Biological Assessment

U.S. Fish and Wildlife Service

Enrico Fermi Unit 3
Combined License Application

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U.S. Nuclear Regulatory Commission Combined License Application
Docket No. 52-033

U.S. Army Corps of Engineers Permit Application
Permit Application No. 10-58-0011-P

Monroe County, Michigan

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U.S. Nuclear Regulatory Commission
Rockville, Maryland

U.S. Army Corps of Engineers
Detroit District

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Abbreviations/Acronyms

ac	acre(s)
BMP	best management practice
CFR	*Code of Federal Regulations*
COL	combined construction permit and operating license
CWA	Clean Water Act
DA	Department of the Army
EIS	environmental impact statement
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
ER	environmental report
ESA	Endangered Species Act of 1973, as amended
FR	*Federal Register*
ft	foot/feet
FWS	U.S. Fish and Wildlife Service
GEH ESBWR	General Electric Hitachi Economic Simplified Boiling Water Reactor
GEIS	generic environmental impact statement
kV	kilovolt(s)
m	meter(s)
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
mi	mile(s)
MNFI	Michigan Natural Features Inventory
NEPA	National Environmental Policy Act of 1969, as amended
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
ROW	right-of-way

SESC	Soil Erosion and Sedimentation Control Plan
SWPPP	storm water pollution prevention plan
USACE	U.S. Army Corps of Engineers
USC	United States Code
USGCRP	U.S. Global Change Research Program

1.0 Introduction

The U.S. Nuclear Regulatory Commission (NRC) is reviewing an application from the Detroit Edison Company (Detroit Edison) for a combined construction permit and operating license (COL) to build one General Electric Hitachi Economic Simplified Boiling Water Reactor (GEH ESBWR) at the Enrico Fermi Atomic Power Plant Site (Fermi 3). The proposed NRC Federal action is the issuance, under the provisions of 10 CFR Part 52, of a COL authorizing the construction and operation of one new GEH ESBWR at the Fermi site. To support the Fermi 3 power plant, ITC *Transmission*, responsible for the transmission grid in southeastern Michigan, would have to build three new 345-kV transmission lines in a single corridor from the power plant to a substation in Milan, Michigan. The Fermi 3 plant would be located adjacent to the existing Fermi 2 plant within the 1,260-ac Detroit Edison Enrico Fermi Atomic Power Plant Site (Fermi site), located in Monroe County, Michigan. The Fermi site is located approximately 30 mi southwest of Detroit, Michigan, approximately 24 mi northeast of Toledo, Ohio, and approximately 7 mi from the United States–Canada international border. Figure 1-1 depicts the 50-mile radius region surrounding the Fermi site, and Figure 1-2 depicts the 7.5-mile radius vicinity surrounding the Fermi site.

In addition to the COL application, Detroit Edison plans to apply for a U.S. Army Corps of Engineers (USACE) permit pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 and Section 404 of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA) for Fermi 3 work in navigable waterways and waters of the United States. The NRC is preparing an environmental impact statement (EIS) for the Fermi 3 project under the National Environmental Policy Act of 1969, as amended (NEPA). The USACE is cooperating with the NRC to ensure that the EIS is adequate to fulfill the requirements of USACE regulations; the CWA Section 404(b)(1) guidelines, which contain the substantive environmental criteria used by the USACE in evaluating discharges of dredged or fill material into waters of the United States; and the USACE public interest review process. The NRC and the USACE have prepared this biological assessment (BA) to support a joint consultation with the U.S. Fish and Wildlife Service (FWS) in accordance with the Endangered Species Act of 1973, as amended (ESA). The USACE permit decision will be made following issuance of the final EIS.

This BA examines the potential impacts of building and operating Fermi 3 at the Fermi site on Federally listed threatened or endangered species and species that are candidates for Federal listing pursuant to ESA Section 7(c). The BA also addresses Federally listed species and species that are proposed or candidates for Federal listing that could occur in the counties in Michigan that include the Fermi site or within which the proposed transmission system required to connect Fermi 3 to the electric grid (Table 1-1).

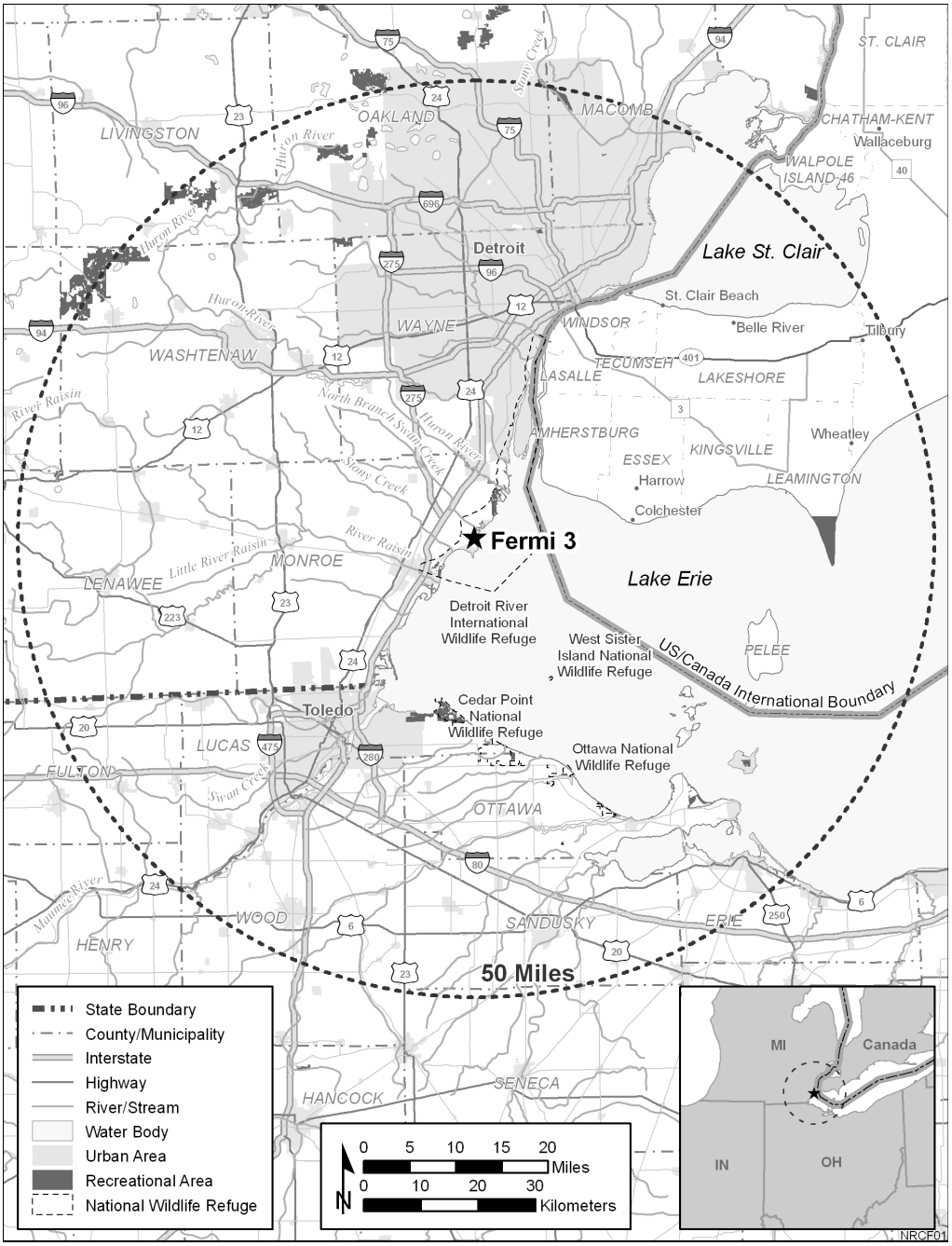


Figure 1-1. Location of the Fermi 3 Site and Surrounding 50-mi Region (Source: Detroit Edison 2011a)

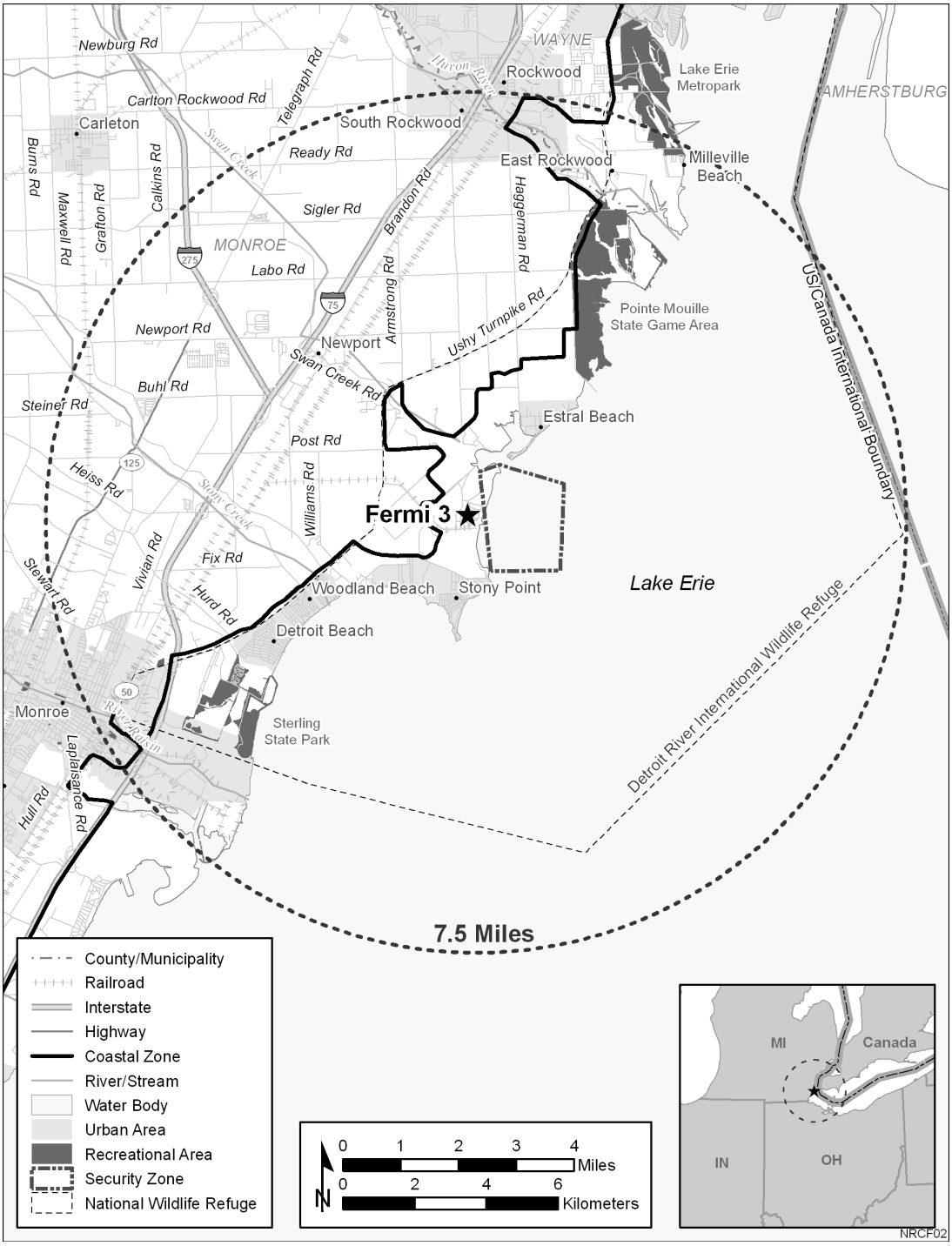


Figure 1-2. Fermi 3 Site and 7.5-mi Vicinity (Source: Detroit Edison 2011a)

Table 1-1. Federally Listed Threatened and Endangered Species and Species That Are Candidates for Federal Listing with a Potential to Occur in Counties in which the Fermi Site and Proposed Transmission Lines Are Located

Common Name	Scientific Name	Legal Status[(a)]	County
Terrestrial Species			
Mammals			
Indiana bat	*Myotis sodalis*	E	Monroe, Washtenaw, Wayne
Reptiles			
Eastern massasauga rattlesnake	*Sitrurus catenatus catenatus*	C	Washtenaw, Wayne
Insects			
Karner blue butterfly	*Lycaeides melissa samuelis*	E	Monroe
Mitchell's satyr	*Neonympha mitchellii mitchellii*	E	Washtenaw
American burying beetle	*Nicrophorus americanus*	E	Washtenaw
Vascular Plants			
Eastern prairie fringed orchid	*Platanthera leucophaea*	T	Monroe, Washtenaw, Wayne
Aquatic Species			
Mollusks (Mussels)			
Northern riffleshell	*Epioblasma torulosa rangiana*	E	Monroe, Wayne
Rayed bean	*Villosa fabalis*	E	Monroe, Wayne
Snuffbox mussel	*Epioblasma triquetra*	E	Monroe, Washtenaw

Source: FWS (2009a).
(a) T = Federal threatened; E = Federal endangered; C = Federal candidate.

2.0 Fermi Site Description

The Fermi site is located in Monroe County, Michigan, along the shore of Lake Erie, approximately 30 mi southwest of Detroit, Michigan. The county's land use is mostly agricultural and rural, with some limited but growing residential areas. Areas of forests and wetlands are generally confined to property lines and along streams and shorelines (see Figure 2-1). The proposed Fermi 3 development area is located entirely within the current Fermi site boundary, just south and west of existing Fermi 2 facilities (see Figures 2-1 and 2-2). Part of the proposed Fermi 3 site was previously developed for the Fermi 1 and 2 Atomic Power Plants (Detroit Edison 2011a). Fermi 1 was last operated in 1972, is permanently shut down, and is being decommissioned. Fermi 2 is a licensed operating power plant. An aerial view of the Fermi site as it exists now is shown in Figure 2-3.

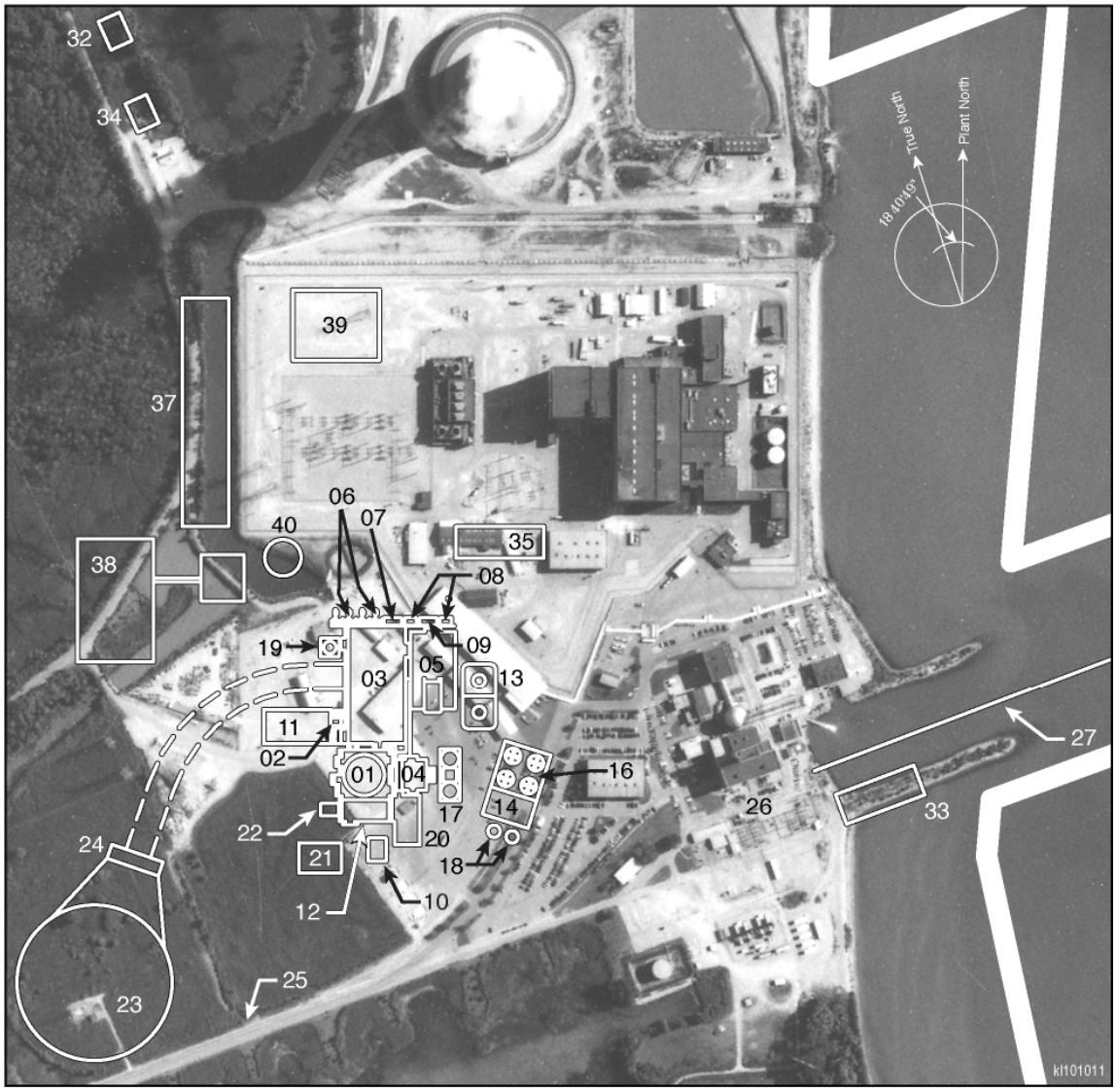
The project area (action area) consists of the Fermi site and the proposed transmission line corridor. Lake Erie borders the Fermi site on the east, Toll Road is located along the western boundary of the site, Swan Creek is located to the north, and Pointe Aux Peaux Road is located to the south. The entire Fermi site is relatively flat. Large areas of the site consist of developed land, but emergent wetlands, early successional habitats, forests, small quarry lakes, and ponds also are present. The locations of existing facilities at the Fermi site and facilities that would be developed for the proposed Fermi 3 project are shown in Figures 2-1 and 2-2.

The existing Fermi 2 unit will remain and continue to operate at the Fermi site and will not be affected by the proposed action. Fermi 2 uses two 400-ft tall concrete natural draft cooling towers for heat dissipation (Figure 2-3). The cooling water intake from Lake Erie for Fermi 2 is located between two rock groins that extend into Lake Erie along the eastern edge of the site and is used to provide makeup water from Lake Erie for evaporation, drift and blowdown losses. The Fermi 2 cooling water discharge is located along the shoreline of Lake Erie, north of Fermi 2 and east of the cooling towers (Figure 2-4).

2.1 Terrestrial Habitats – Vicinity and Site

The terrestrial communities found on the Fermi site and surrounding landscape are typical of the western shore of Lake Erie in the Lower Peninsula physiographic province and the Southern Lower Peninsula Ecoregion (MDNR 2005). The Fermi site is a mix of coastal emergent wetlands, developed areas, forests (including narrow coastal shoreline forests, lowland hardwoods, and woodlots), shrubland, and thickets. The surrounding landscape is generally flat and comprises a mix of agricultural fields, developed land, forested and emergent wetlands, and deciduous forests (Detroit Edison 2011a).

Figure 2-1. Fermi Site and Proposed Fermi 3 Facilities (Source: Detroit Edison 2011a)



01 Reactor Building
02 Auxiliary Boiler
03 Turbine Building
04 Control Room
05 Electrical Bldg/Tech Support Center
06 Main Transformers
07 Unit Auxiliary Transformer
08 Reserve Auxiliary Transformer
09 Spare Transformer
10 Radwaste Building
11 Fuel Building
12 Diesel Fuel Oil Storage Tank
13 Water Treatment/Service Water Bldg
14 Service Water Cooling Tower
16 Fire Water Tank And Pumps
17 Water Storage Tanks
18 Condensate Storage Tank
19 Service Building/Operation Support Center
20 Hot Machine Shop And Storage
21 Wash Down Bays
22 ADB
23 NPHS Cooling Tower
24 Pumphouse
25 Security Boundary
26 Station Water Intake
27 CIRC Water Outfall
32 EF2/EF3 Hazardous Waste Warehouse
33 Barge Slip
34 RAD Material Warehouse
35 EF2/EF3 Maintenance Shops
37 EF2/EF3 Common Warehouse
38 Parking Garage and EF2 Shops
39 ISFSI
40 PAP/VIB

miles
0 .0625 .125
0 330 660
feet

Figure 2-2. Proposed Facilities at the Fermi Site (Source: Detroit Edison 2011b)

Figure 2-3. Aerial View of the Existing Fermi Site Looking North (Source: Detroit Edison 2011a)

The most prevalent land cover types on the Fermi site are coastal emergent wetland, developed land, open water, woodlots, shrubland, and lowland hardwood. The surrounding area has similar cover types, except that coastal emergent wetlands and coastal forest are absent (Detroit Edison 2011a).

No surveys specifically designed to evaluate the Federally listed terrestrial species identified by the FWS, including species that are candidates for listing, have been conducted at the Fermi site. However, detailed terrestrial biological surveys of the Fermi site were conducted by Detroit Edison in July and October 2008 and May and June 2009 to support the EIS for the Fermi 3 project (Detroit Edison 2009a), and several previous wildlife and plant studies were conducted on the property. Detroit Edison conducted reconnaissance surveys of the Fermi site and vicinity between November 2006 and May 2008, and NUS Corporation examined the Fermi site between 1973 and 1974 prior to the development of Fermi 2 (NUS Corporation 1974; Detroit Edison 2011a). No Federally listed plants or animals or species that are candidates for Federal listing were observed during the surveys noted above (Detroit Edison 2009a, 2011a). No areas designated as critical habitat for Federally listed terrestrial species or species that are candidates for Federal listing exist at the Fermi 3 site.

Figure 2-4. Surface Water Features, Discharge Outfalls, and Water Quality Sampling Locations on the Fermi Site

A variety of wildlife species inhabit the forested, wetland, and open-water habitats on the Fermi site, including amphibians, reptiles, birds, and mammals. While the terrestrial wildlife species observed on the Fermi site are generally representative of the diverse but fragmented habitat types present on the site, the diversity of species is somewhat more limited than the habitat diversity might otherwise suggest. Although the habitat is diverse, habitat quality in the emergent marshes is compromised by the dense stands of common reed (*Phragmites australis*), which has low value as habitat for most species and aggressively competes with native plants that provide high-value habitat (Detroit Edison 2011a).

2.2 Aquatic Habitats – Vicinity and Site

The aquatic resources on the Fermi site and vicinity occur in a variety of natural and constructed freshwater features including (1) the circulating water reservoir, (2) overflow and discharge canals, (3) drainage ditches, (4) the onsite Quarry Lakes, (4) wetland ponds and marshes managed as part of the Detroit River International Wildlife Refuge (DRIWR), (5) Swan Creek, (6) Stony Creek, and (7) Lake Erie (Figure 2-4).

No surveys specifically designed to identify the Federally listed aquatic species identified by the FWS have been conducted at the Fermi site. However, detailed surveys of aquatic biota were conducted in a variety of aquatic habitats at the Fermi site by Detroit Edison from July 2008 through July 2009, to support the EIS for the Fermi 3 project (AECOM 2009), and several previous surveys have also been conducted in the vicinity of the Fermi site (e.g., MDEQ 1998; Gustavson and Ohren 2005; Francis and Boase 2007). No Federally listed aquatic species were observed during the surveys noted above. No areas designated as critical habitat for Federally listed aquatic species are present at the Fermi 3 site. Information about the aquatic habitats and biota associated with the various surface water features are provided in the following sections.

2.2.1 Circulating Water Reservoir

The circulating water reservoir, a component of the heat dissipation system associated with the operation of Fermi 2, provides the cooling water for the circulating water system. The circulating water reservoir is located east of the Fermi 2 cooling towers in the northern portion of the developed part of the Fermi site (Figure 2-4). This manmade reservoir encompasses an area of approximately 5 ac, is approximately 20 ft deep, and is lined with clay. The circulating water reservoir is periodically treated with chemicals to inhibit excessive growth of vegetation and the production of aquatic organisms and does not provide habitat suitable for supporting significant populations of important aquatic species.

2.2.2 Overflow and Discharge Canals

One clay-lined canal, approximately 5 ft to 10 ft deep and 70 ft wide, originates in the central portion of the Fermi site (along the western edge of the developed portion of the site) and extends northward, where it connects with Swan Creek after passing through a marshy area known as the North Lagoon. This constructed canal is referred to as the north canal (Figure 2-4). The north canal was historically used as a cooling water discharge and overflow canal for operation of Fermi 1, but ceased being used when Fermi 1 was temporarily shut down in the mid-1960s. Currently, the Fermi site uses the canal as a permitted wastewater discharge (Outfall 009; Figure 2-4). Thirty fish species were captured in the overflow canal during surveys conducted in 2008; the most abundant species were bluegill (*Lepomis macrochirus*), pumpkinseed (*L. gibbosus*), emerald shiner (*Notropis atherinoides*), and gizzard shad (*Dorosoma cepedianum*) (AECOM 2009).

A second manmade canal, referred to as the south canal, originates in the central portion of the Fermi site and extends southward, where it flows into the South Lagoon (Figure 2-4). This canal is approximately 5 ft to 10 ft deep and 70 ft wide and serves as a drainage for wetland areas located west of the developed portion of the Fermi site. Twenty-eight fish species were collected in the discharge canal during surveys conducted in 2008; the most abundant species were goldfish (*Carrasius auratus*), common carp (*Cyprinus carpio*), bluegill, pumpkinseed, and golden shiner (*Notemigonus crysoleucas*) (AECOM 2009).

A third small water body is located between the overflow and discharge canals. This manmade feature, referred to as the central canal (Figure 2-4), is stagnant and has no connections to the overflow canal or the discharge canal. Thirteen fish species were collected in the central canal during surveys conducted in 2008; the most abundant species were bluegill, gizzard shad, largemouth bass (*Micropterus salmoides*), white crappie (*Pomoxis annularis*), green sunfish (*L. cyanellus*), and bluntnose minnow (*Pimephales notatus*) (AECOM 2009).

No Federally listed aquatic species were observed during sampling for fish or invertebrates in the overflow and discharge canals (AECOM 2009).

2.2.3 Quarry Lakes

The North and South Quarry Lakes (Figure 2-4) are located in the southwestern portion of the Fermi site. The 2 lakes are approximately 50 ft deep and, in total, cover an area of approximately 100 ac. The quarry lakes were created when water filled abandoned rock quarries that were used for site development and for development of Fermi 2 (Detroit Edison 1977) and have no surface water connection to other surface water habitats. The Quarry Lakes support a limited variety of aquatic species common to Lake Erie coastal marsh habitats. Nine fish species were collected in the Quarry Lakes during surveys conducted in 2008; the most abundant species were bluegill, gizzard shad, green sunfish, goldfish, and

common carp (AECOM 2009). No Federally listed aquatic species were observed during sampling (AECOM 2009).

2.2.4 Wetland Ponds and Marshes

Portions of the Fermi site are managed as part of the DRIWR. These managed areas surround the developed portion of the Fermi site on the northern, western, and southern borders. The managed area encompasses approximately 656 ac, including coastal wetlands and palustrine wetlands, such as freshwater emergent wetlands and small lakes that are semi-permanently or seasonally inundated. A fisheries survey of coastal marshes managed areas was conducted in September 2005 by the Michigan Department of Natural Resources (MDNR) and FWS to document fish communities associated with Michigan waters of Lake Erie and to inventory fishery resources (Francis and Boase 2007). This survey used electrofishing and seining to sample four marsh complexes, one of which was the Swan Creek Estuary, near the northern extent of the Fermi site. A total of 38 species of fish from 13 families were collected at this sampling site. Species most common in the catch included gizzard shad, bluntnose minnow, mimic shiner (*Notropis volucellus*), bluegill, pumpkinseed, goldfish, and largemouth bass. Thirty-three fish species were collected during fishery surveys conducted near the mouth of Swan Creek in 2008. The most abundant species in those collections were gizzard shad, emerald shiner, bluegill, brook silverside (*Labidesthes sicculus*), pumpkinseed, and golden shiner (AECOM 2009). No Federally listed aquatic species were observed during sampling (AECOM 2009).

2.2.5 Swan Creek

Swan Creek is located on the northern boundary of the Fermi site (Figure 2-4). It originates approximately 12 mi to the northwest of the Fermi site as small streams and then flows south and east to where it enters Lake Erie. Land use adjacent to the Swan Creek drainage includes small residential communities and agricultural development. Swan Creek forms a freshwater estuary where it flows into Lake Erie. The aquatic habitat in this area is shallow, with large stands of submerged aquatic vegetation. Many areas along the shoreline support water lilies, cattails, common reed, and other emergent vegetation (Francis and Boase 2007; AECOM 2009). The benthic habitat associated with the area of Swan Creek adjacent to the Fermi site consists of sandy sediment interspersed with small pockets of gravel and flat stone (AECOM 2009).

Benthic macroinvertebrates were collected during eight sampling events from July 2008 through June 2009 near the location where water from the North Lagoon area enters Swan Creek (location SC-W in Figure 2-4; AECOM 2009). These collections were dominated by aquatic worms (Haplotaxida, 31 percent), small crustaceans (Amphipoda, 23 percent), and midge larvae (Diptera, 19 percent), among others (AECOM 2009). Dreissenid mussels (zebra and quagga mussels) and pea clams were also present in the Swan Creek collections. A fisheries survey of

the Swan Creek estuary was conducted in September 2005, by the MDNR and FWS using electrofishing and seining to sample nine sites along Swan Creek ranging from approximately 0.5 to 2.5 mi from the Fermi site (Francis and Boase 2007). A total of 38 species from 13 families were collected at these sampling sites. Frequently encountered species included gizzard shad, bluntnose minnow, emerald shiner, mimic shiner, bluegill, pumpkinseed, goldfish, and largemouth bass (Francis and Boase 2007). Fish were also collected monthly from Swan Creek from July 2008 to June 2009 (excluding winter months) near the location where water from the North Lagoon area enters Swan Creek (location SC-W in Figure 2-4; AECOM 2009). Overall, the fish species encountered during these surveys were similar to those observed in the survey by Francis and Boase (2007). A total of 1790 fish, comprising 33 species, were represented in the samples, and dominant species included gizzard shad, emerald shiner, bluegill, brook silverside, and pumpkinseed (AECOM 2009). No Federally listed aquatic species have been reported from surveys conducted in Swan Creek.

2.2.6 Lake Erie

The Fermi site is situated along the shoreline of Lake Erie. Lake Erie would serve as the source of cooling water for Fermi 3 and would also receive cooling water discharge from the proposed unit. Consequently, aquatic habitats and organisms in Lake Erie in the vicinity of the Fermi site have the greatest potential for being affected by building and operation of Fermi 3. Lake Erie is divided into three basins based upon the bathymetry of the lake: the eastern basin, the central basin, and the western basin. Because the Fermi site is located on the shoreline of the western basin, this portion of Lake Erie is of the greatest concern relative to building and operation of the Fermi 3 unit.

Benthic invertebrates were sampled from two locations in Lake Erie just offshore from the Fermi site during 2008 and 2009 (AECOM 2009). One site was located in water approximately 3-5 ft deep and has a substrate that consists of mud and sand; this location is near the existing cooling water intake for Fermi 2 and the proposed location for the Fermi 3 intake. The benthic organisms collected at this site consisted primarily of various species of amphipods, dipterans, and tubificid worms (AECOM 2009). The second site, located in water approximately 1-4 ft deep at the southern end of the Fermi site near the South Lagoon, had a rocky substrate. Dominant taxa collected from this site included various species of ephemeropterans (mayflies), amphipods, dipterans, tubificid worms, mollusks (dreissenid mussels and Sphaerid clams), and water mites (AECOM 2009).

Fish were collected monthly from July 2008 to June 2009 (excluding winter months) at two sampling locations in Lake Erie just offshore from the Fermi site (AECOM 2009). One location was near the existing cooling water intake bay for Fermi 2, which is also the proposed intake location for Fermi 3. The other sampling location was approximately 0.5 mi south of the intake bay sampling location along the Lake Erie shoreline near the South Lagoon. The two locations differed in the types of aquatic habitat that were present and had comparatively different species

richness and abundance. The intake location was located along a sand and gravel beach in the open waters of Lake Erie and had little or no structure that would provide cover or spawning features. The South Lagoon location was near sand and gravel shoreline areas as well as vegetated shoreline areas that could provide cover and spawning areas for some fish species. In addition, the South Lagoon location was near the mouth of the drainage area for the South Lagoon, which has extensive aquatic vegetation; fish within that drainage can move freely from the lagoon out into the main body of the lake. Overall, 5765 individual fish, comprising 40 species, were collected from the two Lake Erie sampling locations (AECOM 2009). The most abundant species encountered in those collections were gizzard shad, goldfish, white perch (*Morone americana*), emerald shiner, spottail shiner, and bigmouth buffalo (*Ictiobus cyprinellus*) (AECOM 2009).

Additional data on fish species that occur in the waters of Lake Erie near the Fermi site are provided by entrainment and impingement sampling. The rates at which fish eggs and fish larvae were entrained by the existing cooling water intake of Fermi 2 were measured from July 2008 through July 2009, excluding months of December through February when ice cover was present and it was anticipated that spawning by fish would be at minimum levels (AECOM 2009). Entrainment rates (fish eggs plus larvae per unit volume of water) ranged from 4.82/m^3 in July 2009 to 0.00/m^3 in November 2008 and March 2009. The average annual entrainment rate for all species collected from July 2008 through July 2009 was 0.98/m^3. Of the 12 fish species identified in entrainment samples, the species with the highest annual entrainment rates included gizzard shad, emerald shiner, bluntnose minnow, and yellow perch (AECOM 2009). In general, fish species entrained during the 2008-2009 study (AECOM 2009) were similar to those captured during a previous entrainment study (Lawler, Matusky, and Skelly Engineers 1993) conducted at the Fermi site from October 1991 to September 1992. The most abundant larval fish taxa entrained during the earlier study included species in the family Cyprinidae, gizzard shad, species in the family Clupeidae, and white perch; the most abundant taxa for fish eggs in entrainment samples included Cyprinidae and Percidae.

Impingement data collected from 1991 to 1992 from the Fermi 2 intake indicated that the dominant species impinged was the gizzard shad, which accounted for 71.5 percent of the estimated total number of individual fish impinged during the study period. White perch was the second most abundant species impinged (6.8 percent of the estimated total). Third, fourth, and fifth species ranked by the estimated number of individuals affected included the rock bass, freshwater drum, and emerald shiner. An additional study to estimate impingement rates at the Fermi 2 intake was conducted from August 2008 through July 2009. During that period, gizzard shad accounted for approximately 39 percent, emerald shiner accounted for approximately 29 percent, and white perch accounted for approximately 10 percent of the total estimated numbers of fish impinged at the plant (AECOM 2009). Overall, it is estimated that 3102 individual fish were impinged by the Fermi 2 cooling water intake during the 2008-2009

sampling period. No Federally listed aquatic species were observed during the impingement study.

2.3 Terrestrial Habitats − Transmission Line Corridors

To deliver the power generated by Fermi 3, existing transmission line corridors would need to be upgraded and new corridors, complete with transmission lines and substations, would need to be developed. The proposed and existing transmission line corridor routes are indicated in Figure 2-5.

The need for additional transmission towers and additional right-of-way (ROW) width would be evaluated by ITC *Transmission* when designing the Fermi 3 connection in the future. Detroit Edison expects that Fermi 3 would require three 345-kilovolt (kV) lines in a single 300-ft wide corridor extending north from the Fermi site and then west to the Milan Substation, for a total distance of about 29.4 mi. The anticipated route crosses portions of Monroe, Wayne, and Washtenaw counties (Figure 2-5).

The first segment (approximately 18.6 mi) follows existing 345-kV lines. North from the Fermi site, this segment of the proposed transmission line corridor follows existing Fermi 2 transmission lines to a point just east of I-75. From there, it runs west and north following other existing non-Fermi lines. Detroit Edison expects that the new transmission infrastructure for this first segment would fit within the existing corridor width already established for the existing transmission lines (Detroit Edison 2011a). In addition, reconfiguration of existing conductors may allow the use of existing transmission infrastructure in places.

The final 10.8 mi of the route would cross agricultural land, forest, and rural residential land. Although ITC *Transmission* has already established this segment of ROW, it would require clearing vegetation for a new ROW and erecting new towers and stringing transmission lines.

The route crosses vegetative cover types similar to those on the Fermi site and its vicinity, but there are no areas of coastal emergent wetlands or coastal forest along the transmission line corridor (Detroit Edison 2011a). ITC *Transmission* has not conducted systematic terrestrial and aquatic surveys for the Fermi 3 lines. Instead, the BA relies on information about the possible occurrence of endangered or threatened species in counties crossed by the transmission lines from FWS records (FWS 2011a) and the Michigan Natural Features Inventory (MNFI) (MNFI 2007a). The route does not cross any areas designated as critical habitat for endangered species.

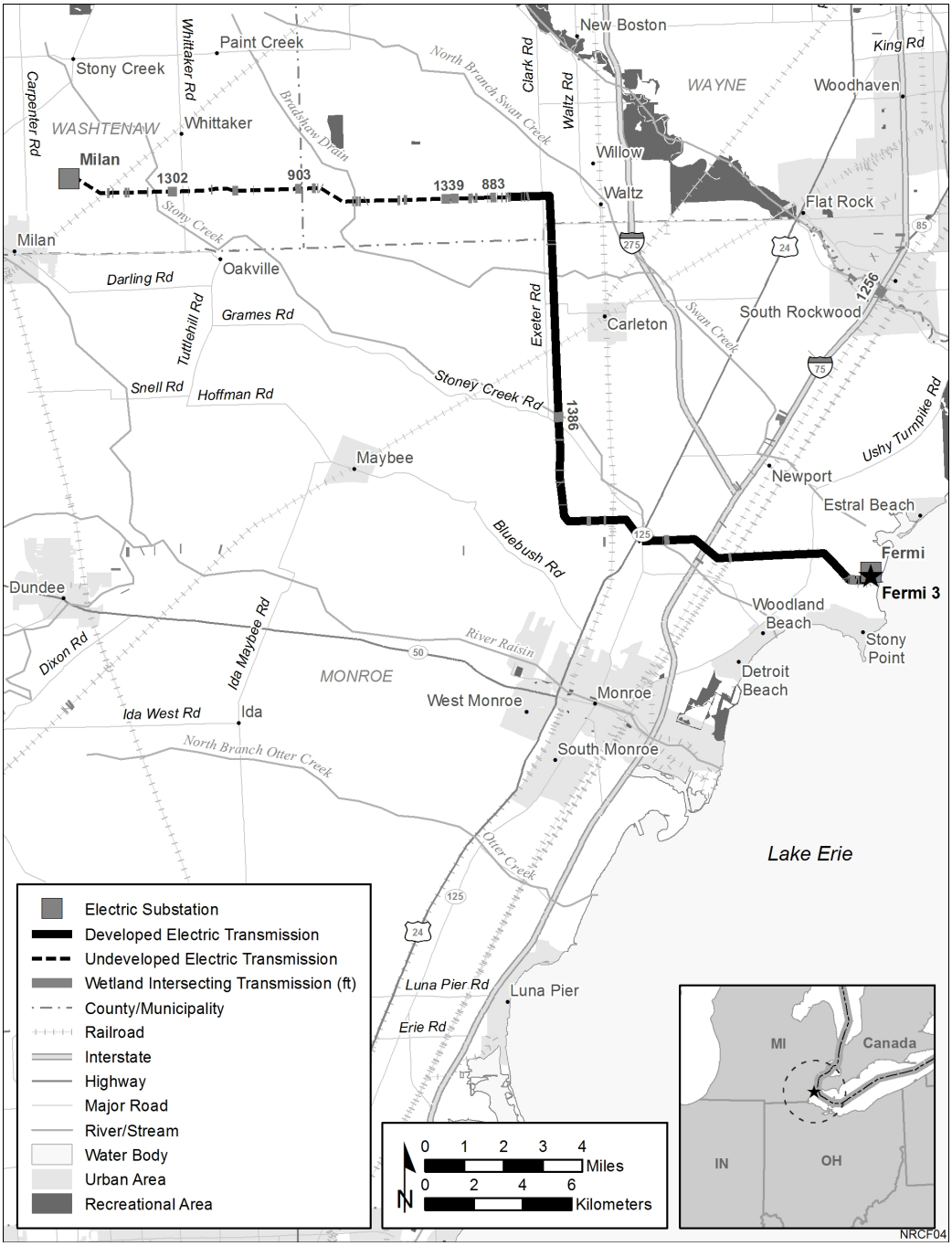


Figure 2-5. Proposed (Undeveloped) and Existing (Developed) Transmission Line Corridors for Fermi 3

2.4 Aquatic Habitats − Transmission Line Corridors

Aquatic habitats within or adjacent to the corridor for the transmission lines needed to deliver power from Fermi 3, and identified in Detroit Edison's ER (Detroit Edison 2011a), include several small streams and numerous small drains that transport runoff water from agricultural areas. The undeveloped ROW where new transmission lines will be constructed crosses nine small streams and agricultural drains, but does not cross any lakes, ponds, or reservoirs (Figure 2-5). Stony Creek, which is crossed by the previously developed eastern portion of the assumed transmission line route and would be crossed again by the currently undeveloped portion of the assumed transmission line route, is the largest stream crossed by the transmission line corridor and is described below. Because of the small size of the remaining streams and agricultural drainages present along the presumed transmission line path, information regarding the aquatic species present in these water bodies is not available. There are no areas containing designated critical habitat along the transmission corridor (Detroit Edison 2011a). ITC *Transmission* has not conducted systematic aquatic surveys for the Fermi 3 lines. Instead, the BA relies on information about the possible occurrence of endangered or threatened species in counties crossed by the transmission lines from FWS records (FWS 2011a) and the MNFI (MNFI 2007a).

Although the Fermi site lies entirely outside of the Stony Creek watershed, some transmission line facilities associated with the proposed Fermi 3 development could cross streams located within the Stony Creek watershed. Stony Creek is located generally to the west of the Fermi site in Washtenaw and Monroe Counties, Michigan, and drains directly into the western basin of Lake Erie at a location approximately 3 mi southwest of the Fermi site boundary. Overall, Stony Creek is about 35 mi long and is supported by many more miles of smaller tributaries that comprise the Stony Creek Watershed.

Some biological data have been collected from Stony Creek and its tributaries. The Stony Creek Watershed Project has performed studies focusing on water quality, nutrients, and indicator species, although the majority of the data from these studies were not collected near the Fermi site. A macroinvertebrate survey to assess water quality was conducted in 2004 at several sampling sites along Stony Creek. The nearest sampling site was located approximately 2.5 mi south-southwest of the Fermi site. Data about various hydrological parameters were collected in addition to the macroinvertebrate samples (Gustavson and Ohren 2005). Fish surveys conducted in portions of Stony Creek located in Monroe County during 1997 indicated that the fish community in Stony Creek was dominated by taxa that are tolerant of degraded water quality conditions, although the fish community was rated as acceptable (MDEQ 1998). Dominant species found to be present included green sunfish, rock bass (*Ambloplites rupestris*), common carp, and blackside darter (*Percina maculata*)

(MDEQ 1998). No Federally listed aquatic species have been reported from surveys conducted in Stony Creek.

3.0 Proposed Federal Actions

The proposed NRC Federal action is the issuance, under the provisions of 10 CFR Part 52, of a COL authorizing the construction and operation of one new GEH ESBWR at the Fermi site. The proposed USACE Federal action is issuance of a permit pursuant to the CWA and Rivers and Harbors Act of 1899 to authorize work that could affect waters of the United States, including jurisdictional wetlands.

Prerequisites to certain NRC-authorized construction activities include, but are not limited to, documentation of existing site conditions for the Fermi 3 site and acquisition of the necessary permits (e.g., COL, local building permits, a National Pollutant Discharge Elimination System [NPDES] permit [40 CFR Part 122], a CWA Section 404 permit, a General Stormwater Permit, and other state and local permits). After these prerequisites are completed, planned construction activities could proceed and would include all or some of the activities pursuant to 10 CFR Part 50.10(a)(1). Following construction, the planned operation of the new reactor would be authorized if the Commission finds, under 10 CFR 52.103(g), that all acceptance criteria in the COLs have been met.

In a final rule dated October 9, 2007 (NRC 2007), the NRC limited the definition of "construction" to the activities that fall within its regulatory authority in 10 CFR Part 51.4. Many of the site preparation activities associated with building a nuclear power plant are not part of the NRC action to license the plant. Activities that are associated with building the plant but are not within the purview of the NRC action are grouped under the term "preconstruction." Preconstruction activities include clearing and grading, excavating, erecting support buildings and transmission lines, and other associated activities. These preconstruction activities may take place before the application for a COL is submitted, during the review of a COL application, or after a COL has been granted. Although preconstruction activities are outside the NRC's regulatory authority, many of them are within the regulatory authority of local, State, or other Federal agencies. The distinction between construction and preconstruction is not carried forward in this biological assessment; both are jointly discussed and are generally referred to as "building."

The USACE regulatory program was originally established pursuant to the Rivers and Harbors Appropriation Acts of 1890 (superseded) and 1899 (33 USC 401 *et seq*.). Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States. The most frequently exercised USACE authority is contained in Section 10 (33 USC 403). This section covers building, excavation, or deposition of materials in, over, or under such waters, or any work that would affect the course, location, condition, or capacity of those waters. In 1972 and 1977, amendments to the CWA added "Section 404" authority, which authorizes the USACE to issue permits for the discharge of material into waters

of the United States at specified disposal sites. Selection of such sites must be in accordance with guidelines developed by the U.S. Environmental Protection Agency (EPA) in conjunction with the Department of the Army (DA). These guidelines are known as the 404(b)(1) Guidelines for the specification of disposal sites for dredged or fill material. The discharge of all other pollutants into waters of the United States is regulated under Section 402 of the CWA.

Based on their habitat affinities and life-history characteristics, some protected terrestrial and freshwater species could be affected by building and operation activities associated with the Fermi 3 project:

- Terrestrial, including wetlands
  - Building activities
    - Onsite clearing, grading, and other site-preparation and building activities
    - Clearing for expansion of existing transmission line corridors or temporary workspaces
    - Clearing for new transmission line corridors
    - Installation of new or upgraded transmission lines and towers
  - Operation
    - Vegetation control in transmission line corridors
    - Transmission line repairs or upgrades
- Aquatic
  - Building activities
    - Terrestrial habitat disturbance, including wetlands and floodplains, on and in the vicinity of the site, and within/along existing and new transmission line corridors where such could impact water bodies (e.g., via erosion/sedimentation)
    - Aquatic habitat disturbance (e.g., dredging or placement of facilities in aquatic habitats)
  - Operation
    - Cooling water intake and discharge system
    - Transmission line ROW management
    - Introduction of contaminants (due to biocide and other water treatments, cooling tower blowdown, etc.)
    - Dredging to maintain the intake bay and barge slip areas

3.1 Impacts from Building and Operation on Site

The impacts from the proposed building and operation on onsite terrestrial and aquatic resources were assessed, as described in the following sections.

3.1.1 Terrestrial Species

Impacts on terrestrial resources, including wetlands, from building of Fermi 3 would include loss of habitat (temporary and permanent), increased human presence, increased traffic and noise, avian collisions with cranes and other tall construction equipment, the presence of outdoor lighting, and fugitive dust. Habitat losses would likely displace relatively mobile wildlife, while less-mobile wildlife could be destroyed. Mortality is expected to be limited mostly to the least-mobile wildlife, mainly small, slow-moving, burrowing, and cavity-dwelling species. However, increased mortality of more mobile species may result from increased traffic. Land clearing during nesting could temporarily depress local migratory bird productivity. Although nearby undisturbed forest and wetland habitat would be available to receive displaced animals, displaced wildlife would increase competition for limited resources, disrupt established territories, and cause increased predation and decreased fecundity. These conditions could lead to a temporary, localized reduction in population size for some species. After building activities have been completed, species that can adapt to disturbed or developed areas may recolonize affected areas where suitable habitat remains, is replanted, or allowed to regenerate.

The footprint of disturbance would encompass approximately 197 ac within the Fermi site (Detroit Edison 2011a). Approximately 9.4 ac of wetland on the Fermi site would be permanently lost, and approximately 23.7 ac would be temporarily disturbed during building. Approximately 9.4 ac of forest would be permanently lost, and approximately 11.1 ac would be temporarily disturbed during building. Approximately 8.4 ac of the permanently lost forest is recently regenerated cover on fill created during building of Fermi 2. Only about 1 ac of Lake Erie shoreline forest would be permanently disturbed. Section 4 describes Federally listed terrestrial species or species that are candidates for listing that may occur in or near the Fermi site or the proposed transmission line corridors.

Detroit Edison has stated its commitment to compliance with USACE Section 404 permit conditions and implementation of associated plans, including a Soil Erosion and Sedimentation Control (SESC) Plan, Storm Water Pollution Prevention Plan (SWPPP), and Compensatory Mitigation Plan, to provide adequate environmental protection (Detroit Edison 2011b). Best management practices (BMPs) would also be in place to address unavoidable disturbances. All building activities would be performed by Detroit Edison in compliance with applicable Federal, State, and local laws, regulations, and permit requirements (Detroit Edison 2011b).

Operating the proposed Fermi 3 plant is likely to have minimal potential impacts on vegetation, birds, and terrestrial, wetland, and shoreline habitats. Operations that could affect terrestrial resources are generally associated with the cooling system, transmission system, or traffic. Operation of the cooling towers transfers heat to the atmosphere in the form of water vapor and can result in icing, fogging, increased humidity, increased noise levels, and the deposition of dissolved solids from cooling-tower drift (NRC 1996). According to Detroit Edison, the maximum predicted annual salt deposition rate at any receiving location is 1 kg/ha/mo (Detroit Edison 2011a). This value is much lower than the NRC-acceptable levels of total dissolved solids and is not considered damaging to plants (NRC 2000). Therefore, impacts associated with operation of the cooling tower are expected to be negligible on vegetation, both on the Fermi site and in the vicinity.

Tall structures introduce a risk of avian collision mortality, but impacts on bird populations from avian collisions would be expected to be minimal. The Generic Environmental Impact Statement (GEIS) for license renewal (NRC 1996) concludes that effects of bird collisions with existing cooling towers are unlikely to threaten the stability of local populations or result in a noticeable impairment of the function of a species within local ecosystems.

Increased vehicular traffic could increase mortality of some wildlife species, particularly slower moving animals such as reptiles.

3.1.2 Aquatic Species

Activities related to building of Fermi 3 that could affect aquatic habitats include (1) building of a new intake structure, (2) building of a cooling water discharge structure, (3) rehabilitation of the existing barge slip, (4) building of a parking structure and a warehouse, and (5) dewatering of the Fermi 3 excavation area. Aquatic habitat features that could be directly affected by building Fermi 3 include Lake Erie and the north, central, and south canals on the Fermi site. Ground-disturbing activities that lead to soil erosion during site preparation and building of the new unit could result in adverse effects on water quality in water bodies on or adjacent to the Fermi site, including Lake Erie, the north and south canals, Swan Creek, and wetlands. Dewatering of the excavation area for Fermi 3 could result in lowering of groundwater levels that, in turn, could affect the level of surface water in the onsite North and South Quarry Lakes. In addition, during building of new transmission lines, there is a potential to affect habitat in streams that would be crossed in Monroe, Washtenaw, and Wayne Counties. This subsection evaluates impacts that could occur on aquatic resources on or in the vicinity of the Fermi site during building of Fermi 3 or during building of associated transmission lines. Building-related activities that could affect wetlands, including those within areas managed as part of the DRIWR, are described in Section 3.1.1 of this BA. As discussed in Section 2.2, drainage ditches and the circulating water reservoir on the Fermi site do not provide suitable aquatic habitat to support significant populations of aquatic organisms. Consequently, there would be little to no building-related impacts on aquatic resources within these surface water features.

3.2 Impacts from Building and Operation in Proposed Transmission Line Corridors

The transmission lines serving Fermi 3 would be owned and operated by ITC *Transmission*. Detroit Edison would not control the development or operation of the new transmission lines. Accordingly, the following discussion is based on publicly available information and reasonable expectations of how ITC *Transmission* would proceed, based on standard industry practice.

3.2.1 Terrestrial Species

3.2.1.1 Building

Building Fermi 3 would necessitate development of three new transmission lines in an assumed 300-ft-wide corridor from the Fermi site to the Milan Substation, a distance of approximately 29.4 mi. The first 18.6 mi (going west and north from Fermi) would be installed alongside the 345-kV lines that are already in place (see Figure 2-5). This 18.6-mi portion of the transmission line would be created largely by the reconfiguration of conductors on existing towers within the transmission ROW, but placement of additional transmission infrastructure may be necessary (Detroit Edison 2011a). A majority of the 18.6-mi portion of the route would cross large crop fields and would result in minimal impacts on habitat and wildlife.

The 10.8-mi portion of ROW between the existing transmission ROW and the Milan Substation would run through forests, rural residential areas, and agricultural fields. For the purpose of this BA, the 10.8-mi portion of the proposed route is presumed to have a ROW that is 300 ft wide. To accommodate erection of new transmission towers, including installation of steel poles, footings, and conductors along this portion of the corridor, Detroit Edison has indicated that acquisition and clearing of additional land adjacent to the existing ROW may be necessary for laydown and other building purposes (Detroit Edison 2011a).

The Milan Substation would probably be expanded from its current size of 350 ft by 500 ft to an area approximately 1000 ft by 1000 ft to accommodate the three new transmission lines from Fermi 3 (Detroit Edison 2011a). This expansion would encroach onto maintained grass and agricultural areas.

The exact locations (routes) for the new ROWs have not yet been finalized by ITC *Transmission*. Thus, the routes and corridor boundaries shown in Figure 2-5 are considered provisional and subject to change (Detroit Edison 2011a). Field surveys for Federally listed threatened and endangered species or species that are candidates for Federal listing have not yet been conducted in the proposed corridors. No Federally listed terrestrial species or species that are candidates for Federal listing are known to occur in the affected or directly adjoining habitats, but several Federally listed terrestrial species could potentially use the corridor and

adjoining habitats (MNFI 2007a; FWS 2011a). Wetland delineation surveys have not yet been conducted to determine the precise locations and extent of wetlands.

Development of the western 10.8 mi of transmission line corridor would affect approximately 415 ac. Approximately 244 ac of forest, including approximately 74 ac of forested wetlands, would be cleared of trees and other woody vegetation and planted with grass to accommodate the proposed three new 345-kV transmission lines (Detroit Edison 2011a). Other land uses within the proposed transmission line corridor include approximately 9 ac of emergent wetlands, 10 ac with grass or herbaceous cover, and approximately 135 ac of cropland, pasture, and hayfield. Most of the forested wetlands would be converted in the long term to scrub-shrub or emergent wetland types by controlling the regrowth of trees and other woody vegetation during maintenance of the corridor. The total potential permanent impact on wetlands from installation of the towers is expected to be approximately 0.5 ac (Detroit Edison 2011a).

Activities associated with building the new transmission lines would include clearing land, erecting new poles or towers, stringing new conductors, and upgrading existing transmission lines. Figure 2-5 shows the proposed routing for the three new lines in the transmission line corridors.

Impacts on wildlife and habitat from transmission line development would be reduced to the extent practicable by using existing transmission towers and ROWs for approximately 18.6 of the 29.4 mi of its length. Most large wildlife species present are expected to be sufficiently mobile and would temporarily move out of the way to avoid building activity, but smaller ground- and cavity-dwelling animals would be more vulnerable to mortality from land clearing. Wildlife species that favor disturbed vegetation communities would be expected to benefit and use the newly cleared ROW following erection of the transmission lines. The impact on terrestrial wildlife resources would therefore be minor.

ITC *Transmission* would have to mitigate for unavoidable permanent wetland impacts to comply with Federal and State regulations. ITC *Transmission* would likely design mitigation measures in consultation with applicable regulatory agencies, including the USACE and MNDR, prior to submitting their permit applications (Detroit Edison 2011a). Prior to applying for permits from USACE and MDNR, ITC *Transmission* would likely have to delineate wetlands and conduct targeted surveys for Federally listed species. ITC *Transmission* could use that information to identify span and tower locations that minimize potential impacts on wetlands and other important habitats. ITC *Transmission* would at that time identify specific locations of towers, construction access routes, and material storage areas.

3.2.1.2 Operation

The potential effects on terrestrial ecological resources from transmission line operation would result mostly from vegetation maintenance. The GEIS for license renewal (NRC 1996)

concludes that once a transmission line corridor has been established, the impacts on wildlife populations from continued ROW maintenance are not significant.

Effects on wildlife from the transmission lines are expected to be minor and to be limited to bird collisions with towers and conductors. Section 4.5.6.2 of the GEIS for license renewal (NRC 1996) concludes that bird collisions during operation of transmission lines do not cause long-term reductions in bird populations. The GEIS (NRC 1996) also concludes that the impacts of electromagnetic fields (EMFs) on terrestrial flora and fauna are not significant at operating nuclear power plants, including transmission line systems with variable numbers of power lines. On this basis, it is concluded that the incremental impacts of EMF due to possible additions of new power lines for Fermi 3 would be minimal.

Therefore, the review team concludes that the potential effects of transmission line maintenance in existing and new transmission line corridors would not likely adversely affect the Federally listed terrestrial species, including species that are candidates for Federal listing, identified in Table 1-1.

3.2.2 Aquatic Species

A short length (less than 1 mi) of new transmission line corridor would be developed on the Fermi site to transmit power from the Fermi 3 generator to a new Fermi 3 switchyard. This new onsite transmission line corridor would be approximately 170 ft wide and include two sets of towers that would carry both rerouted Fermi 2 transmission lines and new Fermi 3 transmission lines (Detroit Edison 2011a). Surface water and wetland features located along the proposed onsite corridor include the south canal, a drainage area that is composed of a mosaic of emergent wetlands, and some forested wetlands (Detroit Edison 2011a). There are no surface water features within the footprint for the new switchyard (Detroit Edison 2011a). Clearing of the onsite transmission line ROW, erecting the transmission towers, and stringing of the transmission lines will all be accomplished using methods that minimize impacts on wetlands (Detroit Edison 2011a). The south canal and the drainage area within this portion of the Fermi site will be spanned by the transmission lines; impacts on the drainage area are expected to be minor because no activities associated with the transmission structure installation are expected to occur within the drainage channel (Detroit Edison 2011a).

Three new 345-kV transmission lines for Fermi 3 will be located within an assumed 300-ft-wide corridor from the Fermi site to the Milan Substation, with a length of approximately 29.4 mi. While the onsite Fermi 3 transmission lines will be owned by Detroit Edison up to the point of their interconnection with the new Fermi 3 switchyard, ITC *Transmission* will exclusively own and operate the offsite lines and other transmission system equipment between the Fermi 3 switchyard and the Milan Substation, and Detroit Edison will not control the building or operation of the transmission system. It is expected that Detroit Edison would contract with

ITC *Transmission* to maintain the transmission towers and lines located on Detroit Edison property (Detroit Edison 2011a).

The transmission line corridor route is described in Section 2.4.1.2 of the EIS and is illustrated in Figure 2-5. The three 345-kV lines for Fermi 3 would be built in an east–west common corridor that currently contains transmission lines for Fermi 2 for approximately 5 mi to a point just west of I-75. From this point, the three Fermi-Milan lines would be in a corridor shared with other non-Fermi lines that travel to the west and north for approximately 13 mi. The last 10.8 mi of the proposed corridor that would proceed west to the Milan Substation are currently undeveloped, and no transmission infrastructure exists. This portion of the corridor has been under ITC *Transmission*'s control for future transmission development, but vegetation maintenance has been minimal except to remove tall, woody vegetation. According to FWS's National Wetland Inventory mapping, the identified transmission route crosses about 30 wetlands or other waters that may be regulated by the USACE and MDEQ (FWS 2010). The 18.6-mi existing eastern section of the transmission route crosses 12 narrow agricultural drains and small streams; the undeveloped western 10.8-mi section of the route crosses nine drains and small streams.

Impacts of transmission line development on aquatic resources along the eastern 18.6 mi of the transmission line corridor are expected to be small, since the reconfiguration of existing conductors would, for the most part, allow for the use of existing infrastructure (e.g., transmission line towers) to create the new lines, and access for installing additional lines is good because the vegetation has been managed to exclude tall woody vegetation. Existing aquatic habitats in this portion of the corridor would be spanned, and BMPs would be used to protect aquatic habitats crossed by the new lines. This includes, but is not limited to, the use of silt fencing, hay bales, and similar practices to ensure the protection of aquatic habitats in close proximity to building activity. Similarly, agricultural drains and small streams occurring in the undeveloped western corridor are narrow, and it is anticipated that placement of structures within stream channels could be avoided by using tower spans of 700–900 ft (Detroit Edison 2011a). Roads in the vicinity are expected to provide sufficient access to this region of the corridor without the need for building new access roads. There are no aquatic habitats within the area that would be affected by the anticipated expansion of the Milan Substation. Impacts of transmission line development on aquatic habitats within the proposed transmission line corridor would be temporary, easily mitigated, and minor and no additional mitigation would be necessary.

4.0 Species Descriptions

This section identifies terrestrial and aquatic Federally listed species, including species that are candidates for Federal listing, that may occur on or near the Fermi site or the proposed transmission line corridors (see Table 1-1) and describes their life history and habitat use.

4.1 Terrestrial Species

4.1.1 Indiana Bat (*Myotis sodalis*)

The Indiana bat (*Myotis sodalis*) is Federally listed and State-listed as endangered. In its scoping letter, the FWS (2009a) identified the Indiana bat as potentially occurring in Monroe, Washtenaw, and Wayne counties, Michigan. The MDNR expressed no specific concern for the species during consultations in 2007 (Detroit Edison 2009b), and according to MNFI there are no reported occurrences of the Indiana bat in Monroe County (MNFI 2007b). No bats of any species were observed at the Fermi site during any of the wildlife surveys conducted by Detroit Edison since 2006. However, mist-net surveys for Indiana bats that follow FWS protocols have not been conducted on the Fermi site. MNFI records indicate that the Indiana bat has been observed in counties to the north and west of Monroe County. The species is found in Michigan only during late spring to early fall, when it roosts in forested areas beneath loose bark of large trees or in hollow snags (MNFI 2007b). With the death of many green ash (*Fraxinus pennsylvanica*) trees in the project area caused by the emerald ash borer (*Agrilus planipennis*), there are several trees that, at the time of the preparation of this biological assessment, may be suitable for summer roosting habitat (Detroit Edison 2011c).

On August 2, 2011, Detroit Edison conducted a field visit to the Fermi site to evaluate areas that would be affected by building the proposed Fermi 3 facilities that had not been investigated during the 2008–2009 survey because of site layout changes that occurred after the survey was completed (Detroit Edison 2011c). Detroit Edison evaluated potential roost trees in each location as low, moderate, or high potential based on criteria drawn from the FWS's *Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision* (FWS 2007). Six trees were evaluated as potentially suitable for summer roosts by the Indiana bat and their locations were determined using a handheld GPS unit. Figure 4-1 illustrates these potential roost tree locations. Figure 4-1 also shows the location of a single large shagbark hickory tree identified during the 2008–2009 wildlife surveys in the woods east of Quarry Lakes Road.

One location was considered high potential, but this determination was based on a single tree that may deteriorate and become unsuitable by the time building of the transmission line

Figure 4-1. Fermi 3 Potential Indiana Bat Roost Trees (Source: Detroit Edison 2011c)

would occur. Most trees in the area were too small or otherwise unsuitable for Indiana bat summer roosts, and this situation is unlikely to improve with time.

Although some roost trees suitable for summer roosting habitat are present, other habitat features usually preferred by Indiana bat are generally lacking at the Fermi site. In addition, most of the potential roost trees are dead ash trees that will continue to deteriorate, so conditions for summer roosts will not improve before building of the new Fermi unit starts.

Because the transmission line corridor has not been surveyed, no potential roost trees have been identified in the corridor. It is possible that suitable roosting habitat occurs within the western 10.8-mi segment of the corridor. Other Indiana bat habitat features have likewise not been evaluated. Any ash trees in the corridor that have the potential to be potential roost trees at the time this BA was prepared would continue to deteriorate. Conditions for summer roosts would be unlikely to improve before the start of transmission line development.

4.1.2 Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*)

The eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) is a candidate for listing that is known or believed to occur in more than 50 counties in Michigan, including Washtenaw and Wayne counties (MNFI 2007a; FWS 2011b). This species is found in a variety of wetland habitats. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens. Some populations of the eastern massasauga rattlesnake also utilize open uplands and/or forest openings for foraging, basking, gestation, and parturition (i.e., giving birth to young) (Lee and Legge 2000; MNFI 2007a). Neither FWS nor MNFI have records of this snake occurring in Monroe County (MNFI 2007a; FWS 2011b). Therefore it is unlikely that the snake occurs on the Fermi site. No surveys have been conducted to evaluate the presence or absence of the snake or of suitable habitat along the transmission line corridor, including those areas where the corridor would pass through Washtenaw and Wayne counties.

4.1.3 Karner Blue Butterfly (*Lycaeides melissa samuelis*)

The Karner blue butterfly (*Lycaeides melissa samuelis*) is Federally listed as endangered, State-listed as threatened, and considered by FWS to occur in Monroe County but not on the Fermi site. It usually is associated with landscapes composed of sandy soils, which supported oak or oak-pine savanna or barrens prior to European settlement. Since its historical habitat suffers from fire suppression efforts, the butterfly often occurs in openings, old fields, and ROWs surrounded by close-canopied oak forest. Karner blue larvae feed exclusively on wild lupine (*Lupinus perennis*), but adults visit a wide variety of flowering plants for nectar (Rabe 2001). Although lupines were established in the prairie creation area in the onsite transmission line ROW and were observed in 2000 and 2002, no lupines were observed in subsequent vegetation surveys between 2006 and 2009 (Detroit Edison 2009a). This butterfly has not been

observed in Washtenaw or Wayne counties, and it has not been seen in Monroe County since 1986 (MNFI 2007a). The most recent sitings of this butterfly have been in the west-central portion of lower Michigan (MNFI 2007a).

The MDNR Endangered Species Coordinator stated that Karner blue butterflies are not likely to occur on the Fermi site because none were found when the entire area was carefully surveyed in recent years prior to introduction of Karner blue butterflies in the Petersburg Wildlife Management Area near Petersburg, Michigan. The maximum movement of the butterflies from their point of introduction is about 1 km (Hoving 2010), eliminating the possibility that introduced butterflies would now occur on the Fermi site or along the transmission line corridor. In discussions between NRC and FWS in July 2011, FWS indicated that the Karner blue butterfly is unlikely to occur in the project area.

4.1.4 Mitchell's Satyr Butterfly *(Neonympha mitchellii mitchellii)*

The Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*) is Federally listed as endangered and is known or believed to occur in nine counties in southern Michigan, including Washtenaw County but not Monroe or Wayne counties (FWS 2011c). It is also State-listed as endangered (MNFI 2007a). Although its habitat requirements are not yet fully understood, this butterfly appears to be restricted to calcareous wetlands that range along a continuum from open fen, wet prairie, prairie fen, and sedge meadow to shrub-carr and tamarack savanna (Lee 2000; MNFI 2007a). According to the MNFI, this butterfly was last seen in Washtenaw County in 2010. According to the FWS, however, this species is unlikely to occur in the project area (Fisher 2011).

4.1.5 American Burying Beetle (*Nicrophorus americanus*)

The American burying beetle (*Nicrophorus americanus*) is Federally listed as endangered and State-listed as presumed extirpated (meaning that the State believes that no individuals remain in the State). The species has not been observed on the Fermi site, and the last reported observation in the project area was in Washtenaw County in 1917 (MNFI 2007a). The American burying beetle formerly occupied a broad range of habitats, ranging from mature hardwood forests to old field shrubland to grassland. It is not found in sites with soils unsuitable to burying carrion, such as those with very loose sand, extremely dry soils, or saturated soils. The FWS did not mention this species in its scoping letter (FWS 2009a).

4.1.6 Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)

The Eastern prairie fringed orchid (*Platanthera leucophaea*), also known as the prairie white-fringed orchid, is Federally listed as threatened and State-listed as endangered. This species has not been observed on or near the Fermi site in any vegetation studies conducted on the site since 1973, but it has been reported in Monroe County as recently as 2006 (MNFI 2007c). The

plant is known mostly from lakeplain prairies around Saginaw Bay and western Lake Erie, occurring in moist alkaline and lacustrine soils. This habitat is not present on the Fermi site or in the immediate vicinity, but it may occur along the proposed transmission line corridor. Although it is rare, this orchid can readily colonize highly disturbed sites such as ditches, unmowed old fields, and even the edges of golf courses as long as competition is not overly intense and proper soil fungi are present. No surveys have been conducted to evaluate the presence or absence of this orchid along the transmission line corridor.

4.2 Aquatic Species

4.2.1 Northern Riffleshell (*Epioblasma torulosa rangiana*)

The northern riffleshell (*Epioblasma torulosa rangiana*) is a freshwater unionid mussel (see Section 2.4.2.1 of the EIS) that was Federally listed as an endangered species in 1993 (58 FR 5638) and is also listed as endangered by the State of Michigan (MNFI 2007a). The historic range for the northern riffleshell includes Illinois, Indiana, Kentucky, Michigan, Ohio, Pennsylvania, West Virginia, and western Ontario (Carman and Goforth 2000a). It was once widespread in the Ohio and Maumee River Basins and in tributaries of western Lake Erie (Carman and Goforth 2000a). In Michigan, the northern riffleshell is only known to currently occur in the Black River in Sanilac County and the Detroit River in Wayne County (Carman and Goforth 2000a). More than 100 individuals from the Detroit River population were relocated to the St. Clair River in 1992 as part of an effort to establish a new population, but the success of that effort is unknown (Carman and Goforth 2000a).

The habitat for the northern riffleshell is fine to coarse gravel in riffles and runs of streams with swift currents (MNFI 2007a). The northern riffleshell was last observed in Monroe County in 1977 and in Wayne County in 2006 (MNFI 2007a). The northern riffleshell has not been reported from Washtenaw County (MNFI 2007a). No streams with conditions suitable for the northern riffleshell are present on the Fermi site; whether appropriate habitats are present in stream areas that are crossed by the proposed transmission line corridor is currently unknown. No extant populations of this species are known from stream drainages that would be crossed by the transmission lines. The northern riffleshell is a riverine species and areas of Lake Erie adjacent to the Fermi site do not offer suitable habitat for this species.

4.2.2 Rayed Bean (*Villosa fabalis*)

The rayed bean (*Villosa fabalis*) is a freshwater unionid mussel that was Federally listed as an endangered species in 2012 (77 FR 8632). This species is also listed as endangered by the State of Michigan and has been recorded in Monroe and Wayne Counties (MNFI 2007a). The rayed bean is patchily distributed in the St. Lawrence, Ohio, and Tennessee River drainages (Carman 2001). Although it was historically widespread from Ontario to Alabama and Illinois to New York, only a few populations are currently known to exist, and it is assumed to be

extirpated throughout much of its former range (Carman 2001). Extant populations are currently known from 31 streams in Indiana, Michigan, New York, Ohio, Pennsylvania, Tennessee, and West Virginia in the United States, and the province of Ontario in Canada (77 FR 8632). In Michigan, existing rayed bean populations are known from the Black, Pine, Belle, and Clinton River systems (77 FR 8632).

The rayed bean is generally found in smaller headwater creeks, although it has also been found in larger rivers (FWS 2002). It usually is found in or near shoal or riffle areas; there are also records of rayed bean specimens (valves only) from shallow, wave-washed areas of Lake Erie generally associated with islands in the western portion of the lake (FWS 2002). Preferred substrates are gravel and sand, and it is oftentimes found among the roots of vegetation growing in riffles and shoals (FWS 2002). The rayed bean has experienced a significant reduction in range, and most of its populations are isolated and appear to be declining (FWS 2002). The survival of the rayed bean is threatened by a variety of stressors, especially habitat destruction associated with siltation, dredging, and channelization and the introduction of alien species such as the Asian clam and zebra and quagga mussels (FWS 2002).

Valves of the rayed bean were last observed in Monroe County in 1984 and in Wayne County in 2006 (MNFI 2007a). These observations were based upon the presence of shells, not living specimens (Carman 2001). The rayed bean has not been reported from Washtenaw County (MNFI 2007a). There are no streams on the Fermi site with conditions suitable for the rayed bean and no extant populations are known to occur in the stream drainages that would be crossed by the proposed transmission line route.

Although there are records of rayed bean valves from shallow, wave-washed areas of western Lake Erie, information supplied by Detroit Edison suggests that it is unlikely that the species occurs in the vicinity of the Fermi site for a number of reasons: (1) approximately 30 yr of information on mussels in the western basin of Lake Erie (including in the vicinity of the Fermi site) have been collected and evaluated by the U.S. Geological Survey (USGS) and no rayed bean specimens have been identified; (2) the USACE conducted mussel surveys in Lake Erie approximately 2 mi south of the Fermi site and found no live specimens or shells of the rayed bean; (3) the rayed bean was not observed in surveys conducted by the MNFI just north of the Fermi site near the mouth of Swan Creek; and (4) observations made by divers during sediment sampling and buoy maintenance activities within the exclusion zone for the Fermi site indicate that the sediment is predominantly clay hardpan, which would not be suitable for the rayed bean (Detroit Edison 2010).

4.2.3 Snuffbox Mussel (*Epioblasma triquetra*)

The snuffbox mussel (*Epioblasma triquetra*) is a freshwater unionid mussel that was Federally listed as an endangered species in 2012 (77 FR 8632). This species is also listed as endangered by the State of Michigan and has been recorded in Monroe, Wayne, and

Washtenaw Counties (MNFI 2007a). The historic range of the snuffbox mussel extends from Ontario southward to Mississippi and Alabama and eastward to New York and Virginia; extant populations are still present in Wisconsin, Illinois, Indiana, Kentucky, Michigan, Ohio, Pennsylvania, Tennessee, and West Virginia (NatureServe 2009). In Michigan, this species is found primarily in eastern and southeastern rivers and has been reported from Otter Creek in Monroe County and the Detroit River in Wayne County (Carman and Goforth 2000b). The snuffbox mussel primarily inhabits small and medium-sized rivers, although specimens have also been collected from Lake Erie and large rivers, such as the St. Clair River. Preferred habitat usually has clear water and sand, gravel, or cobble substrate with a swift current; individuals are often buried deep in the sediment (Carman and Goforth 2000b). In Michigan, the only known fish host is the log perch (*Percina caprodes*), although the banded sculpin (*Cottus carolinae*) has been identified as a fish host in other portions of its range (Carman and Goforth 2000b).

The snuffbox mussel was last reported from Monroe, Wayne, and Washtenaw Counties in 1933, 2000, and 1977, respectively (MNFI 2007a). Streams with conditions suitable for the snuffbox mussel are not present on the Fermi site. Although there is a possibility that shoreline areas of Lake Erie near the Fermi site could contain suitable substrates for the snuffbox mussel, information supplied by Detroit Edison suggests that it is unlikely that the species occurs in the vicinity of the Fermi site for a number of reasons: (1) approximately 30 yr of information on mussels in the western basin of Lake Erie (including in the vicinity of the Fermi site) have been collected and evaluated by the USGS and no snuffbox mussel specimens have been identified; (2) the USACE conducted mussel surveys in Lake Erie approximately 2 mi south of the Fermi site and found no live specimens or shells of the snuffbox mussel; (3) the snuffbox mussel was not observed in surveys conducted by the MNFI just north of the Fermi site near the mouth of Swan Creek; and (4) observations made by divers during sediment sampling and buoy maintenance activities within the exclusion zone for the Fermi site indicate that the sediment is predominantly clay hardpan, which would not be suitable for the snuffbox mussel (Detroit Edison 2010).

It is currently unknown whether appropriate habitats for the snuffbox mussel are present in any of the streams that are crossed by the proposed transmission line corridor. However, no extant populations of this species are known from stream drainages that would be crossed by the transmission lines.

5.0 Potential Environmental Effects of the Proposed Actions

This section describes the potential impacts from building and operating the proposed Fermi 3 on the species listed in Table 1-1.

5.1 Building Impacts

The following paragraphs describe the potential for building of Fermi 3 to affect Federally listed species, including species that are candidates for Federal listing, with the potential to occur on and within the vicinity of the Fermi site and transmission line corridors (see Table 1-1).

5.1.1 Fermi Site

5.1.1.1 Terrestrial Species

Indiana Bat

The Indiana bat has not been observed on the Fermi site, nor has it been reported in Monroe County by the MNFI (MNFI 2007b); however, the Indiana bat has been observed in counties to the north and west of Monroe County (MNFI 2007a). The FWS considers the Indiana bat as known to or believed to occur in Monroe County. There is currently a low probability that suitable habitat for this species might be present on the Fermi site; that probability will decrease in the next few years as the dead and dying ash trees further deteriorate. Considering there is a low probability that suitable Indiana bat habitat would exist on the Fermi site by the time building activities would begin, the review team concludes that the proposed site work may affect, but would not be likely to adversely affect, the Indiana bat.

Eastern Massasauga Rattlesnake

There is no record of occurrence of this species in Monroe County (MNFI 2007a; FWS 2011b); thus, it is unlikely to occur on the Fermi site. Therefore, the review team concludes that project-related building activities at the Fermi site would have no effect on the eastern massasauga rattlesnake.

Karner Blue Butterfly

Although the Karner blue butterfly was observed in Monroe County in 1986 (MNFI 2007a), the FWS stated that this species is unlikely to occur in the project area (FWS 2011a). MDNR also stated that the probability of the Karner blue butterfly occurring on the Fermi site is very low.

Therefore, the review team concludes that project-related building activities at the Fermi site would have no effect on the Karner blue butterfly.

Mitchell's Satyr Butterfly

Although MNFI records indicate the insect was observed in Washtenaw County in 2010, according to the FWS, this species is unlikely to occur in the project area (Fisher 2011). Therefore, project-related building activities at the Fermi site would have no effect on the Mitchell's satyr butterfly.

American Burying Beetle

This species is presumed extirpated from the State and has not been seen in the project area since 1917 (MNFI 2007a). Because it is unlikely to occur anywhere in the state, project-related building activities at the Fermi site would have no effect on the American burying beetle.

Eastern Prairie Fringed Orchid

There are no recorded occurrences of this species on the Fermi site (MNFI 2007a; FWS 2011a) and it was not observed during any of the plant or wildlife surveys conducted on the Fermi site (Detroit Edison 2009a). The FWS has indicated the plant is unlikely to occur on the Fermi site (Fisher 2011). However, this species was observed in Monroe County within the last 5 years, and the plant is known to occur in lakeplain prairies around western Lake Erie. The plant may therefore occur on the Fermi site. There are approximately 238 ac of emergent wetlands on the Fermi site. Because Fermi 3 would impact only approximately 20.9 ac (or about 9 percent) of the emergent wetlands on the Fermi site and because large portions of these emergent wetlands are likely to be unsuitable because they have been severely degraded by the invasive plant. common reed, the review team has determined that project-related building activities on the Fermi site may affect, but would be unlikely to adversely affect, the Eastern prairie fringed orchid.

5.1.1.2 Aquatic Species

Northern Riffleshell

There is no suitable habitat for the northern riffleshell on the Fermi site or in adjacent waters of Lake Erie (Section 4.2). In addition, there are no recent records of occurrence of this species from the Fermi site or environs. On the basis of this information, the review team concludes that project-related building activities on the Fermi site would have no effect on the northern riffleshell.

Rayed Bean

There are no streams on the Fermi site with conditions suitable for the rayed bean. Although there are records of rayed bean valves from shallow, wave-washed areas of western Lake Erie, it is considered unlikely for the species to occur in the vicinity of the Fermi site for a number of reasons, as presented in Section 4. In addition, most of the area that would be affected by development of the intake structure, barge slip, and the discharge structure for Fermi 3 has been disturbed previously by periodic maintenance dredging. On the basis of this information, the review team concludes that project-related building activities on the Fermi site would have no effect on the rayed bean.

Snuffbox Mussel

There are no recent records of occurrence of this species from the Fermi site or environs. Although there are no suitable stream habitats on the Fermi site, there is the potential for suitable habitats to exist in Lake Erie and the host required by this species (logperch, *Percina caprodes*) has been collected near the Fermi site in Swan Creek and in Lake Erie near the South Lagoon (AECOM 2009). The areas in Lake Erie that would be disturbed during the building of Fermi 3 facilities either have been previously disturbed by periodic maintenance dredging or have a clay hardpan substrate (Detroit Edison 2010) rather than the sand, gravel, or cobble substrate preferred by this species. Therefore, it is considered unlikely that this species would be present in the project area. On the basis of this information, the review team concludes that project-related building activities on the Fermi site would have no effect on the snuffbox mussel.

5.1.2 Transmission Line Corridors

Although ITC *Transmission* has not finalized the locations of the transmission line corridor or ancillary areas (e.g., laydown areas), Detroit Edison has indicated that the proposed route is the result of past analyses of routes conducted for the development of Fermi 2. The route analysis (Detroit Edison 2009b) followed guidance from the U.S. Department of the Interior and the Federal Power Commission for siting transmission lines. In addition, other criteria were considered to minimize environmental impacts (Detroit Edison 2011a).

5.1.2.1 Terrestrial Species

Because ITC *Transmission* has not yet performed on-the-ground field surveys for Federally listed species along the proposed routes, the review team consulted online sources, including the MNFI and the FWS Environmental Conservation Online System, to determine what information is currently available. Once final routes have been determined, ITC *Transmission* is expected to conduct on-the-ground field surveys for each line prior to completing applications for the required USACE and MDNR permits. ITC *Transmission* would likely have to implement BMPs to minimize any potential impacts on Federally listed species and critical habitats during

transmission line development activities, based on USACE and MDNR permit conditions (Detroit Edison 2011a).

The Milan substation is expected to be expanded from its current dimensions of 300 ft by 500 ft to approximately 1000 ft by 1000 ft. All of the area that would be used for the expansion is either cropland or mowed grass. Building an expanded substation would, therefore, have no effect on any of the Federally listed terrestrial species, including species that are candidates for Federal listing.

Indiana Bat

The Indiana bat has been observed in Washtenaw and Wayne counties (MNFI 2007a), and this species might occur in suitable habitat along the transmission line corridor. The review team believes that if Detroit Edison limits clearing of forest cover to between October 15 and March 31, it could avoid potentially adverse effects on Indiana bats (FWS 2009b). Detroit Edison and ITC *Transmission* could also avoid adverse effects by conducting surveys of suitable habitat trees similar to the survey conducted on the Fermi site in August 2011. If the results of such a survey failed to locate suitable habitat, the likelihood of Indiana bats being present and affected by building the transmission line would be minimal. Alternately, Detroit Edison or ITC *Transmission* could conduct targeted mist nest surveys of forested areas using an FWS-approved protocol (FWS 2011d) prior to disturbance and proceed only if the surveys reveal that no bats are present. Considering the ability to avoid adverse impacts, the review team concludes that building of the proposed transmission lines may affect, but is not likely to adversely affect, the Indiana bat.

Eastern Massasauga Rattlesnake

Because there is no record of occurrence of this species in Monroe County, it is unlikely to occur along the Monroe County segment of the transmission line route. Based on its known distribution, this snake could occur in wetlands and naturally vegetated upland habitats crossed by the Washtenaw County and Wayne County segments of the route. Clearing forested wetlands would be necessary to establish new transmission corridor. Forested wetlands within the transmission line ROW would be converted to emergent or scrub-shrub wetlands for the long term. Because the species favors both open and forested wetlands (MNFI 2007a), conversion of wetland from forested to emergent or scrub-shrub wetland is unlikely to adversely affect the species. The same is true for clearing upland forests for the transmission lines.

The greatest potential for impacts on this snake would be during ground disturbance of naturally vegetated areas to build tower pads and access roads. The eastern massasauga rattlesnake is a mobile snake, and active adults with a length of 2 to 3 feet would likely move out of the way before being crushed by construction equipment. However, ground disturbance of nests or underground hibernation areas could kill or injure individuals. ITC *Transmission* could reduce

the potential for impacts by surveying areas subject to ground disturbance prior to clearing and grubbing, delaying work if hibernation areas or nests are discovered, and relocating discovered individuals to nearby naturally vegetated areas. Recognizing the possibility of these simple management efforts, the review team concludes that building of the proposed transmission lines may affect, but is not likely to adversely affect, the eastern massasauga rattlesnake.

Karner Blue Butterfly

The Karner blue butterfly is listed as endangered and is recognized as potentially occurring in Monroe County (MNFI 2007a). It has not been seen in Monroe County since 1986 (MNFI 2007a; FWS 2011a). This butterfly has not been observed in Washtenaw or Wayne counties (MNFI 2007a) and is unlikely to occur in the project area in those counties. The review team therefore concludes that building of the proposed transmission line would have no effect on the Karner blue butterfly.

Mitchell's Satyr Butterfly

Although MNFI records indicate this insect was observed in Washtenaw County in 2010, according to the FWS, this species is unlikely to occur in the project area (Fisher 2011). Therefore, the review team concludes that building the proposed transmission lines would not affect the Mitchell's satyr butterfly.

American Burying Beetle

This species is presumed extirpated from the state and has not been seen in the project area since 1917 (MNFI 2007a). Because it is unlikely to occur anywhere in the State, building the proposed transmission lines would not affect the American burying beetle.

Eastern Prairie Fringed Orchid

The Eastern prairie fringed orchid has been observed in recent years in Monroe, Washtenaw, and Wayne counties. This plant could potentially occur wherever suitable habitat exists along the proposed transmission line route. Because the plant favors open rather than forested wetland habitat, forest clearing to establish new transmission line corridor lands is unlikely to result in adverse effects. However, filling emergent wetlands to build tower pads or access roads could kill any specimens present within the filled wetlands. However, it should be possible for ITC *Transmission* to survey emergent wetlands for this plant prior to any fill activities and make minor adjustments to tower placements or access road alignments to avoid any identified specimens. Recognizing that ITC *Transmission* could use BMPs or make minor adjustments to wetland locations affected by building of the transmission line, the review team concludes that building the proposed transmission lines may affect, but is not likely to adversely affect, the Eastern prairie fringed orchid.

5.1.2.2 Aquatic Species

Northern Riffleshell

Although suitable habitat for the northern riffleshell could be present in some of the streams that would be crossed by the proposed transmission line corridor, it is not expected to occur along the transmission line route because extant populations of this species in Michigan are only known to be present in the Black River in Sanilac County and the Detroit River in Wayne County (Carman and Goforth 2000a). Even if present in streams crossed by the transmission line corridors, building transmission lines for Fermi 3 is not expected to affect the northern riffleshell because aquatic habitats that are crossed by the corridor would be spanned without placement of structures within stream channels and because BMPs would be implemented to protect water quality in aquatic habitats located near building activity. Additional regulatory review of proposed plans for building of the transmission lines, which would be built, owned, and maintained by ITC *Transmission*, would be conducted by MDNR, and potential impacts on water quality are expected to be addressed through mitigation measures and BMPs required under other State- or Federally issued permits. On the basis of this information, the review team concludes that building of transmission lines for Fermi 3 would have no effect on the northern riffleshell.

Rayed Bean

No extant populations are known to occur in the stream drainages that would be crossed by the proposed transmission line route. The building of transmission lines for Fermi 3 is not expected to affect the rayed bean because the species has not been reported from the streams that would be crossed by the proposed transmission line corridor; aquatic habitats that are crossed by the corridor would be spanned without placement of structures within stream channels; and BMPs would be implemented to protect water quality in aquatic habitats located near building activity. On the basis of this information, the review team concludes that building transmission lines for Fermi 3 would have no effect on the rayed bean.

Snuffbox Mussel

It is not known whether suitable stream habitat or populations of the snuffbox mussel occur along the proposed offsite transmission line corridor. However, no extant populations of this species are known from stream drainages that would be crossed by the transmission lines. It is anticipated that the small streams that would be crossed by the proposed transmission line corridor could be easily spanned without placing structures in stream channels and that BMPs would be implemented to protect water quality in streams during building activities. Additional regulatory review of proposed plans for building the offsite transmission lines, which would be built, owned, and maintained by ITC *Transmission*, would be conducted by MDNR, and potential impacts on water quality are expected to be addressed through mitigation measures and BMPs

required under other State- or Federally issued permits. On the basis of this information, the review team concludes that building the transmission lines for Fermi 3 would have no effect on the snuffbox mussel.

5.2 Operations Impacts

The following paragraphs describe the potential for operations-related impacts on the Federally listed species, including species that are proposed or candidates for Federal listing with the potential to occur on and within the vicinity of the Fermi site and transmission line corridors (see Table 1-1).

5.2.1 Fermi Site

5.2.1.1 Terrestrial Species

Indiana Bat

This species has potential to occur in suitable habitat on the Fermi site. This species might roost and forage in forested and other naturally vegetated suitable habitats on the Fermi site. However, those habitats would not be disturbed by Fermi 3 operations. Therefore, the operation of Fermi 3 would have no effect on the Indiana bat on the Fermi site.

Eastern Massasauga Rattlesnake

There is no record of occurrence of this species in Monroe County (MNFI 2007a; FWS 2011b); thus, the snake is unlikely to occur on the Fermi site. Therefore, operation of Fermi 3 would have no effect on the eastern massasauga rattlesnake on the Fermi site.

Karner Blue Butterfly

The Karner blue butterfly has not been seen in Monroe County since 1986 (MNFI 2007a), and the FWS stated that this species is unlikely to occur in the project area (FWS 2011a). MDNR also stated that the probability of the Karner blue butterfly occurring on the Fermi site is very low. Therefore, the review team concludes that the operation of Fermi 3 would have no effect on the Karner blue butterfly on the Fermi site.

Mitchell's Satyr Butterfly

Although MNFI records indicate this insect was observed in Washtenaw County in 2010, according to the FWS, this species is unlikely to occur in the project area (Fisher 2011). Therefore, the review team concludes that the operation of Fermi 3 would have no effect on the Mitchell's satyr butterfly.

American Burying Beetle

This species is presumed extirpated from the State and has not been seen in the project area since 1917 (MNFI 2007a). The FWS did not mention this species in its scoping letter (FWS 2009a). Therefore, operation of Fermi 3 would have no effect on this insect on the Fermi site.

Eastern Prairie Fringed Orchid

There are no recorded occurrences of this species on or near the Fermi site (MNFI 2007a; FWS 2011a). However, the plant is known mostly from lakeplain prairies around Saginaw Bay and western Lake Erie; therefore, this plant may occur on the Fermi 3 site. Nevertheless, even if specimens occurred in wetland habitats on the site, operations would not disturb wetland habitats. Therefore, the operation of Fermi 3 would have no effect on the Eastern prairie fringed orchid on the Fermi site.

5.2.1.2 Aquatic Species

Northern Riffleshell

There are no recent records of occurrence of this species from the Fermi site or environs. As identified in Section 2.2, there are no streams on the Fermi site with conditions suitable for the northern riffleshell. In addition, the northern riffleshell is a riverine species that would not occur in Lake Erie (Section 2.2). Because there is no suitable habitat for the northern riffleshell on the Fermi site or in adjacent waters of Lake Erie, the operation of Fermi 3, including withdrawal and discharge of cooling water from or into Lake Erie and NPDES-permitted discharges waste water and storm water into onsite water bodies, would have no effect on this species. Further, it is anticipated that water quality would be maintained during operations because (1) the NPDES permit for Fermi 3 would specify allowable concentrations of chemicals in Fermi 3 discharges and would require regular testing to evaluate compliance, and (2) Detroit Edison has stated that the Fermi 3 SWPPP and design features would be used to control storm water runoff to ensure that sediment loading to Swan Creek is adequately controlled to minimize water quality impacts (Detroit Edison 2011a). On the basis of this information, the review team concludes that operation of Fermi 3 would have no effect on the northern riffleshell.

Rayed Bean

As identified in Section 2.2, there are no streams on the Fermi site with conditions suitable for the rayed bean and it is believed that the species is unlikely to be present in Lake Erie near the Fermi site. Even if the rayed bean was present in the vicinity of the Fermi site, periodic dredging would be unlikely to affect the species within the project area, because the intake bay

has been dredged in the past. As a consequence, it is unlikely that the substrate within areas that would periodically require dredging during Fermi 3 operations would be suitable for the rayed bean.

As eggs, unionid mussels are not likely to be affected by entrainment through the cooling water intake because they are not free-floating, but rather develop into larvae within the female. The glochidial stage, during which juvenile mussels attach to a suitable fish host, may be indirectly vulnerable through impingement and entrainment of host species. Post-glochidial and adult stages are not likely to be susceptible to entrainment because they bury themselves in sediment. Fish hosts for the glochidia of the rayed bean could include the Tippecanoe darter (*Etheostoma tippecanoe*), greenside darter (*Etheostoma blennioides*), rainbow darter (*Etheostoma caeruleum*), mottled sculpin (*Cottus bairdi*), and largemouth bass (*Micropterus salmoides*). Of these potential host species, only the largemouth bass was observed in fish collections in Lake Erie near the intake structure or near the discharge from the South Lagoon Based on impingement studies conducted at the existing Fermi 2 intake in 2008 and 2009, it is estimated that small numbers of largemouth bass individuals (approximately 30) would be impinged annually with the intake pumps for Fermi 3 at full operating capacity (AECOM 2009).

It is anticipated that operation of Fermi 3 would not result in water quality unsuitable for the rayed bean if a population were present in Lake Erie near the Fermi site. Thermal effects associated with cooling water discharge during operation of Fermi 3 would be unlikely to affect mussels, as the discharge ports would direct water upward and not toward the lake bottom. In addition, it is anticipated that suitable water quality would be maintained because (1) the NPDES permit for Fermi 3 would specify allowable concentrations of chemicals in the Fermi 3 discharge and would require regular testing to evaluate compliance, and (2) Detroit Edison has stated that the Fermi 3 SWPPP and design features would be used to control storm water runoff to ensure that sediment loading to Swan Creek and/or Lake Erie is adequately controlled to minimize water quality impacts (Detroit Edison 2011a). On the basis of the above information, the review team concludes that of the operation of Fermi 3 would have no effect on the rayed bean.

Snuffbox Mussel

Although there are no suitable stream habitats on the Fermi site, there is potential for suitable habitats in adjacent areas of Lake Erie and the host required by this species (logperch, *Percina caprodes*) has been collected from the Fermi site at sampling locations in Swan Creek and in Lake Erie near the South Lagoon. Even if the snuffbox mussel was present in the vicinity of the Fermi site, periodic dredging would be unlikely to affect the species within the project area, because the intake bay has been dredged in the past. As a consequence, it is unlikely that the substrate within areas that would periodically require dredging during Fermi 3 operations would be suitable for the snuffbox mussel.

As eggs, unionid mussels are not likely to be affected by entrainment through the cooling water intake because they are not free-floating, but rather develop into larvae within the female. The glochidial stage, during which juvenile mussels attach to a suitable fish host, may be indirectly vulnerable through impingement and entrainment of host species. Post-glochidial and adult stages would not be susceptible to entrainment because they bury themselves in sediment. Fish hosts for the snuffbox mussel include the logperch, which was observed in fish collections in Lake Erie near the discharge from the South Lagoon and in Swan Creek. Based on impingement studies conducted during 1991 and 1992, Lawler, Matusky, and Skelly Engineers (1993) estimated that approximately 31 logperch were impinged annually by the Fermi 2 cooling water intake. However, impingement studies conducted during 2008 and 2009 at the Fermi 2 intake did not observe impingement of any logperch (AECOM 2009). Together, these two impingement studies suggest that small numbers of logperch could be impinged by the operation of the cooling water intake for Fermi 3.

It is anticipated that operation of Fermi 3 would not result in water quality unsuitable for the snuffbox mussel if a population were present in Lake Erie near the Fermi site. Thermal effects associated with cooling water discharge during operation of Fermi 3 would be unlikely to affect mussels, as the discharge ports would direct water upward and not toward the lake bottom. In addition, it is anticipated that suitable water quality would be maintained because (1) the NPDES permit for Fermi 3 would specify allowable concentrations of chemicals in the Fermi 3 discharge and would require regular testing to evaluate compliance, and (2) Detroit Edison has stated that the Fermi 3 SWPPP and design features would be used to control storm water runoff to ensure that sediment loading to Swan Creek and/or Lake Erie is adequately controlled to minimize water quality impacts (Detroit Edison 2011a). On the basis of the above information, the review team concludes that the operation of Fermi 3 would have no effect on the snuffbox mussel.

5.2.2 Transmission Line Corridors

5.2.2.1 Terrestrial Species

Indiana Bat

This species has potential to occur in suitable habitat along the transmission line corridor. This species might roost and forage in forested and other naturally vegetated suitable habitats on the Fermi site. However, those habitats would not be disturbed by operation of the Fermi 3 transmission lines. Therefore, the review team concludes that the operation of the Fermi 3 transmission lines would have no effect on the Indiana bat.

Eastern Massasauga Rattlesnake

This species may occur in Washtenaw and Wayne counties along the transmission line corridor. However, as discussed above, the eastern massasauga rattlesnake is a mobile snake and active adults with a length of 2 to 3 feet would likely move to avoid temporary impacts associated with transmission line corridor maintenance. Consequently, if Detroit Edison and ITC *Transmission* (1) conduct surveys to identify whether the eastern massasauga rattlesnake or its habitat occur along or adjacent to the proposed transmission line corridors, (2) are flexible in routing to avoid such sites, (3) implement BMPs to minimize impacts, and (4) adhere to Federal and State laws, the review team concludes that operation of the Fermi 3 transmission lines would have no effect on the eastern massasauga rattlesnake.

Karner Blue Butterfly

The Karner blue butterfly is listed as endangered and is recognized as potentially occurring in Monroe County (MNFI 2007a). It has not been seen in Monroe County since 1986 (MNFI 2007a; FWS 2011a). This butterfly has not been observed in Washtenaw or Wayne counties (MNFI 2007a) and is unlikely to occur along the proposed route. The review team therefore concludes that operation of the transmission line would have no effect on the Karner blue butterfly.

Mitchell's Satyr Butterfly

Although MNFI records indicate this insect was observed in Washtenaw County in 2010, according to the FWS, this species is unlikely to occur in the project area (Fisher 2011). Therefore, the review team concludes operation of the Fermi 3 transmission lines would not affect the Mitchell's satyr butterfly.

American Burying Beetle

The last reported observation of this species in the project area was in Washtenaw County in 1917 (MNFI 2007a). The State status of this insect is presumed extirpated. The FWS did not mention this species in its scoping letter (FWS 2009a). Therefore, the review team concludes operation of the Fermi 3 transmission lines would have no effect on the American burying beetle.

Eastern Prairie Fringed Orchid

The Eastern prairie fringed orchid could potentially occur wherever suitable habitat exists along the proposed transmission line route. Therefore, the review team has determined that operation of proposed project the may affect the Eastern prairie fringed orchid in the proposed

transmission line corridors. However, if Detroit Edison and ITC *Transmission* (1) conduct surveys to identify whether the Eastern prairie fringed orchid occurs along or adjacent to the proposed transmission line corridors, (2) are flexible in routing to avoid such sites, (3) implement BMPs to minimize impacts associated with vegetation control activities, and (4) adhere to Federal and State laws, the review team concludes operation of the Fermi 3 transmission lines may affect, but would not likely adversely affect, the Eastern prairie fringed orchid.

5.2.2.2 Aquatic Species

Northern Riffleshell

Although suitable habitat for the northern riffleshell could be present in some of the streams that would be crossed by the proposed transmission line corridor, the species is not expected to occur along the transmission line route because extant populations in Michigan are only known to be present in the Black River in Sanilac County and the Detroit River in Wayne County (Carman and Goforth 2000a). Even if present in streams crossed by the transmission line corridors, impacts on the northern riffleshell from maintenance of transmission lines are unlikely, provided that BMPs identified in permits for the transmission lines are implemented. Additional regulatory review and permitting of proposed plans for maintenance of the transmission lines (e.g., for annual vegetation management plans) would be required prior to implementation (Detroit Edison 2011a). On the basis of this information, the review team concludes that operation and maintenance of transmission lines for Fermi 3 would have no effect on the northern riffleshell.

Rayed Bean

No extant populations of the rayed bean are known to occur in the stream drainages that would be crossed by the proposed transmission line route. The operation and maintenance of transmission lines for Fermi 3 are not expected to affect the rayed bean because the species has not been reported from the streams that would be crossed by the proposed transmission line corridor, because structures requiring maintenance (e.g., transmission towers) would not be placed in aquatic habitats that are crossed by the corridor, and because BMPs would be implemented to protect water quality in aquatic habitats during maintenance activities such as vegetation management (Detroit Edison 2011a). On the basis of this information, the review team concludes that operation and maintenance of transmission lines for Fermi 3 would have no effect on the rayed bean.

Snuffbox Mussel

It is not known whether suitable stream habitats for, or populations of, the snuffbox mussel occur along the proposed transmission line corridor. However, no extant populations of this species are known from stream drainages that would be crossed by the transmission lines.

Even if present, impacts on the snuffbox mussel from the operation and maintenance of transmission lines for Fermi 3 are not anticipated because structures requiring maintenance (e.g., transmission towers) would not be placed in aquatic habitats that are crossed by the corridor, and BMPs would be implemented to protect water quality in aquatic habitats during maintenance activities such as vegetation management (Detroit Edison 2011a). On the basis of this information, the review team concludes that operation and maintenance of transmission lines for Fermi 3 would have no effect on the snuffbox mussel.

6.0 Cumulative Effects

6.1 Terrestrial

Current projects within the geographic area of interest potentially capable of affecting the same terrestrial ecological resources as Fermi 3, including the new transmission lines, include the ongoing operation of Fermi 2, the Detroit Edison Monroe Power Plant, the Bayshore Power Plant, the J.R. Whiting Power Plant, three limestone quarries, and several wastewater treatment plants (see Table 7-1 in the Fermi 3 Draft EIS). Reasonably foreseeable projects within the geographic area of interest that could affect the same terrestrial ecological resources include expanded regional commercial and residential development, building of the Ventower Industries manufacturing facility, and building of a proposed Cleveland-Toledo-Detroit passenger rail line. Ongoing commercial and residential development in the region would be expected to add to the loss of various habitats and wildlife, but the review team has no information about specific individual development proposals.

The geographic area of interest includes agricultural land, including row crops; open water, including part of Lake Erie and shallow lagoons within the Fermi site; developed land, especially in the Detroit metropolitan area; upland forests; and forested and emergent wetlands. With the exception of Great Lakes marsh and southern hardwood swamp, the habitats and wildlife that would be disturbed are common in the region. The habitats that would be affected as a result of any of the reasonably forseeable activities listed above are not considered unique or critical for the survival of Federally listed threatened or endangered species or for the other important species identified in Section 2.4.1 of the Fermi 3 Draft EIS.

Potential future activities in the vicinity of the proposed transmission line corridors that could contribute to effects on threatened and endangered terrestrial species also include the potential expansion of the existing transmission system and the potential for other development activities, both residential and commercial, in the vicinity of the proposed transmission line corridors. It is currently unknown whether such activities or development will occur or the level of development that could be realized. However, such development could result in further loss of habitat and increased forest fragmentation that could affect species that inhabit those areas.

At least some of the other current and potential projects as listed above in the area of interest would affect some of the same habitats as the Fermi 3 project. It can therefore be concluded that one or more of them may also affect some of the same Federally listed species that are identified in Table 1-1. However, the habitats that would be affected are not considered unique or critical for the survival of Federally listed terrestrial species, including species that are candidates for Federal listing. As described in Section 5 of this BA, the Fermi 3 project may affect, but is not likely to adversely affect, Federally listed terrestrial species. None of the

available information concerning other projects in the site vicinity suggest a potential for habitat disruption, or other environmental effects that would cause a noticeable impact to the terrestrial species when combined with building and operating a new ESBWR unit at the Fermi site. Therefore, the review team concludes that the contribution of building and operating Fermi 3 to the cumulative impacts on Federally listed terrestrial species is likely to be minimal.

6.2 Aquatic

In addition to the impacts from building and operation of Fermi 3 and the associated transmission facilities, the cumulative analysis considers other past, present, and reasonably foreseeable future actions that could affect aquatic resources within the same watersheds that could be affected by building and operation of Fermi 3. The geographic area of interest for the cumulative impact analysis for aquatic resources includes primarily the lower Swan Creek watershed and the Western Basin of Lake Erie. This geographic area encompasses ecologically relevant aquatic habitat features and the relevant portions of associated populations of Federally listed aquatic species or designated critical habitat that could be affected by building and operation of the proposed Fermi 3.

Impacts on aquatic resources can result from changes in habitat availability or quality, degradation of water quality, and increased mortality of organisms. Activities and environmental changes that may contribute to cumulative impacts on aquatic resources within the geographic area of interest include building and operating the proposed Fermi 3, operation of other power plants (including existing Fermi 2), discharge of treated wastewater, surface water runoff, increased urban development, agricultural activities, commercial and recreational fisheries, introduced invasive species, and global climate change. Human activities have resulted in considerable changes in the Lake Erie aquatic ecosystem during the past century. These changes have resulted from many causes, including overfishing, introduction and expansion of invasive exotic species, nutrient enrichment, dredging, degradation of tributary conditions and other habitat features, and introduction of contaminants.

As described in previous sections, building Fermi 3 and the associated transmission lines would have no effect on Federally listed aquatic species in the Western Basin of Lake Erie or in the lower Swan Creek watershed. If the BMPs identified in previous sections of this BA are implemented, the impacts on the aquatic environment from Fermi 3 building activities, including development of associated transmission lines, would be negligible and discountable and should not appreciably or detectably increase cumulative impacts on Federally listed aquatic species within the geographic area of interest. Therefore, there would be little or no contribution to the cumulative impacts on these species due to the building of Fermi 3. Thus, even where other development projects that occur along the shores of Lake Erie's Western Basin or within watersheds that drain into the Western Basin would contribute to the impacts on Federally listed

aquatic species within the geographic area of interest, the contribution of building and operating Fermi 3 to the overall cumulative level of impact would be negligible.

The Lake Erie aquatic ecosystem is also affected by urbanization, industrialization, and agriculture. Development of Fermi 3 and other proposed projects in the region (see Table 7-1 in the draft EIS), could result in increased population and additional urbanization, with subsequent impacts on aquatic resources within the Western Basin of Lake Erie or in the lower Swan Creek watershed. Increased urbanization within the region could affect aquatic resources by increasing the amount of impervious surface, non-point source pollution, and water use and by altering riparian and in-stream habitat and existing hydrology patterns. Agricultural development within the basin introduces large amounts of sediment to Lake Erie (LaMP Work Group 2008). Overall, the contribution of building and operating Fermi 3 to the cumulative effects from such development-related effects within the Western Basin of Lake Erie or the Lower Swan Creek watershed is expected to be negliglble.

There are five operational power plants within the geographic area of interest, including Fermi 2 (located on the Fermi site), the Detroit Edison Monroe Power Plant (6 mi southwest of the Fermi site), the J.R. Whiting Power Plant (14 mi south-southwest of the Fermi site), the Bayshore Power Plant (20 mi south-southwest of the Fermi site), and the Davis-Besse Nuclear Plant (27 mi southeast of the Fermi site). All of these power plants withdraw cooling water from and discharge heated effluent into the Western Basin of Lake Erie. Fermi 2 and Davis-Besse use closed-cycle cooling; the Whiting, Bayshore, and Monroe Power Plants employ once-through cooling. Withdrawing cooling water has a potential to affect aquatic organisms through impingement and entrainment. If the organisms being entrained or impinged at different power plants are members of the same populations, the impacts on those populations would be cumulative. Because the water intakes for Fermi 2 and Fermi 3 would be located in close proximity within the intake bay, it is estimated that the combined operation of the Fermi 2 and Fermi 3 facilities would effectively double the water intake and would likely increase entrainment and impingement rates of aquatic organisms in the immediate vicinity of the intake bay compared to the operation of Fermi 2 alone (Detroit Edison 2011a). However, as described in Section 5.2.1, Fermi 3 is not expected to entrain or impinge the free-living life stages of the listed mussel species identified in Table 1-1, although small numbers of host fish species for these mussels could be entrained or impinged. Overall, entrainment and impingement effects of Fermi 3 on Federally listed aquatic species would be undetectable.

Discharge of heated cooling water from power plants also has the potential to affect survival and growth of organisms by altering ambient water temperatures. In most cases, thermal plumes from power plants discharging into Lake Erie would be expected to affect relatively small areas, and the plumes from Fermi 3 and the other power plants in the Western Basin are not expected to overlap (including the thermal plumes for Fermi 2 and the proposed Fermi 3). As described in Section 5.2.1, thermal effects associated with cooling water discharge during operation of

Fermi 3 would be unlikely to affect mussels, as the discharge ports would direct water upward and not toward the lake bottom. As a consequence, the contribution of Fermi 3 to cumulative effects of thermal discharges on the northern riffleshell, the rayed bean, and the snuffbox mussel within the Western Basin of Lake Erie would be negligible.

Adverse cumulative effects on water quality associated with other projects and activities (e.g., agriculture, storm water runoff, sewage and wastewater treatment facilities) in the Western Basin of Lake Erie and the lower Swan Creek watershed are likely to be significant overall; however, the incremental contribution of Fermi 3 operations to the cumulative impact would be minor.

Dredging occurs in many locations within the Western Basin of Lake Erie and has the potential to affect aquatic biota and habitats through disturbance of benthic habitats, increased turbidity, the suspension and deposition of sediment, introduction of contaminants, and other changes in water quality. The potential for dredging to affect aquatic habitats and biota depends upon the uniqueness and sensitivity of the habitat that would be disturbed by dredging or by disposal of dredged sediments, the types of organisms present in the areas that would be affected, and the size of the area. Although some small areas of a the Fermi site would be affected by dredging in order to build and operate Fermi 3, the dredged materials would be disposed of in onsite disposal areas, not in the open waters of Lake Erie. Whereas cumulative impacts of all dredging activities within the Western Basin of Lake Erie could have small to moderate impacts on aquatic resources in general and, potentially, on some listed aquatic species, there would be no detectable incremental contribution to the overall cumulative impact on the northern riffleshell, rayed bean, or snuffbox mussel due to dredging at the Fermi site because of the minor and infrequent dredging that needs to occur and because the three species of concern are likely not present in the geographic area of interest.

The presence of invasive non-native species is one of the major stressors affecting the Lake Erie ecosystem (LaMP Work Group 2008), including the survival of listed mussel species. These species may prey on native species or compete with them for limited resources, thereby altering the structure of aquatic ecosystems. For example, invasions by quagga (*Dreissena rostriformis bugensis*) and zebra mussels (*Dreissena polymorpha*) have affected ecosystem conditions in Lake Erie by altering nutrient conditions and competing with other species that feed on phytoplankton and zooplankton. Increases in these species have been implicated in the declines of native freshwater mussels. Invasive nuisance organisms that have been found or are presumed to occur in Lake Erie in the vicinity of the Fermi site include the fishhook water flea (*Cercopagis pengoi*), the spiny water flea (*Bythotrephes longimanus*), quagga and zebra mussels, the sea lamprey (*Petromyzon marinus*), and the round goby (*Neogobius melanostomus*). These species are not considered abundant in the vicinity of the Fermi site. Although the cumulative impacts of invasive species on the Lake Erie ecosystem are undoubtedly significant, the building and operation of Fermi 3 would not be expected to

measurably promote expansion of populations of invasive species. Thus, the incremental contribution of Fermi 3 to cumulative impacts on Federally listed aquatic species from invasive species would be negligible.

The EPA's Great Lakes National Program Office has initiated the Great Lakes Restoration Initiative to address environmental issues in five topical areas: cleaning up toxics and areas of concern, combating invasive species, promoting nearshore health by protecting watersheds from polluted runoff, restoring wetlands and other habitats, and tracking progress and working with strategic partners. It is expected that this long-term initiative would address some water quality and non-native species concerns that contribute to cumulative impacts of aquatic resources in the area of interest.

The review team is also aware that potential climate changes together with reactor operations could affect water quality and aquatic ecosystems. A study conducted by the U.S. Global Change Research Program (USGCRP 2009) projected that during the operating license period for Fermi 3 (estimated to be 2020 to 2060), changes in the region's climate would include a 3–4°F increase in the average temperature, slightly increased precipitation in the winter and spring, more intense rainstorms throughout the year, and a drop of 1–1.5 ft in the average water levels in Lake Erie. These changes could lead to increased erosion and sediment loading in tributaries and in Lake Erie. It is expected that as temperatures increase and water quality changes due to climate change, a long-term shift could occur in the aquatic species assemblages present within the region (USGCRP 2009). With increases in evaporation rates and longer periods between rainfalls, the likelihood of drought will increase and water levels in rivers, streams, and wetlands are likely to decline (USGCRP 2009), thereby reducing the availability of some aquatic habitats. It is also predicted that reduced summer water levels are likely to reduce the recharge of groundwater, causing small streams to dry up and potentially reducing habitat needed by native aquatic biota such as freshwater mussels. The size of coastal wetland areas that are important for specific life stages of many aquatic organisms within the region could also be affected. Such changes in aquatic species assemblages are likely to be further affected by invasions of non-native species that could thrive under warmer conditions. USGCRP (2009) also predicts that in some lakes increased water temperatures could lead to an earlier and longer period in summer during which mixing of the relatively warm surface lake water with the colder water below is reduced, potentially increasing the risk of developing oxygen-poor zones that could result in increased mortality of fish and other aquatic organisms.

The review team concludes that, with projected climate change and past, present, and reasonably foreseeable future actions in the Lower Swan Creek watershed and the Western Basin of Lake Erie, cumulative impacts on aquatic resources could alter noticeably but not destabilize important attributes of the aquatic resource. However, there would be no detectable incremental contribution to the overall cumulative impact related to global climate change to the

northern riffleshell, the rayed bean, or the snuffbox mussel from building and operating Fermi 3. The three species are not known from the site or environs, the habitat is unsuitable for their colonization, and the contribution of Fermi 3 to the furtherance of global climate change would be negligible.

7.0 Conclusions

The potential impacts of building and operating the proposed Fermi 3 project, including the associated offsite transmission lines, on Federally listed terrestrial and aquatic species, including species that are candidates for Federal listing are identified in Table 7-1. The known and probable distributions of these species and the potential ecological impacts of building and operation on the species, their habitats, and the species they interact with have been considered in this biological assessment. Building and operating the subject facilities at the Fermi site would not affect any critical habitat listed under the Federal Endangered Species Act (ESA) because no designated critical habitat occurs in the vicinity of the Fermi site or along the route for the proposed transmission lines.

Building and operating the proposed Fermi 3 facilities is not likely to adversely affect terrestrial species listed under the ESA, including candidates for Federal listing, if Detroit Edison meets the conditions stated in Section 5.2. The Indiana bat may be affected but is unlikely to be adversely affected because of the lack of suitable habitat for the species on the Fermi site. The eastern massasauga rattlesnake is unlikely to occur on the Fermi site and would not be affected by building and operating the proposed Fermi 3 facilities. The Karner blue butterfly is unlikely to occur in the project area and therefore would not be affected by building and operating the proposed Fermi 3 facilities. The Mitchell's satyr butterfly is unlikely to occur in the project area and therefore would not be affected by building and operating the proposed Fermi 3 facilities. The American burying beetle is presumed extirpated from Michigan and therefore would not be affected by building and operating the proposed Fermi 3 facilities. Habitat for the eastern prairie fringed orchid is not present on the Fermi site. Therefore, building and operating the proposed Fermi 3 facilities would not affect the eastern prairie fringed orchid.

Clearing forest vegetation for new ROWs for proposed transmission lines (a preconstruction activity that is not a part of the NRC action) and operation of the transmission line would not likely adversely affect individuals of terrestrial species indicated in Table 7-1 if Detroit Edison and ITC *Transmission* meet the conditions stated in Section 5.2.

Habitat along the offsite transmission line corridor has not been surveyed for potential Indiana bat habitat and it is possible suitable habitat currently exists. Because Detroit Edison can avoid adverse impacts, building the proposed transmission lines may affect, but is not likely to adversely affect, the Indiana bat. The eastern massasauga rattlesnake could occur within the transmission line corridor. Because Detroit Edison has the ability to reduce impacts on the snake by simple management efforts, building the transmission line may affect, but is unlikely to adversely affect, the eastern massasauga rattlesnake.

Table 7-1. Summary of Potential Effects on Federally Listed Threatened and Endangered Species and Species That are Candidates for Federal Listing from Building and Operation of Proposed Fermi 3 and Associated Transmission Lines

Common Name	Scientific Name	Status[(a)]	Determination
Terrestrial Species			
Mammals			
Indiana bat	*Myotis sodalis*	E	May affect; not likely to adversely affect
Reptiles			
Eastern massasauga rattlesnake	*Sistrurus catenatus catenatus*	C	May affect; not likely to adversely affect
Insects			
Karner blue butterfly	*Lycaeides melissa samuelis*	E	No effect
Mitchell's satyr	*Neonympha mitchellii mitchellii*	E	No effect
American burying beetle	*Nicrophorus americanus*	E	No effect
Vascular Plants			
Eastern prairie fringed orchid	*Platanthera leucophaea*	T	May affect; not likely to adversely affect
Aquatic Species			
Mollusks (Mussels)			
Northern riffleshell	*Epioblasma torulosa rangiana*	E	No effect
Rayed bean[)]	*Villosa fabalis*	E	No effect
Snuffbox mussel	*Epioblasma triquetra*	E	No effect

Source: FWS (2009a).
(a) T = Federal threatened; E = Federal endangered; C = Federal candidate.

The Karner blue butterfly is unlikely to occur in the transmission line corridor. Building the transmission line, therefore, would have no effect on the Karner blue butterfly. The Mitchell's satyr butterfly is unlikely to occur in the project area and, therefore, would not be affected by building and operating the proposed transmission line. The American burying beetle is considered extirpated from Michigan and therefore would not be affected by building and operating the transmission line. The eastern prairie fringed orchid could occur within the transmission line corridor. Because Detroit Edison has the ability to reduce impacts on the eastern prairie fringed orchid by simple management efforts, building the transmission line may affect, but is unlikely to adversely affect, the eastern prairie fringed orchid.

Building and operating the proposed Fermi 3 facilities is also unlikely to affect any Federally listed aquatic species. The northern riffleshell is likely not present in waters of Lake Erie adjacent to the Fermi site. This species is also unlikely to be present in streams that would be crossed by the associated transmission lines. Streams would be spanned without placing towers or other structures in the stream channel and BMPs would be implemented during building and operation of transmission lines to limit the potential for sediment or contaminants to enter waterways. Based on this review, the NRC and the USACE conclude that building and operation of Fermi 3 or the associated transmission lines would not affect the northern riffleshell.

Based on the absence of observations of specimens in available survey data, it is very unlikely that the rayed bean or the snuffbox mussel are present in the vicinity of the Fermi site. In addition, an assessment of habitat conditions indicates that the substrates in the areas that would be disturbed by building of the cooling water intake structure, barge slip and discharge structure for Fermi 3 are not appropriate for these species. Therefore, these species would not be affected by building or operating Fermi 3. Although it is highly unlikely that either of these two species are present in stream drainages crossed by the proposed transmission lines there would be no direct impacts because the streams would be spanned without placing towers or other structures in the stream channel. In addition, BMPs would be implemented during building and operation of transmission lines to limit the potential for sediment or contaminants to enter waterways. Based on this review, the NRC and the Corps conclude that the building and operation of Fermi 3 or the associated transmission lines would not affect the rayed bean or the snuffbox mussel.

8.0 References

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