pests are also more prevalent in warmer climates, and plants and animals stressed by increased temperatures will be more susceptible to disease. Further, increased flooding (as discussed below) will also promote disease.

Average rainfall is expected to increase (20% by the end of the century) but most of it will be in the winter and spring. Rain is also predicted to occur in fewer and larger events which may result in more surface runoff. These changes in rain patterns are predicted to increase flooding, especially in the spring. However, droughts are predicted to increase due to increased average summer temperature with no increase in summer rainfall. In addition, lake levels are predicted to decline due to increased evaporation. These changes could reduce groundwater recharge, if the increase in total annual rain fall does not offset the reduction in infiltration due to increase run off and evaporation.

Weather pattern changes resulting from climate change may produce more storms with high winds or tornados. There may be evidence of this in the tornado records. The frequency of reported tornados in the US has increased over the past fifty years, and 2011 was one of the most active years for tornados since modern record keeping began in 1950 (NOAA 2011). However, the frequency of strong tornados (F3-F5) over this same time period does not show this same trend (NOAA 2012). If this increasing tornado frequency is real and continues, more tornadoes and wind storms may be expected in the Chicago area in the future. The CCAP report does not discuss wind or tornadoes perhaps because they operate at a much smaller scale than changes in climate. According to the National Science and Technology Council's Scientific Assessment on Climate Change (NSTC 2008), "Trends in other extreme weather events that occur at small spatial scales--such as tornadoes, hail, lightning, and dust storms--cannot be determined at the present time due to insufficient evidence." This is because tornadoes are short-fused weather, on the

time scale of seconds and minutes, and a space scale of fractions of a mile across. In contrast, climate trends take many years, decades, or millennia, spanning vast areas of the globe.

Climate change also increases the chance of a change in a species range and its population size. In general, ranges are expected to shift north. This could result in a listed species leaving the area or another entering. In addition, the populations of a number of species in the area may decline due to loss of habitat, inability to migrate, and stress from increased temperatures. If the decline is great enough, it could result in the species being listed.

Increased Temperatures Adverse Effects on HED

The current range of the HED extends from southern Missouri to northern Michigan. Therefore, the species and appropriate habitat exist in a warmer climate than currently found in northern Illinois. Chicago's climate is predicted to be as warm as the current climate of southern Missouri under the worst case scenario (high emissions model) in about 50 years (after the end of the permit). Therefore, the HED is predicted to be able to tolerate the elevated temperature predicted for the Chicago area (even under the high emissions scenario) during the life of the permit. HED however, may change the time of their active period in response to warmer temperatures.

Trigger: A change in the time of HED active period is detected, based on results of documented scientific research or academic study performed by others in the Planning Area (e.g. FPDWC, HMS or IDOT) accompanied by a measured 1°C increase in the annual temperature sustained for at least 5 years.

Response: Upon written notification (with documentation) from the USFWS that an identified change in the time of HED's active periods has occurred, ComEd will adjust the timing of operations to accommodate changes in the HED's active periods.

Increased Temperatures Adverse Effects on Blanding's and Spotted Turtles

Blanding's turtles and spotted turtles in the Planning Area are in the southern portion of their ranges, indicating that they may have limited tolerance for increased temperatures. As temperatures increase appropriate habitat will remain in the Planning Area, because the plant communities that provide habitat (e.g. marsh) are found further south. However, the turtles may experience increased physiological stress. Reptiles are sensitive to changes in air and water temperature (Carey and Alexander 2003). This is, in part, because reptiles are ectothermic, and temperatures outside of their thermal optima cause stress. In addition, turtles may change their active period in response to increased temperatures.

Trigger: A change in the Blanding's turtle or spotted turtle active period is detected, based on results of documented scientific research or academic study performed by others in the Planning Area (e.g. FPDWC, IDOT or HMS) or elsewhere in the Chicago area accompanied by a measured 1°C increase in the annual temperature sustained for at least 5 years.

Response: Upon written notification (with documentation) from the USFWS that an identified change in Blanding's turtle or spotted turtle active periods has occurred, ComEd will adjust the timing of operations to accommodate changes in the turtle's active periods.

8.4.2 Change in Listing Status of a Species in the Permit Area

HCP Species

Listing of currently unlisted species that are "adequately covered" (as defined in 50 CFR 17.3) in the HCP subsequent to issuance of the requested permit. Adequately covered means, with respect to species listed pursuant to section 4 of the ESA, that a proposed conservation plan has satisfied the permit issuance criteria under section 10(a)(2)(B) of the ESA for the species covered by the plan, and, with respect to unlisted species, that a proposed conservation plan has satisfied the permit issuance criteria under section 10(a)(2)(B) of the ESA that would otherwise apply if the unlisted species covered by the plan were actually listed. For the USFWS to cover a species under a conservation plan, it must be listed on the section 10(a)(1)(B) permit.

Changed and Unforeseen Circumstances

Listing of unlisted species that are “adequately covered” (as defined in 50 CFR 17.3) in the HCP subsequent to issuance of the requested permit will be considered a changed circumstance.

Trigger: Listing of unlisted species that are “adequately covered” (as defined in 50 CFR 17.3) in the HCP subsequent to issuance of the requested permit.

Response: If unlisted species that are “adequately covered” in the HCP are listed subsequent to issuance of the requested permit, no further conservation measures or other action will be required of ComEd under the ESA. The ITP will afford ComEd protection against take liability for such species under Section 9 of the ESA and the USFWS’s implementing regulations as of the effective date of such listing. ComEd has requested that the Blanding’s turtle and spotted turtle, whether listed or unlisted, be named on the requested permit. Under the terms of the permit, permit coverage for the Blanding’s turtle and spotted turtle will become effective upon the listing of such species under the ESA provided ComEd is properly implementing the HCP.

Non-HCP Species

Listing of currently unlisted species that are neither addressed in the HCP nor “adequately covered” (50 CFR 17.3).

Changed and Unforeseen Circumstances

Listing of currently unlisted species that is neither addressed in the HCP nor “adequately covered” will be considered a changed circumstance.

Trigger: Listing of currently unlisted species that is neither addressed in the HCP nor “adequately covered”. The USFWS will notify ComEd in writing of the potential listing of any unlisted species that is not covered by the HCP but that could be affected by ComEd’s activities within the Permit Area including, but not limited to, those activities listed as “covered activities” herein.

Response: Upon receipt of written notification from the USFWS or IDNR, ComEd may enter into negotiations with the USFWS regarding amending the HCP, ITP and associated documents, in accordance with Chapter 9 of this HCP to obtain coverage for the newly listed species. Alternatively, ComEd may consult with the USFWS under Section 7 of the ESA.

Species Delisting

Delisting of an HCP covered species during the term of the ITP.

Changed and Unforeseen Circumstances

Delisting of an HCP covered species by the USFWS during the term of the ITP will be considered a changed circumstance.

Trigger: Delisting of an HCP covered species by the USFWS during the term of the ITP.

Response: Upon receipt of written notification from the USFWS or IDNR, ComEd and the USFWS/IDNR will confer on a case-by-case basis to determine how such delisted HCP species will be addressed thereafter under the HCP and ITP. ComEd will continue all conservation measures specific to any delisted HCP covered species until such discussions are complete.

8.4.3 Change in Habitat Range

Identification of HCP covered species or “adequately covered” (as defined in 50 CFR 17.3) species in new locations or habitat.

Changed and Unforeseen Circumstances

Identification of HCP covered species or “adequately covered” species (as defined in 50 CFR 17.3) in new locations or habitat will be considered a changed circumstance.

Trigger: Identification of HCP covered species or “adequately covered” species (as defined in 50 CFR 17.3) in new locations or habitat based on results of documented scientific research or

academic study performed by others in the Planning Area (e.g. FPDWC, HMS or IDOT). The USFWS and IDNR, the entities responsible for monitoring federal and state species listings, will notify ComEd in writing of the change and provide documented scientific research data and other information regarding a change in the habitat range of a currently listed species found within the HCP, including any species which are “adequately covered” (as defined in 50 CFR 17.3). For the purpose of this trigger, new locations include newly discovered occurrences or habitats, as well as historical occurrences that are later shown to be extant or reoccupied. It may also include newly discovered occurrences or habitat outside the Permit Area, but only to the extent that their proximity indicates species presence or habitat suitability on covered lands.

Response: Upon written notification from the USFWS of the documented scientific research data, ComEd will implement AMMs to avoid and minimize adverse effects and take of new occurrences of habitat. To the extent that take cannot be avoided, ComEd will mitigate for the impact of any take consistent with Chapter 5. If it is determined that the amount of authorized take will be exceeded and that the impacts to the species are greater than anticipated, the provisions of Chapter 9 will apply.

8.4.4 Fire

Fires have occurred historically in the Chicago region and have shaped and sustained the natural ecosystems of the area (Chicago Region Biodiversity Council 1999). Historically, these fires were started by lightning strikes or Native Americans. Suppression of fires started after European settlement. More recently; however, the importance of fire for maintaining natural communities has been recognized, and today prescribed burning is one of the most important techniques used to manage these areas. Natural fires (i.e., lightning started) are very rare today, and unplanned human started fires are also rare. However, it is possible that natural fires may become more frequent in the Chicago area with hotter and drier summers as a result of climate change. According to Dave Robson, Natural Areas Manager for FPDWC, they experience an unplanned fire (mostly unintended arson) on their properties along the lower Des Plaines River about once every 3-4 years.

Changed and Unforeseen Circumstances

All unplanned fires within the ComEd ROW or easement as a result of ComEd’s activities will be considered a changed circumstance. Unplanned fires that occur as a result of activities by others (not ComEd), will be considered an unforeseen circumstance. In addition, an unplanned fire that occurs during the active season for any covered animal species and burns more than one-half of the known habitat area for the affected covered species will also be considered an unforeseen circumstance.

Fires Adverse Effects on HED Habitat

A fire could potentially harm HED if it occurs during the adult flight season (i.e., mid-May to mid-October). Natural and unplanned human caused (e.g. arson) fires are rare but could become more common in the Chicago area as summers become hotter and drier as a result of climate change.

Trigger: A fire (natural or human caused) occurs on ComEd ROW or easement as a result of ComEd’s activities.

Response: In response to the trigger, ComEd will do the following: 1) assess the extent and impact of the fire, including the potential for direct harm to the HED, 2) identify and implement additional measures to prevent unplanned fires in the future, and 3) adjust future plans in the affected area, as needed, to protect the HED and its habitat. In addition, if operational equipment and structures are damaged, then emergency repairs will be completed as soon as possible to restore normal operations. USFWS will be contacted about needed emergency repairs, but repairs will be started without awaiting a response from the USFWS. ComEd will report to the USFWS any actions taken.

Fires Adverse Effects on Blanding’s and Spotted Turtle Habitat

A fire potentially could harm Blanding’s turtle or spotted turtle if it occurs during the active season (i.e., mid-May to mid-October). Natural and unplanned human caused fires are rare but could become more common in the Chicago area as summers become hotter and drier as a result of climate change.

Trigger: A fire occurs on ComEd ROW or easement as a result of ComEd's activities.

Response: In response to the trigger, ComEd will do the following: 1) assess the extent and impact of the fire, including the potential for direct harm to the Blanding's turtle and spotted turtle, 2) identify and implement additional measures to prevent unplanned fires in the future, and 3) adjust future plans in the affected area, as needed, to protect Blanding's turtle and spotted turtle, and their habitat. In addition, if operational equipment and structures are damaged, then emergency repairs will be completed as soon as possible to restore normal operations. USFWS will be contacted about needed emergency repairs, but repairs will be started without awaiting a response from the USFWS. ComEd will report to the USFWS any actions taken.

8.4.5 Drought

Drought is a normal and recurring temporary feature of Illinois's climate. While drought is generally recognized as a deficiency of precipitation that results in a water shortage over an extended period of time, specific definitions vary based on the activities or groups affected. Drought definitions are dependent on environmental, social, and economic factors (State Water Plan Task Force 2011). From an environmental perspective, the definition of drought typically considers the relationship of precipitation to factors such as air temperature, soil type, and geologic characteristics (Changnon 1987). According to the Illinois State Water Survey (ISWS), Illinois has experienced five severe droughts (1980-1981, 1988-1989, 1999-2000, 2005 and 2007) since the mid-1950's, that have negatively impacted the state's economy and natural resources (ISWS 2011). This frequency is consistent with Changnon et al. (1996) which states that droughts have occurred in approximately 10 percent of all years in the past century in Illinois. Climate change is expected to result in increased evaporation in the Midwest during summer due to increased average air temperatures and longer periods between rainfalls. This is expected to lead to more frequent periods of drought throughout the region (USGCRP 2009).

For this HCP, the Palmer Drought Severity Index (PDSI) will be used for recognizing drought and planning response measures. The PDSI is a mathematical index that is calculated based on precipitation and temperature data, and has proven to be a useful monitoring tool to trigger drought contingency plans (State Water Plan Task Force 2011). Drought values on the PDSI range from zero through negative four with the following classifications: 0 = normal conditions, -1 = mild drought, -2 = moderate drought, -3 = severe drought, and -4 = extreme drought (Palmer 1965). This HCP assumes that a PDSI score of negative three or less may interfere with and affect the normal life cycles of the covered species.

Changed and Unforeseen Circumstances

Periodic droughts are characteristic of the climate in Illinois and ComEd has planned for the possibility of droughts occurring during the 20-year permit duration. Based on the historic occurrence of droughts during 10 percent of the years in the past century in Illinois, changed circumstances will include the expectation of two droughts during the permit duration. Additional droughts will be considered unforeseen circumstances. Any period of drought longer than two years will also be considered an unforeseen circumstance, as no drought occurring after the mid-1950's in Illinois has lasted longer than two years.

Hine's Emerald Dragonfly

Natural hydrologic cycles, including dry periods, may be an important part of the larval ecology of the HED. HED larvae gain a competitive advantage over the larvae of other dragonfly species during seasonal dry periods in rivulets by utilizing crayfish burrows deeper in the water table. However, USFWS identifies environmental extremes, including drought, as a threat to the species in the USFWS HED Recovery Plan. Severe drought may disrupt ecological and hydrological processes in marshes and sedge meadows, and dry out the slowly flowing water sources, from shallow streams to groundwater seeps, for longer than HED larvae can persist in crayfish burrows. Drought may also alter the quality or pH of water in HED habitat, both of which are thought to be important to HED recruitment since the larvae are aquatic for two to four years (USFWS 2001).

Trigger: The trigger to initiate a response by ComEd is written notification from USFWS that a PDSI score of negative three or less and a change in HED's active period documented by recognized experts/agencies for the area encompassed by the HCP has occurred.

Response: In response to the trigger, ComEd will adjust the timing of operations to accommodate changes in HED's active periods.

Blanding's Turtle and Spotted Turtle Habitat

Habitat available to Blanding's turtle or spotted turtle may shrink with diminishing surface water and wetlands during periods of drought which are severe enough to reduce water levels in these habitats. Lower water levels may increase distance between wetland habitats and suitable upland nesting habitat, potentially reducing reproductive success. Drought may also result in reduced water quality in these habitats, which may pose a threat to the species (Lee 1999).

Trigger: The trigger to initiate a response by ComEd is written notification from USFWS that a PDSI score of negative three or less and a change in the turtle's active period documented by recognized experts/agencies for the area encompassed by the HCP has occurred.

Response: In response to the trigger, ComEd will adjust the timing of operations to accommodate changes in turtles' active periods.

8.4.6 Severe Wind/Tornadoes

While tornadoes are known to occur throughout the region, the likelihood that any particular place will be struck by a tornado is low. One measure is the annual average number of tornadoes per 10,000 square miles by state. In Illinois, the average number of tornadoes per 10,000 square miles is 9.7 (average determined from time period of 1991 to 2010). On average in the U.S., the frequency that any particular square mile of land may be hit by a tornado is about every thousand years (NOAA 2012).

Changed and Unforeseen Circumstances

ComEd will utilize the U.S. Weather Service to determine the Enhanced Fujito Scale classification of the severe wind/tornado event. The Enhanced Fujito scale is a method to assess tornado damage. It uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators (Wind, Science and Engineering Center 2004). It classifies F0-F5 damage as calibrated by engineers and meteorologists across 28 different types of damage indicators (mainly various kinds of buildings, but also a few other structures as well as trees). The scale takes into account the typical strengths and weaknesses of different types of construction, since the same wind does different things to different kinds of structures. In the Enhanced Fujito Scale, there are different, customized standards for assigning any given F rating to a well built, well anchored wood-frame house compared to a garage, school, skyscraper, unanchored house, barn, factory, utility pole or other type of structure (U.S. Tornado Climatology 2011).

Most tornadoes (around 77%) in the U.S. are considered weak (EF0 or EF1) and about 95% of all U.S. tornadoes are below EF3 intensity (NOAA 2012). Based on this information, damages incurred by severe winds and tornadoes classified as F0 and F1 (per the Enhanced Fujito Scale) will be considered a changed circumstance. Damages incurred by severe winds and tornadoes classified as EF2 – EF5 will be considered an unforeseen circumstance.

Tornado Adversely Affects HED, Blanding's or Spotted Turtle Habitat

When a tornado occurs and damages or destroys a minimization and/or mitigation effort covered by the HCP and located on ComEd's ROW or easements, ComEd will implement conservation measures appropriate to remediate the circumstance. This would include an evaluation of the affected site, implementing corrective action and implementing additional monitoring (if appropriate).

Trigger: The trigger for ComEd to implement corrective action where a tornado negatively affects HED, Blanding's turtle or spotted turtle habitat at any time during the life of the permit is when a structure (i.e., ComEd utility pole or tower) falls, resulting in disturbance to the vegetation within the HED or covered turtle habitat.

Response: ComEd will investigate and document the incident in writing and take photos, if possible. ComEd will notify the USFWS and other state and federal agencies (as needed) and develop an appropriate response. Emergency repair to operational equipment and structures will be completed as soon as possible to restore normal operations after the natural disturbance.

USFWS will be contacted about needed emergency repairs, but repairs will be started without awaiting a response from the USFWS if there is a life-safety situation. ComEd will report to the USFWS any actions taken. Actions necessary to respond to the disturbance will be mitigated for in accordance with Sections 5.1.6 and 5.2.5 if they should impact the species or its habitat.

Tornado Adversely Affects Implementation of an AMM

Trigger: The trigger for ComEd to implement corrective action where a tornado negatively affects the implementation of an AMM is when the AMM becomes ineffective due to the tornado. For example, silt fence, matting or erosion control blanket may be damaged or removed due to the tornado.

Response: In response to the trigger, ComEd will implement one or more of the following corrective actions:

- (1) Restore the AMM; and or
- (2) Clean-up the disturbed area to allow for the reestablishment of the AMM in that area. Emergency repair to AMMs will be completed as soon as possible to protect species and their habitat. ComEd will report to the USFWS any actions taken.

8.4.7 Invasion of a New Non-plant Species

Documented scientific research or academic study performed by others in the Permit Area regarding invasion of new non-plant macro-organisms such as insects and vertebrates that negatively affect one of the covered species. Such effects may include a new predator or a competing species.

Changed and Unforeseen Circumstances

Documented scientific research or academic study performed by others in the Permit Area regarding new non-plant macro-organisms that negatively affect one of the covered species will be considered an unforeseen circumstance.

Trigger: Documented scientific research or academic study performed by others in the Permit Area regarding new non-plant macro-organisms that negatively affect one of the covered species. The USFWS and IDNR, the entities responsible for monitoring federal and state species listings, will notify ComEd in writing of the invasion and provide scientific data and other information documenting the effects on the covered species.

Response: Vegetation management will be evaluated with USFWS to determine if changes are needed. Vegetation management may be adjusted, as needed, to reduce the impact on covered species.

8.4.8 Accidental Harmful Human Activity

Harmful activity caused by ComEd or their contractors (e.g. spills, tire ruts, driving vehicles through Critical Habitat with or without matting to reach structures in situations where 1) rail line access is not possible and the situation is an emergency and 2) a field worker/contractor fails to follow the avoidance and minimization procedures outlined in Section 5.1.2) resulting in impacts to Critical Habitat.

Changed and Unforeseen Circumstances

Documented negative impact on Critical Habitat caused by ComEd employee or contractor based on a site assessment by ComEd, in coordination with the USFWS, will be considered a changed circumstance. Any accidental harmful human activity that results from pipeline company integrity digs, or other third parties, are not the responsibility of ComEd and will be considered an unforeseen circumstance

Trigger: Documented negative impact caused by ComEd employee or contractor on Critical Habitat based on a site assessment by ComEd, in coordination with the USFWS.

Response: ComEd will notify the USFWS, conduct a site assessment and document the incident in writing and provide photos, if possible. ComEd will coordinate and cooperate with the USFWS as soon as possible to identify affected lands and points where collaboration is needed to investigate the changes. ComEd will work with the USFWS and other state and federal agencies

to develop an appropriate response. Typical corrective actions will include restoring the impacted area to pre-disturbance conditions. Emergency repair to operational equipment and structures will be completed as soon as possible to restore normal operations after an emergency situation. USFWS will be contacted about needed emergency repairs, but repairs will be started without awaiting a response from the USFWS if there is a life-safety situation. ComEd will report to the USFWS any actions taken. Actions necessary to respond to the disturbance will be mitigated for in accordance with Sections 5.1.6 and 5.2.5 if they should impact the species or its habitat.

8.4.9 Vandalism or Other Destructive or Illegal Human Activity

Vandalism or other destructive or illegal human activities include unauthorized use of a vehicle (on or off road) through vegetation within the CHUs, poaching, trespassing and dumping of materials.

Changed and Unforeseen Circumstances

Documented acts of vandalism or other destructive or illegal human activity caused by a ComEd employee or contractor that does not result in direct impacts to HED larvae occupied rivulets or HED larvae habitat areas, based on a site assessment by ComEd in coordination with the USFWS, will be considered a changed circumstance. Documented direct impacts to HED larvae occupied rivulets or HED larvae habitat areas caused by a ComEd employee or contractor based on a site assessment by ComEd, in coordination with the USFWS, will be considered an unforeseen circumstance. Documented acts of vandalism or other destructive illegal human activity cause by someone other than a ComEd employee or contractor will be considered an unforeseen circumstance.

Trigger: Documented acts of vandalism or other destructive or illegal human activity based on a site assessment by ComEd, in coordination with the USFWS.

Response: ComEd will notify the USFWS, conduct a site assessment and document the incident, in writing and provide photos if possible. ComEd will coordinate and cooperate with the USFWS to identify affected lands and points where collaboration is needed to investigate the changes. ComEd will work with the USFWS and other state and federal agencies to develop an appropriate response. Typical corrective actions will include restoring the impacted area to pre-disturbance conditions. Emergency repair to operational equipment and structures will be completed as soon as possible to restore normal operations after an emergency situation. The USFWS will be contacted about needed emergency repairs, but repairs will be started without awaiting a response from the USFWS if there is a life-safety situation. ComEd will report to the USFWS any actions taken.

8.4.10 Disease

During the term of the requested permit, it is anticipated that disease may affect some of the covered species or their habitat within the HCP area. Diseases which may affect HED are not currently known. However, other species of dragonfly are known to be affected by parasitic diseases, such as the parasite-caused metabolic disease identified in the twelve-spotted skimmer (*Libel Lula pulchella*) by Marden and Schilder (Kennedy 2006). Blanding's turtle and spotted turtle may be susceptible to a variety of coccidian, hemoflagellate and monogean parasites, as well as lung flukes, roundworms, leaches and others. However, little is known about whether such parasites negatively affect populations (Congdon and Keinath 2006). Vegetation which comprises habitat for HED, Blanding's turtle and spotted turtle within the HCP area may be subject to diseases caused by parasitic fungi, bacteria, viruses, nematodes and other organisms (Asselin 2011). It is not possible to predict with any certainty the frequency, extent or severity of disease outbreaks. However, climate change may influence the effects of disease on covered species or their habitat. In general, diseases tend to be more prevalent in warmer climates, and plants and animals stressed by increased temperatures may be more susceptible to disease. Occurrence of current diseases within the HCP area may increase, and new diseases may arrive with increased temperatures.

Changed and Unforeseen Circumstances

Documentation that a new disease affecting an HED, Blanding's or spotted turtle population occurring once during the permit duration shall be considered a changed circumstance. Should a detrimental disease outbreak be confirmed more than once over the permit duration, the circumstance will be considered unforeseen.

Hine's Emerald Dragonfly

HED populations may be particularly vulnerable to the impacts of disease based on the small, isolated nature of most populations and the limited genetic diversity of the species as described in the original USFWS HED Recovery Plan for the species (USFWS 2001). A disease could have devastating effects on a population that does not have the genetic diversity to allow some members to survive the disease or on a population that is too isolated to be bolstered by immigration.

Trigger: The trigger to initiate a response by ComEd to address disease affecting an HED population is written notification from USFWS of the disease. Notification shall include documented scientific research and/or evidence from recognized experts that confirms the presence of a disease and demonstrates a negative effect on the HED population.

Responses: In the event that disease is demonstrated to negatively affect HED populations and threaten their continued existence within the HCP area, avoidance, minimization, vegetation management and mitigation measures would be reevaluated. ComEd would coordinate with the USFWS to develop and implement revisions to the HCP that attempts to lessen the impact of take incurred by protected species due to disease.

Blanding's and Spotted Turtles

Blanding's turtle and spotted turtle populations may be vulnerable to impacts from disease based on the life strategy of the species, which is characterized by high adult survival rates and high longevity but delayed sexual maturity, small clutch size, and low reproductive rates (Lee 1999). If a disease significantly impacts the survival rate of sub-adult or adult age classes of a population, recruitment levels may not be high enough to prevent the population from declining.

Trigger: The trigger to initiate a response by ComEd to address disease affecting Blanding's turtle or spotted turtle population is written notification from USFWS of the disease. Notification shall include documented scientific research and/or evidence from recognized experts that confirms the presence of a disease and demonstrates a negative effect on the Blanding's turtle or spotted turtle population.

Responses: In the event that disease is demonstrated to negatively affect populations of Blanding's turtle and spotted turtle and threatens their continued existence within the HCP area, avoidance, minimization, vegetation management and mitigation measures would be reevaluated. ComEd would coordinate with the USFWS to develop and implement revisions to the HCP that attempts to lessen the impact of take incurred by protected species due to disease.

8.4.11 Oil Spills or Natural Gas Pipeline Leaks

Numerous oil and gas pipelines run through and adjacent to ComEd's property within the Planning Area. There have been frequent reports of oil pipeline leaks in the U.S. and Canada in recent years, and two oil leaks have occurred within the Planning Area in the last few years. The Enbridge spill near Romeoville Prairie released about 250,000 gallons of crude oil in September 2010, and the West Shore/Buckeye Pipeline spill released at least 30,000 gallons on HMS' Long Run Parcel. There have been no natural gas pipeline leaks in the Chicago area in the past 20 years and only one in Illinois (http://en.wikipedia.org/wiki/List_of_pipeline_accidents#United_States).

Changed and Unforeseen Circumstances

Oil pipeline leaks (from a third party) of the size (250,000 gallons) and frequency (two a year) that have occurred in the Planning Area will be considered a changed circumstance. More frequent (> 2/year) or larger (>250,000 gallons) oil spills will be considered an unforeseen circumstance. Any natural gas pipeline leak or explosion will be an unforeseen circumstance. Any oil spills or natural gas pipeline leaks that result from pipeline company integrity digs are not the responsibility of ComEd and will be considered an unforeseen circumstance

An Oil Spill Adversely Affects a HED Habitat

An oil (crude or refined) spill in HED larvae occupied rivulets or HED larvae habitat areas will result in the total loss of habitat in the area contaminated by the oil and possibly the taking of individual HED affected

by the spill. All vegetation and animal life will be killed or greatly harmed in this area. All larval HED and any adult HED that come in direct contact with the oil will be killed. Other nearby adult HED may be harmed by the oil vapors/fumes, and other larval HED downstream of the spill may be harmed or killed by exposure to toxic compounds (e.g. VOCs, SVOCs and metals) in the water released (via surface or groundwater) from the oil in the spill area.

Trigger: An oil spill from a third party (<250,000 gallons and at a frequency of no more than two a year) on ComEd's property within the Permit Area that contains HED larvae occupied rivulets or HED larvae habitat areas or is upstream and near HED larvae occupied rivulets or HED larvae habitat areas.

Response: The oil and pipeline companies are responsible for the response and cleanup of the oil spills. ComEd will work with the oil and pipeline companies and any other involved private entities or public agencies to clean up the spill as quickly as possible in order to minimize damage to natural resources, as well as property and public health. ComEd will also work closely with the oil and pipeline companies, USFWS, and others involved during the restoration phase. ComEd will plan, but not budget, for oil spills because all cost will be the responsibility of the oil and pipeline company. It is anticipated that new and additional safeguards, such as improved early/immediate pipeline leak detection systems, will be required to be put in place by the pipeline companies in this area as a result of the recent spills.

An Oil Spill Adversely Affects a Blanding's or Spotted Turtle Habitat

An oil (crude or refined) spill in Blanding's turtle or spotted turtle habitat will result in the total loss of habitat in the area contaminated by the oil and possibly the taking of individual Blanding's turtle or spotted turtle affected by the spill. All vegetation and animal life, including Blanding's turtles and spotted turtles, that come in direct contact with the oil will be greatly harmed or killed. Other Blanding's turtles and spotted turtles outside the spill area but nearby may be harmed by the oil vapors/fumes, and others downstream of the spill may be harmed by exposure to toxic compounds (e.g. VOCs, SVOCs and metals) in the water released (via surface or groundwater) from the oil in the spill area.

Trigger: An oil spill from a third party (<250,000 gallons and at a frequency of no more than two a year) on ComEd's property within the Permit Area that contains Blanding's turtle or spotted turtle habitat or is upstream and near Blanding's turtle or spotted turtle habitat.

Response: The oil and pipeline companies are responsible for the response and cleanup of the oil spills. ComEd will work with the oil and pipeline companies and any other involved private entities or public agencies, to clean up the spill as quickly as possible in order to minimize damage to natural resources, as well as property and public health. ComEd will also work closely with the oil and pipeline companies, USFWS, and others involved during the restoration phase. ComEd will plan, but not budget, for oil spills because all cost will be the responsibility of the oil and pipeline company. It is anticipated that new and additional safeguards, such as improved early/immediate pipeline leak detection systems, will be required to be put in place by the pipeline companies in this area as a result of the recent spills.

8.4.12 Train Derailment

Several railways traverse the Planning and Permit Areas, including one railroad line on the west side of the Des Plaines River owned by MWGen, and two railroad lines on the east side of the Des Plaines River, one owned by Canadian National (CN) and one owned by Burlington Northern Santa Fe (BNSF). In addition to the railroad line owners, other railroad companies have trackage rights to operate on each of these lines (e.g. CN, Amtrak and Union Pacific).

Changed and Unforeseen Circumstances

Due to the presence of train traffic through Planning Area and the unpredictable nature of such accidents, one train car derailment in a protected area occupied by the covered species will be considered a changed circumstance. However, train car derailments are rare events and additional derailments (i.e., more than one train derailment incident) throughout the duration of the permit period will be considered an unforeseen circumstance.

Hine's Emerald Dragonfly

An accidental train car derailment along one of the railroad lines in an area occupied by HED could have direct or indirect impacts. The magnitude of these impacts would be dependent on a number of variables including: (1) the location of the derailment, (2) the nature of the derailment (i.e., number of cars, loaded vs. unloaded cars, contents of cars, cars remaining upright vs. contents spilled, etc.), (3) the time of year (active vs. inactive HED periods), and (4) the success of restoration efforts.

Trigger: The trigger to initiate a response by ComEd is notification that an accidental train car derailment has occurred on ComEd's property in a protected area occupied by HED.

Responses: In the event of an accidental train car derailment, ComEd will respond by coordinating with the responsible party(ies) (i.e., railroad line owner and operator) and natural resource regulatory agencies to: (1) determine the extent of impacts to HED and HED habitat and (2) develop an emergency (i.e., short term) response plan. The railroad will be fully responsible for all restoration and cleanup activities, including funding, from the train car derailment.

Blanding's and Spotted Turtle

An accidental train car derailment along one of these railroad lines in an area occupied by Blanding's turtle or spotted turtle could have direct or indirect impacts. The magnitude of these impacts would be dependent on a number of variables including: (1) the location of the derailment, (2) the nature of the derailment (i.e., number of cars, loaded vs. unloaded cars, contents of cars, cars remaining upright vs. contents spilled, etc.), (3) the time of year (active vs. inactive covered turtle periods), and (4) the success of restoration efforts.

Trigger: The trigger to initiate a response by ComEd is notification that an accidental train car derailment has occurred on ComEd's property in a protected area occupied by Blanding's turtle or spotted turtle.

Responses: In the event of an accidental train car derailment, ComEd will respond by coordinating with the responsible party(ies) (i.e., railroad line owner and operator) and natural resource regulatory agencies to: (1) determine the extent of impacts to Blanding's turtle or spotted turtle, or their habitat, and (2) develop an emergency (i.e., short term) response plan. The railroad will be fully responsible for all restoration and clean up from the train car derailment.

8.4.13 Addition of Electric Lines

Addition of electric lines and associated structures within the Permit Area.

Changed and Unforeseen Circumstances

The addition of electric lines and associated structures based on capacity planning and the need to accommodate growth in the region will be considered a changed circumstance.

Trigger: ComEd identifies (through capacity planning) the need for additional electric lines and associated structures within the Permit Area. ComEd will notify USFWS in writing of the proposed work and include documentation to verify that the proposed work meets the purpose and intent of this HCP.

Response: Upon written notification from the USFWS of the approved additional work, ComEd will continue to implement AMMs to avoid and minimize adverse effects and take of protected species and habitat. To the extent that take cannot be avoided, ComEd will mitigate for the impact of any take consistent with Chapter 5. If it is determined that the amount of authorized take will be exceeded and that the impacts to the species are greater than anticipated, the provisions of Chapter 9 will apply.

Conclusion

In order to mitigate for the impact of changed circumstances that occur during the plan term and that require an immediate response, ComEd will implement the adaptive management provisions of Section 6.4. This will be done when changes in management practices are necessary to achieve or maintain the HCP's biological objectives and to respond to unexpected monitoring results or new scientific information.

In emergency or time sensitive situations, ComEd will notify the USFWS but will not await a response from USFWS before make such changes and will report to the USFWS any actions taken pursuant to this section.

For those identified changed circumstances that are not as time-critical in nature, ComEd and the appropriate state and federal agencies will confer and agree upon the appropriate adaptive changes and refinements in the implementation of AMMs that may be impacted by any changed circumstance. If, through the on-going coordination and cooperation of ComEd with the USFWS and other aligned agencies throughout the permit duration, specific new management strategies are identified to address changed circumstances, they will be developed and implemented by ComEd as deemed necessary and appropriate.

While ComEd believes that the initial measures to be enacted through the HCP will be effective in contributing to the recovery of the covered species and their habitats, it is anticipated that conditions within the Permit Area, including the protected habitats, and the overall condition of individual species will change over time. Therefore, adaptive management will be used in implementing AMMs, as well as addressing changed circumstances. When necessary, ComEd and the USFWS will evaluate the causal factors and determine what additional adaptive management measures may be necessary to ensure that the objectives of this HCP continue to be met under the identified changed circumstance.

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9 PLAN IMPLEMENTATION

9.1 Responsibilities

As specified in the HCP Handbook (USFWS and NMFS 1996), an Implementing Agreement is not required for low-effect HCPs unless requested by the permit applicant. ComEd understands that it is responsible for implementing this HCP in accordance with the specifications for mitigation, monitoring, reporting and funding and will perform all obligations assigned to it in the ITP and the HCP.

9.2 Permit Duration

This HCP has been developed to meet the ESA Section 10(a)(2)(A) requirements for a conservation plan that addresses Section 10(a)(2)(B) issuance criteria for an ITP. In doing this, this HCP is designed to accommodate the permit needs of ComEd, respond to the long-term conservation needs of the covered species and their habitats and monitor the plan's implementation effectiveness. ComEd is applying for a 20-year renewable ITP from the USFWS. This permit period allows this plan to remain effective and provide adequate protection to cover all of the routine, on-going legal business activities of ComEd, as well as specific planned projects identified as being necessary to meet ComEd's current and/or future business needs. ComEd is also applying for an ITA from the IDNR.

9.3 Amendments

The HCP and/or ITP may be modified in accordance with the ESA, the USFWS implementing regulations and this chapter. HCP and ITP modifications are not anticipated on a regular basis; however, modifications to the HCP and/or ITP may be requested by either ComEd or USFWS. The USFWS also may amend the ITP at any time for just cause, and upon a written finding of necessity, during the permit term in accordance with 50 C.F.R. §13.23(b). The categories of modifications are minor amendments and major amendments.

9.3.1 Minor Amendments

Minor amendments are internal changes or corrections to the HCP that may be made by ComEd, at its own initiative, or approved by ComEd in response to a written request submitted by the USFWS. Requests from the USFWS shall include an explanation of the reason for the change as well as any supporting documentation. Minor amendments on ComEd's initiative do not require pre-authorization or concurrence from the USFWS.

Minor amendments are those that will not (a) result in effects on a HCP species that are new or different than those analyzed in the HCP, (b) result in take beyond that authorized by the ITP, (c) negatively alter the effectiveness of the HCP, or (d) have consequences to aspects of the human environment that have not been evaluated. ComEd will document each administrative change in writing and provide the USFWS with a summary of all changes, as part of its annual report, along with any replacement pages, maps and other relevant documents for insertion in the revised document.

Minor amendments include, but are not limited to, the following:

- Corrections of typographical, grammatical and similar editing errors that do not change intended meanings;
- Corrections of any maps or exhibits to correct minor errors in mapping;
- Insignificant changes to the boundary of the HCP; and
- Corrections of any maps, tables or appendices in the HCP to reflect approved amendments, as provided below, to the HCP or ITP.

9.3.2 Major Amendments

A major amendment is any proposed change or modification that does not satisfy the criteria for a minor amendment. Major amendments to the HCP and ITP are required if ComEd desires, among other things, to modify the projects and activities described in the HCP such that they may affect the impact analysis or conservation strategy of the HCP, affect other environmental resources or other aspects of the human

environment in a manner not already analyzed, or result in a change for which public review is required. Major amendments must undergo the same formal review process as the original HCP and ITP, including appropriate NEPA analysis, a Federal Register notice and an intra-Service Section 7 consultation.

In addition to the provisions of 50 C.F.R. §13.23(b), which authorize the USFWS to amend an ITP at any time for just cause and upon a finding of necessity during the permit term, the HCP and ITP may be modified by a major amendment upon ComEd's submission of a formal permit amendment application and the required application fee to the USFWS, which shall be processed in the same manner as the original permit application. Such application generally will require submittal of a revised HCP and preparation of an environmental review document in accordance with NEPA. The specific document requirements for the application may vary, however, based on the substance of the amendment. For instance, if the amendment involves an action that was not addressed in the original HCP or NEPA analysis, the documents may need to be revised or new versions prepared addressing the proposed amendment. If circumstances necessitating the amendment were adequately addressed in the original documents, an amendment of the ITP might be all that would be required.

Upon submission of a complete application package, the USFWS will publish a notice of the receipt of the application in the Federal Register, initiating the NEPA and HCP public comment process. After the close of the public comment period, the USFWS may approve or deny the proposed amendment application. ComEd may, in its sole discretion, reject any major amendment proposed by the USFWS.

Changes that would require a major amendment to the HCP and/or ITP include, but are not limited to:

- Revisions to the HCP or ITP that do not qualify as a minor amendment (9.3.1);
- Addition of a species to the ITP where such species was not adequately analyzed in the HCP;
- Addition of a new species to the ITP that was not addressed in the HCP;
- Increases in the amount of take allowed for covered activities or adding new covered activities to the HCP;
- Modifications of any action or component of the HCP that may increase the levels of take authorized by the ITP or substantially change the effects of the covered activities on HCP species, the nature or scope of the conservation program, or consequences to the human environment; and
- A renewal or extension of the permit term beyond 40 years, where the criteria for a major amendment are otherwise met, and where such request for renewal is in accordance with 50 C.F.R. §13.22.

9.3.3 Treatment of Changes Resulting from Adaptive Management or Changed Circumstances

Unless explicitly provided in this HCP, the need for and type of amendment to deal with adaptive management or changed circumstances will be determined by the USFWS, in coordination with ComEd, at the time such responses are triggered.

9.4 Suspension/Revocation

The USFWS may suspend or revoke their respective permits if ComEd fails to implement the HCP in accordance with the terms and conditions of the permits or if suspension or revocation is otherwise required by law. Suspension or revocation of the ITP, in whole or in part, by the USFWS shall be in accordance with 50 CFR 13.27-29, 17.22 (b)(8), and 17.32 (b)(8).

9.5 Permit Renewal

Upon expiration, the ITP may be renewed without the issuance of a new permit, provided the permit is renewable, and that biological circumstances and other pertinent factors affecting covered species are not significantly different than those described in the original HCP. To renew the permit, ComEd shall submit to the USFWS, in writing:

- A request to renew the permit, with reference to the original permit number;
- Certification that all statements and information provided in the original HCP and permit application, together with any approved HCP amendments, are still true and correct, and inclusion of a list of changes;
- A description of any take that has occurred under the existing permit; and
- A description of any portions of the project still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

If the USFWS concurs with the information provided in the request, it shall renew the permit consistent with the permit renewal procedures required by Federal regulation (50 CFR 13.22). If ComEd files a renewal request and the request is on file with the issuing USFWS office at least 30 days prior to the permit's expiration, the permit shall remain valid while the renewal is being processed, provided the existing permit is renewable. However, ComEd may not take listed species beyond the quantity authorized by the original permit or change the scope of the HCP. ComEd anticipates renewing the 20 year ITP for a total permit term of 40 years.

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11 ACRONYMS

List of Commonly Referenced Acronyms	
Acronym	Definition
AES	Applied Ecological Services, Inc.
AMM	avoidance and minimization measure
APP	Avian Protection Plan
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
BT	Blanding's turtle
Cal-Sag	Calumet-Saganashkee Channel
CBBEL	Christopher B. Burke Engineering, Ltd.
CHU	Critical Habitat Unit
CN	Canadian National
ComEd	Commonwealth Edison
ECOS	Environmental Conservation Online System
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FPD	Forest Preserve District
FPDCC	Forest Preserve District Cook County
FPDDC	Forest Preserve District DuPage County
FPDWC	Forest Preserve District of Will County
HCP	Habitat Conservation Plan
HED	Hine's emerald dragonfly
HMS	Hanson Material Service
IDNR	Illinois Department of Natural Resources
I&M	Illinois & Michigan
ICC	Illinois Commerce Commission
IEPA	Illinois Environmental Protection Agency
IESA	Illinois Endangered Species Protection Act
INHS	Illinois Natural History Survey
INPC	Illinois Nature Preserve Commission
IPCC	Intergovernmental Panel on Climate Change
ISWS	Illinois State Water Survey
ITA	Incidental Take Authorization
ITP	Incidental Take Permit
IUCN	International Union for the Conservation of Nature
LPNP	Lockport Prairie Nature Preserve
MVP	Minimum Viable Population
MWGen	Midwest Generation
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NERC	North American Electric Reliability Corporation
PCE	Primary Constituent Elements
PDSI	Palmer Drought Severity Index
PVA	Population Viability Analysis
ROW	right of way
RPNP	Romeoville Prairie Nature Preserve
SOP	Standard Operating Procedure
ST	spotted turtle
USFWS	U.S. Fish and Wildlife Service
USACE	U.S. Army Corps of Engineers

**DRAFT Low-Effect Habitat
Conservation Plan for the Hine's
Emerald Dragonfly, Blanding's
Turtle, Spotted Turtle, Black-billed
Cuckoo, Lakeside Daisy and Leafy
Prairie Clover**

APPENDIX

A

FIGURES

**DRAFT Low-Effect Habitat
Conservation Plan for the Hine's
Emerald Dragonfly, Blanding's
Turtle, Spotted Turtle, Black-billed
Cuckoo, Lakeside Daisy and Leafy
Prairie Clover**

APPENDIX

B

HABITAT MAPPING PROTOCOL

APPENDIX B – Habitat Mapping Protocol

Methods Used to Map Hine’s Emerald Dragonfly Habitat within the Habitat Conservation Plan Permit Area

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Date: September 5, 2012

As part of the Hine’s Emerald Dragonfly (HED) Habitat Conservation Plan (HCP), the Lead Partners – Hanson Material Service (HMS), Midwest Generation EME LLC (MWGen), and Commonwealth Edison (ComEd) – retained the services of HED experts Dr. Dan Soluk, University of South Dakota, and Ken Mierzwa, GHD, to complete a comprehensive assessment of the HED population within the Lower Des Plaines River Valley, Illinois. Soluk and Mierzwa completed their assessment based on a thorough review of adult and larval survey data collected from various sites between 1996 and 2011. The results of the review were summarized in a report entitled “An Assessment of Hine’s Emerald Dragonfly (*Somatochlora hineana*) Population Size in the Lower Des Plaines River Valley, Illinois” which was presented to the HCP Lead Partners in January 2012. As part of the HCP, the Lead Partners have mapped areas of larval habitat referred to in the Soluk and Mierzwa population report, as well as adult habitat present within HED Critical Habitat Units (CHUs). The purpose of this appendix is to summarize the methods used for mapping larval and adult habitat in CHUs within the HCP Permit Area as depicted on figures in the HCP.

Larval Habitat

Larval habitat as described by Soluk and Mierzwa (2012) was based on the HED Larval Primary Constituent Elements (PCEs) which include:

1. Organic soils (histosols, or with organic surface horizon) overlying calcareous substrate (predominantly dolomite and limestone bedrock).
2. Calcareous water from intermittent seeps and springs and associated shallow, small, slow flowing streamlet channels, rivulets, and/or sheet flow within fens.
3. Emergent herbaceous and woody vegetation for emergence facilitation and refugia.
4. Occupied burrows maintained by crayfish for refugia.
5. Prey base of aquatic macro-invertebrates, including mayflies, aquatic isopods, caddisflies, midge larvae, and aquatic worms.

Using the HED Larval PCEs as a guide, four different HED larval habitat categories were mapped. Each category is listed and defined below:

- HED Larvae Occupied Rivulets – Rivulets that contain all HED Larval PCEs, have been sampled at least one time between 1996 and 2011, and have been documented as supporting HED larvae during one or more sampling events. Average width of rivulet channels is 1.0 ft (0.3 m); however, lateral movement of larvae outside of the rivulet channel is assumed to extend up to 1.6 ft (0.5 m) on either side for a total occupied width of 4.3 ft (1.3 m).
- HED Larvae Habitat Areas – Larval habitat areas lack well defined rivulet channels, but are influenced by subsurface flow or upwelling. These areas contain all HED Larval PCEs, have been sampled at least one time between 1996 and 2011, and have been documented as supporting HED larvae during one or more sampling events.

- Unoccupied Rivulets – Rivulets that contain all HED Larval PCEs, have been sampled at least one time between 1996 and 2011, but have not yet been documented as supporting HED larvae.
- Historic HED Larvae Habitat Areas – Areas that contained all HED Larval PCEs at one time, and were documented as supporting HED larvae 15 or more years ago. These areas no longer contain all HED Larval PCEs, have been sampled one or more times between 1994 and 2011, but have not been documented as supporting larvae in the last 15 years.

Adult Habitat

Similar to larval habitat, HED adult habitat was mapped based on HED Adult PCEs which include:

1. Natural plant communities near the breeding/larval habitat which may include fen, marsh, sedge meadow, dolomite prairie, and the fringe (up to 328 ft [100 m]) of bordering shrubby and forested areas with open corridors for movement and dispersal.
2. Prey base of small flying insect species (e.g., dipterans).

Only one category was designated as HED adult habitat:

- HED Adult Habitat Areas – Adult habitat areas contain both of the HED Adult PCEs. The areas include all open wetland and adjacent open upland habitats within CHUs. Developed and hard-scape areas (e.g. roads, railroads, parking lots, industrial sites, fly ash fill) are excluded. This mapping convention was agreed to in consultation among the Lead Partners, Dr. Dan Soluk, Ken Mierzwa, and Kris Lah, Endangered Species Team Leader, USFWS.

The adult habitat areas were mapped using a combination of Lead Partner habitat assessments for their respective properties, vegetation community maps acquired from area Forest Preserve Districts (i.e. shape files), and heads-up digitizing through desktop aerial photo interpretation for areas without existing or available vegetation community data.

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APPENDIX

C

ADDITIONAL TABLES

Table C-1: Annual adult HED observations at Middle Parcel

Year	Number of Transects	Number of Observations	Estimated density (per hectare)	Estimated population size
1995	28	1	n/a	n/a
1996	48	6	0.24	2
1997	48	3	0.14	1
1998	32	3	0.27	2
1999	48	14	6.06	51
2000	48	11	4.24	36
2001	36	5	0.6	5
2002	36	9	0.69	6
2003	36	6	0.75	6
2004	36	11	1.14	10
2005	36	0	0	0
2006	36	2	0.2	2
2007	36	4	0.23	2
2008	36	3	0.53	4
2009	36	1	0.19	2
2010	36	1	0.18	0
2011	36	4	0.57	4
mean		5	0.94	8

*modified from Mierzwa and Webb 2012a

Table C-2: Annual adult HED observations at Long Run/ComEd Parcel

Year	Number of Transects	Number of Observations	Estimated density (per hectare)	Estimated population size
2004	12	4	0.37	--
2005	18	0	0.00	--
2006	18	9	0.49	--
2007	18	7	0.32	--
2008	18	3	1.09	--
2009	18	2	0.18	--
2010	20	7	1.44	60
2011	15	3	0.36	5
mean		4	0.46	n/a

*modified from Mierzwa and Webb 2012b

Table C-3: Annual adult HED observations at River South

Year	Number of Transects	Number of Observations	Estimated density (per hectare)	Estimated population size
1995	32	48	4.83	180
1996	48	92	2.92	109
1997	48	96	3.44	131
1998	32	98	6.91	308
1999	48	97	4.73	211
2000	48	99	5.87	262
2001	36	55	2.67	119
2002	36	79	4.89	218
2003	36	15	1.37	61
2004	36	24	1.56	70
2005	36	3	0.20	9
2006	36	6	0.40	18
2007	36	20	1.20	54
2008	36	10	1.16	52
2009	36	6	0.80	36
2010	36	4	0.29	13
2011	36	13	1.61	71
2012	36	13	1.61	71
mean		43	2.58	111

*modified from Mierzwa and Webb 2012d

Table C-4: Summary of recorded surveyed and planted leafy prairie clover plants completed by Forest Preserve District of Will County from 1983-2011.

Year	Romeoville Prairie	Lockport Prairie Nature Preserve	Lockport Prairie East	Keepataw Prairie
1983	159	no data	no data	no data
1986	347	no data	no data	no data
1987	156	no data	no data	no data
1988	271	no data	no data	0
1989	no data	no data	no data	24
1990	380	1514	no data	2000
1991	651	2803	no data	no data
1992	295	4105	no data	50
1993	385	no data	no data	118
1994	no data	5424	no data	no data
1996	1870	1768	no data	no data
1998	2616	no data	no data	98
1999	1510	no data	no data	82
2000	1627	1906	no data	333
2002	674	2481	no data	143
2003	1232	5016	no data	1196
2004	no data	4570	no data	no data
2005	609	2061	no data	1519
2006	2726	13345	no data	0
2008	177 found \ 553 planted	428 found	94 planted	100 planted
2009	143 found \ 178 planted	327 found	7 planted	0
2010	46 found \ 41 planted	217 found	1190 found / 12 planted	no data
2011	40 found \ 80 planted	257 found	no data	no data

*Note – Beginning in 2008 plots were used instead of entire site counts