Attachment 2
NRC3-11-0002

Markup of Fermi 3 FSAR, Revision 2

FSAR Markup	Description of FSAR Markup
Figure 2.1-203	Revised to reflect changes to the on-site transmission.
Figure 2.1-204	Revised to reflect changes to the on-site transmission and the meteorological tower location. Removed "Eagle Nesting Area" pointers, as these are not relevant to the FSAR. Revised Facility Legend for Item #39 to indicate that this is the Fermi 2 ISFSI.
Section 2.3.2.2	Revised to reflect new distances from the new meteorological tower location to the Fermi 3 Reactor Building, Natural Draft Cooling Tower, and the nearby water tower.
Section 2.3.3.3.1	Revised to reflect new distances from the new meteorological tower location to the Fermi 3 Reactor Building, Natural Draft Cooling Tower, and the nearby water tower.
Figure 2.4-211	Revised to reflect changes to the on-site transmission and the meteorological tower location. Removed "Eagle Nesting Area" pointers, as these are not relevant to the FSAR. Revised Facility Legend for Item #39 to indicate that this is the Fermi 2 ISFSI.
Section 2.4.1.1	Revised to reflect change to the Fermi 3 site construction and operation acreage.

Markup of Detroit Edison COLA
(following 11 pages)

The following markup represents changes Detroit Edison intends to reflect in a future submittal of the Fermi 3 COLA. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be different than presented here.

thus will not represent a significant alteration to the flat and gently sloping topographic character of the Fermi region. Additionally, construction of new roads to accommodate the construction traffic for the new facility and the addition of buildings, parking areas and other structures should have little to no effect on the local meteorology of the site.

Estimated Impacts of New Structures

The addition of a NDCT, two multi-cell MDCTs, and reactor building will add additional effects to the airflow trajectories downwind of the new structures. Regulatory Guide 1.23 estimates that a meteorological tower located at least a distance of 10-building-heights horizontal distance downwind from the nearest structure will not have adverse wake effects exerted by the structure. The NDCT for Fermi 3 will be built in the approximate location of the current onsite meteorological tower. Thus, a new meteorological tower will be erected in the southeast corner of the Fermi site prior to construction of Fermi 3. Figure 2.1-204 of Section 2.1 provides the location of the NDCT, two multi-cell MDCTs, and reactor building in relation to the new onsite meteorological tower. The Fermi site according to Figure 2.3-258 is located at an elevation approximately 177.7 m (583 ft.) above mean sea level. The plant area where the structures will be located is relatively flat with only minor differences in plant grade. The two multi-cell MDCTs are located approximately ~~1235.5 m (4054 ft.) north~~ of the new onsite meteorological tower and at a distance that will not affect wind measurements at the new meteorological tower. The reactor building is located approximately ~~1341.1 m (4400 ft.)~~ north-northwest of the new onsite meteorological tower. The height of the reactor building is approximately 48.2 m (158 ft.) above plant grade. Using the method suggested by Regulatory Guide 1.23 the zone of turbulent flow created by the reactor building will be limited to approximately 481.6 m (1580 ft.). Since the new meteorological tower will be at a distance of approximately ~~1341.1 m (4400 ft.)~~, the reactor building will not produce adverse wake effects on the wind direction and speed measurements at the new meteorological tower when winds blow from the ~~north through~~ north-northwest direction~~s~~.

1356 m (4449 ft.) north-northwest

1450 m (4757 ft.)

1450 m (4757 ft.)

The NDCT for Fermi 3 will be constructed in the location of the current onsite meteorological tower and will be built to a height of 182.3 m (600 ft) above plant grade, the tallest structure at the Fermi site. The NDCT is hyperbolically shaped and has a maximum width at the base of the tower, which has an outer diameter of 140.2 m (460 ft.). The downwind wake

zone for hyperbolically shaped and sloping structures is expected to be smaller than for structures that are square or rectangular and have sharp edges. 40 CFR 51.100(ii)(3) defines good engineering practices (GEP) stack height as that which ensures that emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, nearby structures, or nearby terrain features. "Nearby structures" is defined in 40 CFR 51.100(jj)(1) as that distance up to five times the lesser of the height or width dimension of a structure. Furthermore, the wake zone area becomes increasingly smaller as the height to width ratio of a structure increases (Reference 2.3-253). For the NDCT the lesser dimension is the width, which is the base width. Therefore, a conservative method to calculate the outermost boundary of influence exerted by the NDCT is to multiply the maximum width by five. Using this method, with a maximum width of 140.2 m (460 ft.) at the base of the tower, the downwind wake effect is estimated to extend 701.1 m (2300 ft.) from the base of the NDCT. The NDCT is located approximately ~~1268 m (4160 ft.)~~ 1422 m (4665 ft.) northwest of the new meteorological tower. Thus, the new meteorological tower is at a distance that will not be affected by the wake zone of the NDCT.

Other Estimated Impacts

Operation of large power generation units can have two distinct effects on the local climate, 1) additional generation of particulates (particulate matter and fog) and 2) effects by cooling tower plumes. Air emissions of particulate matter will be minor given the nature of a nuclear facility and its lack of significant gaseous exhausts of effluents to the air. Sources of air emissions for the proposed facility include two standby diesel generators, an auxiliary boiler, a diesel fire pump, and increased automobile traffic. The combustion sources mentioned above will be designed for efficiency and operated with good combustion practices on a limited basis throughout the year (often only for testing). Given the small magnitude of size and infrequent operation, these emissions will only have a minimal impact on the local and regional air quality, and furthermore the local climate. These emissions will be regulated by the State of Michigan, Department of Environmental Quality.

undergo a detailed analysis to ensure the meteorological parameters measured at the new meteorological tower are representative of the atmospheric conditions at the Fermi site **[END COM FSAR-2.3-003]**. Actual and perceived data biases between the current and new meteorological towers will be documented and evaluated. The site preparation and construction, pre-operational, and operational onsite meteorological monitoring program is described in greater detail in the following subsections.

2.3.3.2.1 Tower and Instrument Siting

The location of the new onsite meteorological tower in respect to the current onsite meteorological tower and Fermi 3 site layout is provided in Figure 2.1-204. The new meteorological tower will be a guyed open-latticed tower built to ANSI/TIA/EIA-222-G standards, located approximately ~~1341.1 m (4400 ft.)~~ 1450 m (4757 ft.) south-southeast of the Fermi 3 reactor containment building and will have a height of 60 m (197 ft.). This location of the new meteorological tower is at a distance that is greater than 10 times the height of the Fermi 3 reactor building, and therefore meets the siting criteria of NRC Regulatory Guide 1.23.

Structures near the location of the new meteorological tower include a water tower with a height of 44.2 m (144.9 ft.) and a maximum width of approximately 16.2 m (53.3 ft.) at the equator of the tank head. The NRC Regulatory Guide 1.23 suggests that a 10- building-height distance of separation is typically applied to square and rectangular structures having sharp edges. The tank head of the water tower structure is spherical and has a sloping surface, and thus can be expected to produce a smaller wake zone. 40 CFR 51.100(ii)(3) defines good engineering practices (GEP) stack height as that which ensures that emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, nearby structures, or nearby terrain features. "Nearby structures" is defined in 40 CFR 51.100(jj)(1) as that distance up to five times the lesser of the height or width dimension of a structure. Thus, for the water tower with a maximum width of 16.2 m (53.3 ft.), the outermost boundary of influence exerted by the water tower is conservatively estimated to be 81 m (265.8 ft.). The water tower is located approximately ~~210.9 m (692 ft.) southeast~~ 153 m (502 ft) southwest of the new meteorological tower. Thus, the new meteorological tower is at a distance that will not be affected by the wake zone of the water tower.

Natural obstructions that can influence wind measurements near the new meteorological tower include trees that are taller than 5 m (16 ft.). The area surrounding the location of the new meteorological tower ~~is wooded and~~ contains trees that would influence wind measurements if left at their current height. However, prior to installing the new meteorological tower the trees will be trimmed to a height less than 5 m (16 ft.) in height outwards to a distance that satisfies the 10-building-height distance of separation stated in Regulatory Guide 1.23.

NRC Regulatory Guide 1.23 indicates that delta T should be measured at 10 and 60 m, and if necessary at 10 m and a higher level that is representative of diffusion conditions from release points higher than 85-m (278.9 ft.). The atmospheric release heights above plant grade for Fermi 3 are 52.6 m (172.6 ft.) for the reactor building/fuel building stack, 71.3 m (233.9 ft.) for the turbine building stack, and 18 m (59.1 ft.) for the radwaste building stack. All release heights for Fermi 3 are below 85 m (278.9 ft.); therefore, the new meteorological tower will have meteorological sensors located at 10 m and 60 m elevations to estimate dispersion conditions for ground-level and the plant's heat dissipation system. The meteorological sensors will be mounted on booms, which will be greater than one tower width away from the tower and will be oriented normal to the prevailing wind direction.

The influence of terrain near the base of the new meteorological tower on temperature measurements is expected to be minimal. The area surrounding the new meteorological tower will not be paved or contain temporary land disturbances, such as plowed fields or rock piles. In addition, the tower will be situated in a relatively flat area that will be at a similar elevation as the plant structures. A climate-controlled instrument shelter will be installed on a concrete slab at the base of the tower; however, materials that minimize influence on the measurements will be used to construct the shelter. The new tower will be built close to the shoreline of Lake Erie such that it can measure the dynamic onshore and offshore flow conditions within the thermal internal boundary layer. Fermi 2 and Fermi 3 are located at similar distances to the western shoreline of Lake Erie, such that measurements made at the new meteorological tower will be representative of atmospheric dispersion conditions that could affect gaseous effluent releases.

2.4 Hydrology

EF3 COL 2.0-12-A

2.4.1 Hydrologic Description

Subsection 2.4.1.1 provides a general overview of the topography and hydrology in the site vicinity. Subsection 2.4.1.2 provides a discussion of the hydrosphere at Fermi 3 including local watersheds.

2.4.1.1 Site and Facilities

122 hectares (302 acres)

The Fermi site is located in the southeastern corner of Monroe County in southern Michigan, near the northern border of Ohio about 32 km (20 mi) north of the Michigan/Ohio border. The U.S./Canada international border runs through Lake Erie about 11 km (7 mi) east of the Fermi site. The Fermi site is on the west bank of Lake Erie, approximately 39 km (24 mi) northeast of Toledo, Ohio and 48 km (30 mi) southwest of Detroit, Michigan. The Fermi site encompasses approximately 510 hectares (1,260 acres), of which approximately ~~191 hectares (471 acres)~~ will be utilized for the construction and operation of Fermi 3. Fermi 3 will be situated further inland than Fermi 2, approximately 0.40 km (0.25 mi) west of Lake Erie's shoreline.

The topography of the site is flat to gentle rolling plain. Site elevations range from the level of Lake Erie to approximately 7.6 m (25 ft) above the lake level on the western edge of the site. The topography on the Fermi site is relatively level in the undeveloped areas, with an elevation range of approximately 3 m (10 ft) over the site according to U.S. Geological Survey (USGS) topographic maps. Figure 2.4-209 and Figure 2.4-210 show USGS topographic maps of the 12-km (7.5-mi) vicinity and the Fermi property boundary, respectively. Lake Erie has an elevation of approximately 174 m (571 ft), while the area around the Fermi site ranges from 176 to 183 m (577 to 600 ft). The existing plant grade of elevation 177.7 m (583.0 ft) plant grade datum will be altered to 179.8 m (590.0 ft) plant grade datum. Fermi 3 safety-related facilities will be at a nominal grade of 178.0 m (590.5 ft) plant grade datum.

As described in DCD Section 1.2, the plant arrangement is composed of seven principal plant structures: the Reactor Building, Control Building, Fuel Building, Turbine Building, Radwaste Building, Electrical Building, and Service Building. The Reactor/Fuel Building (R/FB), Control Building (CB), and Fire Water Service Complex (FWSC) are the only three Seismic Category I structures of Fermi 3. A site plan showing the relative

Figure 2.1-203 Fermi Property Boundary [EF3 COL 2.0-2-A]

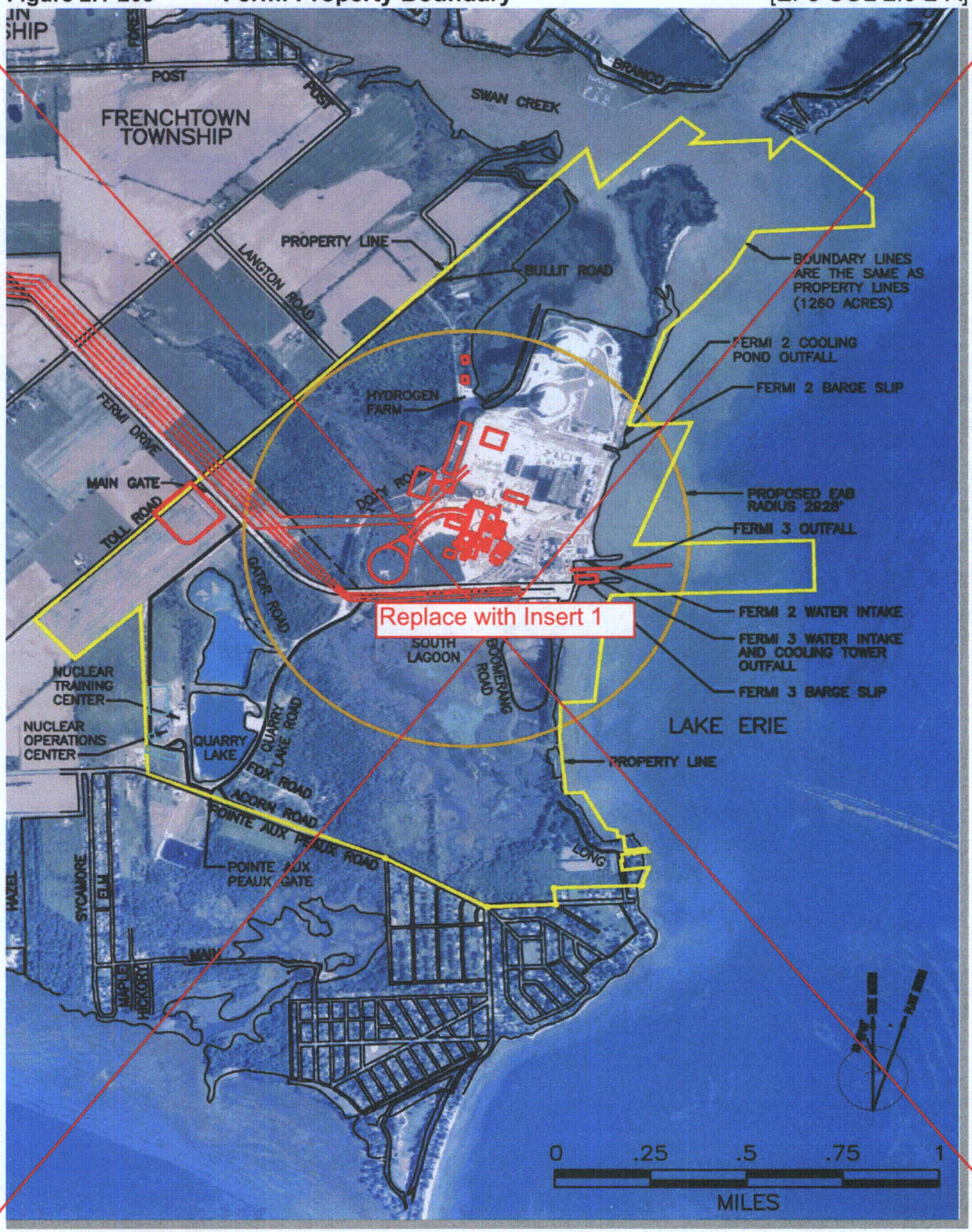


Figure 2.1-204 Fermi 3 Site Plan [EF3 COL 2.0-2-A]

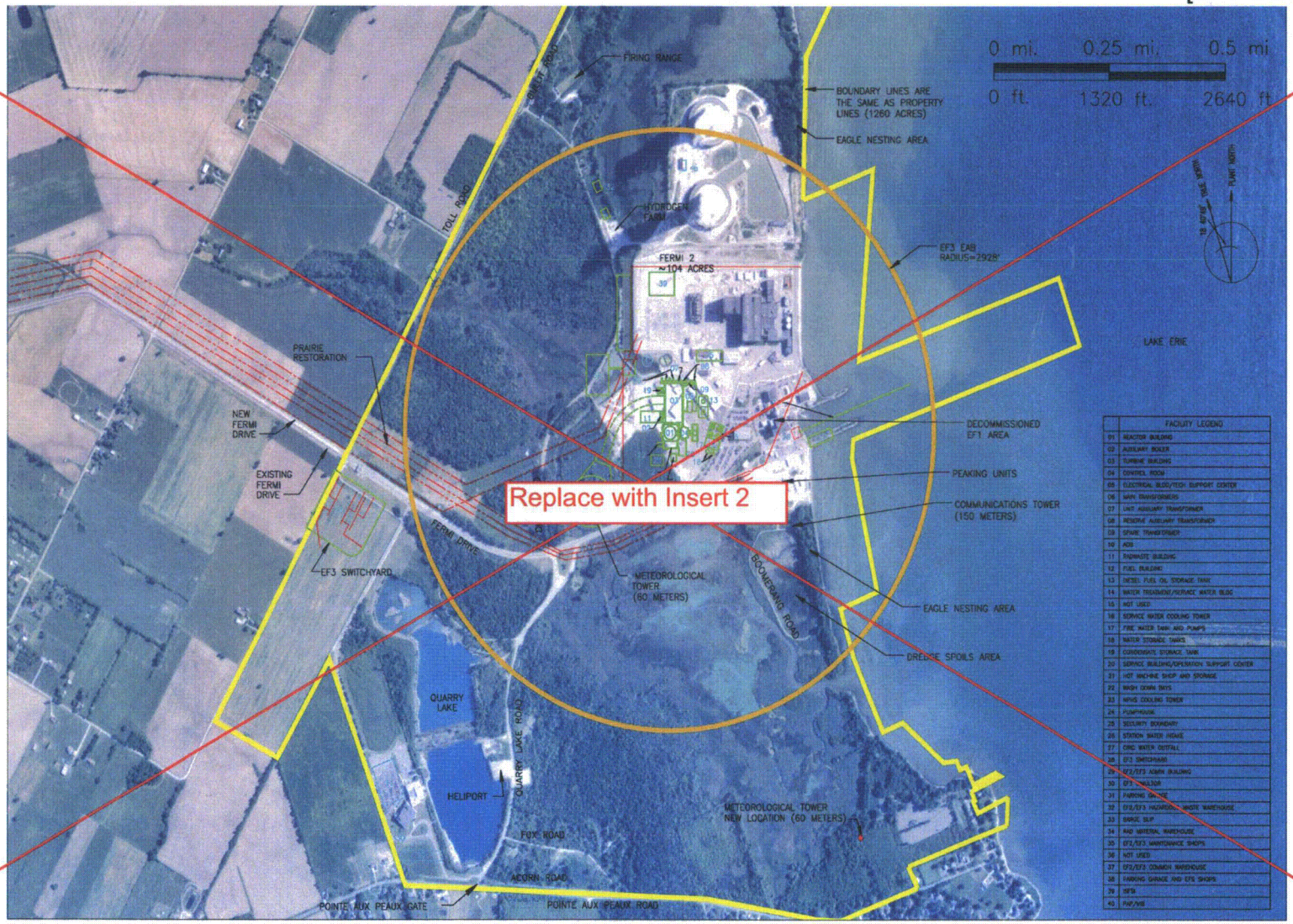
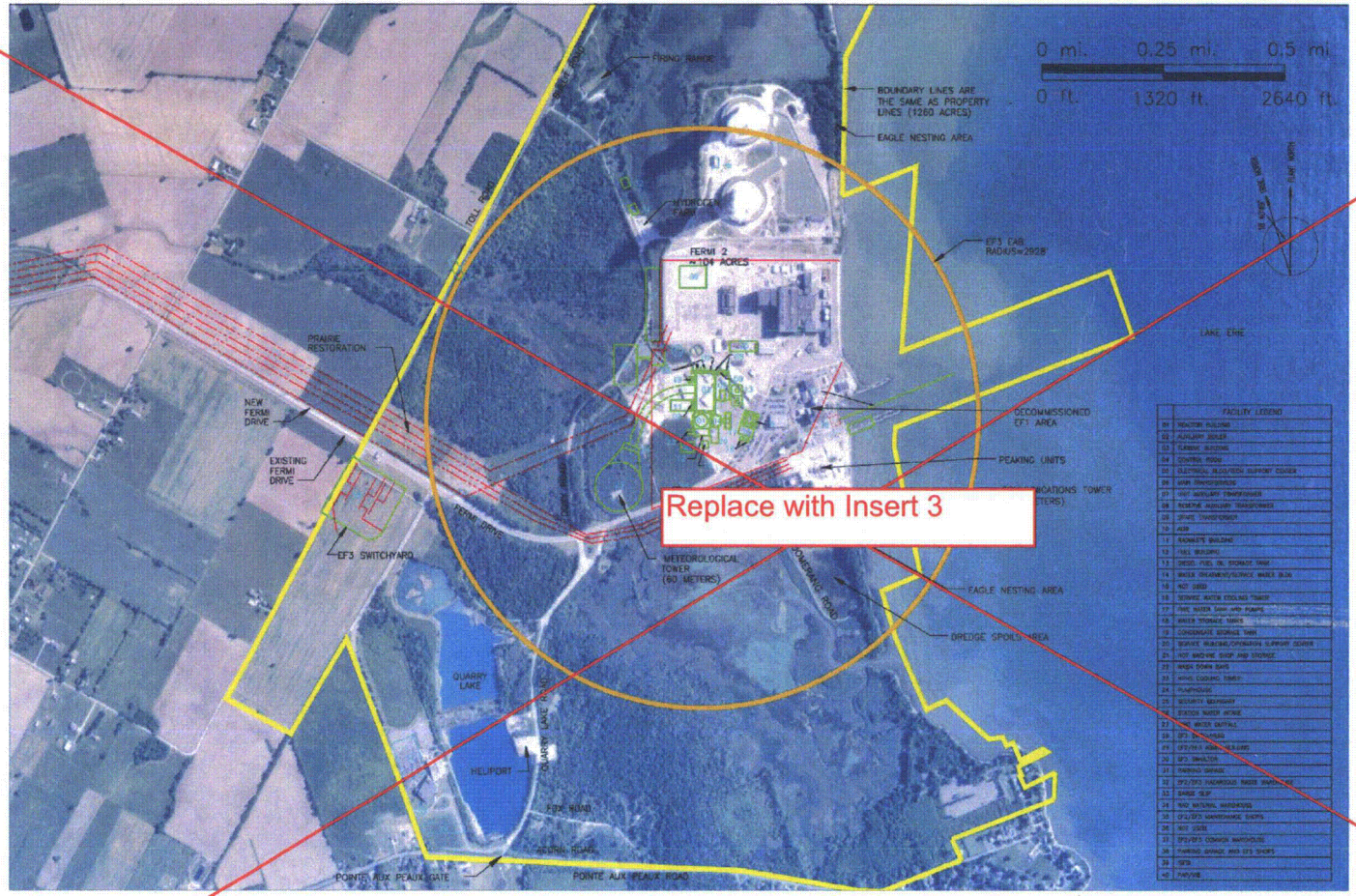


Figure 2.4-211 Fermi 3 Site Plan [EF3 COL 2.0-12-A]



Insert 1 – Figure 2.1-203, Property Boundary

Insert 2 – Figure 2.1-204, Fermi 3 Site Plan

Insert 3 – Figure 2.4-211, Fermi 3 Site Plan

Attachment 3
NRC3-11-0002

Supplemental Response to RAI letter related to Fermi 3 ER

RAI Question GE2-2

NRC RAI GE2-2

Provide electronic versions of all Environmental Report Rev. 0, September 2008 (the "ER") figures in .jpeg, .png or .tif format at a resolution of at least 300 dpi.

Supporting Information

Electronic versions of the figures used in the ER at sufficiently high resolution would facilitate production of the EIS and prevent the need for redrafting figures.

Supplemental Response

Electronic versions of the revised figures provided in Attachment 1 are provided on the enclosed CD.

Proposed COLA Revision

None

NRC3-11-0002
RAI Question GE2-2

Enclosure 1

List of Enclosed Figure Files
(following 1 pages)

ER Figure Native Files

Directory of D:\

01/09/2011 01:14PM	156,674,817	Aerial Photo 002.ai
01/09/2011 12:36PM	58,640,387	Aerial Photo 002_B&W.ai
01/10/2011 12:48PM	855,692	E2_1-3.dwg
01/10/2011 12:54PM	1,531,882	E2_1-4.dwg
01/07/2011 03:40PM	2,742,262	E2_4-19.dwg
01/07/2011 03:40PM	5,729,170	E2_5-27.ai
01/07/2011 03:40PM	4,988,904	E2_5-27.emf
01/07/2011 03:40PM	5,045,444	E2_5-27.eps
01/07/2011 03:40PM	3,262,350	E2_5-28.ai
01/07/2011 03:40PM	9,546,136	E2_5-28.emf
01/07/2011 03:40PM	4,548,256	E2_5-28.eps
01/07/2011 03:41PM	1,551,586	E4_2-1.dwg
01/07/2011 03:41PM	171,903	E4_3-1.dwg
01/07/2011 03:41PM	1,011,746	E4_3-2.dwg
01/07/2011 03:41PM	1,363,700	E4_3-3.dwg
01/07/2011 03:41PM	5,391,349	E4_3-4.dwg
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Attachment 4
NRC3-11-0002

Supplemental Response to RAI letter related to Fermi 3 ER

RAI Question GE1.2-1
RAI Question GE1.2-2

NRC RAIs

RAI GE1.2-1

Provide documentation or a description of the status of Coastal Zone Management (CZM) Certification for Fermi 3.

Supporting Information

Documented proof of CZM Certification must be provided to the NRC by Detroit Edison before the NRC can issue a combined license. The current status and process for obtaining CZM Certification will be presented in the EIS.

RAI GE1.2-2

Provide documentation or a description of the status of Clean Water Act Section 401 Water Quality Certification for Fermi 3.

Supporting Information

Documented proof of Section 401 Water Quality Certification must be provided to the NRC before the NRC can issue a combined license. The current status and process for obtaining Section 401 Water Quality Certification will be presented in the EIS.

Combined Response

Descriptions of the statuses of Clean Water Act Section 401 Water Quality and Coastal Zone Management Act (CZMA) Certifications were originally provided in Detroit Edison letter NRC3-09-0016 (ML093380331), dated November 23, 2009.

The original response to these RAIs stated that, because the Fermi 3 project will impact wetlands, the Michigan Department of Environmental Quality (now the Michigan Department of Natural Resources and Environment) will not issue CZMA or Section 401 Certifications unless and until Detroit Edison obtains a Part 303 wetlands permit via the Michigan Department of Natural Resources and Environment (MDNRE) and USACE Joint Permit Application process. Detroit Edison had planned to submit a Joint Permit Application by July 1, 2010.

On December 14, 2010, Detroit Edison requested that the MDNRE employ an alternative approach to CZMA and Section 401 Certifications. The current level of design detail for the Fermi 3 project is insufficient to support a Joint Permit Application. If sufficient design detail were developed to support a Joint Permit Application at this time, it is likely that some or all of the permitting process would need to be duplicated in the future, due to uncertain specific project implementation plans. The alternative approaches presented to MDNRE, as detailed in Detroit Edison letters to MDNRE provided in Enclosures 1 and 2, are permissible under both the CZMA

and Clean Water Act, and would allow the NRC to issue a COL prior to Detroit Edison obtaining a Part 303 permit via the Joint Permit Application process.

Proposed COLA Revision

None

NRC3-11-0002
RAI Question GE1.2-1
RAI Question GE1.2-2

Enclosure 1

Detroit Edison Proposed Fermi 3 Power Plant -- Request for Alternative Approach to Coastal Zone Management Act Certification
(following 5 pages)

Skiles W. Boyd
Vice President – Environmental Management & Resources

DTE Energy Company
One Energy Plaza, Detroit, MI 48226
Tel: 313.235.7141 Fax: 313.235.5018
Email: boyds@dteenergy.com

DTE Energy

Via U.S. Mail

December 14, 2010

Ms. Mary Vanderlaan
Michigan Department of Natural Resources & Environment
SE Michigan District Office
27700 Donald Court
Warren, MI 48092-2793

Re: Detroit Edison Proposed Fermi 3 Power Plant – Request for Alternative Approach to Coastal Zone Management Act Certification

Dear Ms. Vanderlaan:

As you know, Detroit Edison has applied to the federal Nuclear Regulatory Commission ("NRC") for a combined license for its proposed Fermi 3 project ("Project"). Based on preliminary plans, the Project will impact wetlands and, therefore, will require a permit under Part 303 of the Natural Resources and Environmental Protection Act, MCL § 324.30301 *et seq.*, from the Michigan Department of Natural Resources and Environment ("MDNRE").

Section 307 of the Coastal Zone Management Act ("CZMA"), 16 U.S.C. §1456, requires, among other things, that after final approval by the Secretary of Commerce of a state's coastal management program, an applicant for a federal license to conduct an activity affecting any land or water use or natural resource of the coastal zone of the state shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state's approved program and that such activity will be conducted in a manner consistent with the program. 16 U.S.C. §1456(c)(3)(A) ("CZMA Certification").[1]

In an early discussion, an MDNRE representative stated that MDNRE would object to any CZMA certification for the Project (meaning that the NRC cannot issue its license) unless and until Detroit Edison first obtains a Part 303 permit. Because of the difficulties that such

[1] Detroit Edison's application for the NRC license stated that the applicant "will certify to the NRC that the proposed project is consistent with Michigan's federally-approved Coastal Zone Management Plan. Detroit Edison anticipates that the MDEQ will concur with the certification." Application, Revision 1, March 2010, pg. 1-8. Detroit Edison is unable to review Michigan's current Coastal Zone Management Plan. Although an April 2008 draft of the Plan is available on MDNRE's website, we were advised that the Plan is under review and revision at this time.

sequencing would create for the Project (as further described herein), Detroit Edison requests that MDNRE employ an alternative approach to CZMA Certification for the Project.

As is explained below, both of the alternatives presented herein are permissible under the CZMA and would allow the NRC to issue its license before Detroit Edison needs to obtain a Part 303 permit for the Project. Both alternatives involve no risk of adverse environmental impact because state law will still require Detroit Edison to apply for and obtain a Part 303 permit for the Project.

Detroit Edison's reasons for this request include the following:

1. MDNRE has clear authority to waive CZMA Certification.

The CZMA provides that a State shall be deemed to have concurred in a certification if it does not act within 6 months:

> At the earliest practicable time, the state or its designated agency shall notify the Federal agency concerned that the state concurs with or objects to the applicant's certification. If the state or its designated agency fails to furnish the required notification within six months after receipt of its copy of the applicant's certification, the state's concurrence with the certification shall be conclusively presumed.

16 U.S.C. §1456(c)(3)(A). Courts have held that under the Clean Water Act's ("CWA") similar "default waiver" provision,[2] a state may issue an affirmative waiver and need not passively wait for the deadline to pass. *Envtl. Defense Fund, Inc. v. Alexander*, 501 F.Supp. 742, 771 (N.D. Miss. 1980) (Att. 1) ("[t]he section provides that a state shall be deemed to have waived its rights under § 401 if it 'fails or refuses to act on a request for certification, within a reasonable period of time (which shall not exceed one year).' We do not interpret this to mean that affirmative waivers are not allowed. Such a construction would be illogical and inconsistent with the purpose of this legislation"). *See also City of Olmsted Falls v. U.S. EPA*, 266 F.Supp.2d 718, 726 (N.D. Ohio 2003) (Att. 2) (citing *Envtl. Defense Fund*).

The same logic applies under the CZMA. This conclusion is bolstered by the fact that at least two states appear to have issued CZMA waivers. California guidance contemplates the issuance of waivers in some circumstances. See Attachment 3 (Q&A 12(b) and (c)). A federal court decision also describes a so-called "concurrence" from the State of Washington that was, in

[2] "If the State, interstate agency, or Administrator, as the case may be, fails or refuses to act on a request for certification, within a reasonable period of time (which shall not exceed one year) after receipt of such request, the certification requirements of this subsection shall be waived with respect to such Federal application." 33 U.S.C. § 1341(a)(1).

essence, a waiver of its authority to act. *City of Tacoma v. FERC*, 460 F.3d 53, 69 (D.D.C. 2006) (Att. 4).[3]

Accordingly, Detroit Edison requests that MDNRE exercise the discretion allowed to it by law, and issue a letter that expressly waives its concurrence with CZMA Certification for the Project.

2. The NRC license is needed first and will not obviate state permitting requirements.

The NRC license, if issued, would authorize construction and operation of the project subject to the conditions of the license and would not authorize any activity in regulated wetlands without separately required approvals in accordance with Part 303 and its implementing regulations at Mich Admin Code r 281.921 *et seq*. In accordance with 10 CFR § 52.104 (Duration of Licenses), operation is limited to 40 years following completion of Project construction and NRC certification under 10 CFR § 52.103(g) that all inspections, tests, and analysis acceptance criteria ("ITAAC") have been met. The NRC license and regulations do not require construction to commence within any particular amount of time or limit the duration of the construction period. Obtaining the NRC combined license reduces project risk, is necessary to obtain financing, and is necessary for a decision to proceed with the Project. According to NRC Regulatory Guide 1.206 (which provides guidance regarding applications for combined licenses), the level of design required for the license is approximately 30 percent of the complete design (with the remainder verified by ITAACs). The Part 303 permit application, on the other hand, requires a much higher degree of design detail that will not be developed (typical of a ready to construct project) until much later in the Project. Thus, to support a Part 303 permit application at this time, Detroit Edison would need to artificially develop a level of design detail that is inconsistent with the current stage of the Project and that will change before construction begins. The application, therefore, would draw on MDNRE's resources to review a permit application that will certainly be revised or require renewal before construction begins.

3. Project plans may change.

Even if Detroit Edison were to obtain a Part 303 permit at this time, for the reasons described above Detroit Edison's specific Project implementation plans are uncertain at this early stage and, if the plans change, Detroit Edison likely would need to duplicate some or all of the permitting process, which would result in wasted resources. A likely example of why implementation plans may change relates to the final engineering design timetable and related

[3] The state "concurrence" provided that the state "hereby declines its right to take action under its Coastal Zone Management authority… ." The U.S. Department of Commerce (which implements the CZMA) later ruled that this letter constituted a "conclusive concurrence" under the CZMA. *Id.* The state's action was later invalidated because it violated state regulations, after which the state issued a conditional concurrence. *Id.* at 69-70. We are unaware of any Michigan regulations or MDNRE guidance documents governing CZMA concurrence or waiver. If any exist, please let us know.

construction methods to be used. Final engineering design for the GE Hitachi Economic Simplified Boiling Water Reactor (GEH ESBWR) is underway and is currently forecasted to be complete in approximately three years. As this design work progresses, new construction techniques (i.e., modularization) that are enabled through ever-advancing communication and logistics technologies likely will provide higher levels of construction effectiveness and efficiency. Therefore, it would be most efficient for all concerned if Detroit Edison obtains the NRC license, plans the Project, and then seeks a Part 303 permit when the time and plans are ripe to do so.

4. MDNRE may conditionally concur with CZMA Certification.

If MDNRE concludes that it cannot or will not waive CZMA Certification,[4] as an alternative, MDNRE may issue a letter stating that it concurs with CZMA Certification based on the condition that Detroit Edison must eventually obtain a Part 303 permit for any impacts to regulated wetlands. The CZMA regulations expressly authorize such "conditional concurrences." 15 C.F.R. § 930.4; *see also City of Tacoma, supra* (describing conditional concurrence issued by State of Washington after the concurrence discussed above). The only limit on the conditions that can be imposed is that they must be "necessary to ensure consistency with specific enforceable policies of the [coastal zone] management program." 15 C.F.R. § 930.4. Therefore, assuming that a Part 303 permit is necessary to ensure such consistency, it is clear that MDNRE may issue a CZMA concurrence with the condition that Detroit Edison must eventually obtain a Part 303 permit for any impacts to regulated wetlands.[5] However, Detroit Edison submits that there is no need to put in a federal permit that which is already required by state law. Therefore, a conditional concurrence is unnecessary and waiver should be the favored alternative.

For the foregoing reasons, Detroit Edison requests that MDNRE expressly waive or, in the alternative, conditionally concur with CZMA Certification for the Project.

Detroit Edison respectfully urges MDNRE to favorably respond to this request by February 15, 2011. A response by this date would greatly assist Detroit Edison with its NRC license application and Project scheduling.

We would welcome an opportunity to discuss this matter with you. Please contact me if you would like to arrange a meeting or if you have any questions.

---

[4] In which case, Detroit Edison would respectfully request an explanation of any such decision.

[5] Unlike CWA Section 401, which provides that a state's conditions must be incorporated as terms of the federal license, the CZMA provides that the *project application* must be modified to reflect the agency's conditions. If the federal agency refuses to include those conditions in its approval, the conditional concurrence is treated as an objection. 15 C.F.R. § 930.4(a)(2)-(3).

Sincerely,

Attachments

cc: K. Gold
D. Harwood
A. Houssari
P. Smith
M. Solo
R. Westmoreland

8408351.4

NRC3-11-0002
RAI Question GE1.2-1
RAI Question GE1.2-2

Enclosure 2

Detroit Edison Proposed Fermi 3 Power Plant -- Request for Alternative Approach to Clean Water Act Section 401 Certification
(following 5 pages)

Skiles W. Boyd
Vice President – Environmental Management & Resources

DTE Energy Company
One Energy Plaza, Detroit, MI 48226
Tel: 313.235.7141 Fax: 313.235.5018
Email: boyds@dteenergy.com

DTE Energy

Via U.S. Mail

December 14, 2010

Ms. Mary Vanderlaan
Michigan Department of Natural Resources & Environment
SE Michigan District Office
27700 Donald Court
Warren, MI 48092-2793

Re: Detroit Edison Proposed Fermi 3 Power Plant – Request for Alternative Approach to Clean Water Act Section 401 Certification

Dear Ms. Vanderlaan:

As you know, Detroit Edison has applied to the federal Nuclear Regulatory Commission ("NRC") for a combined license for its proposed Fermi 3 project ("Project"). Based on preliminary plans, the Project will impact wetlands and, therefore, will require a permit under Part 303 of the Natural Resources and Environmental Protection Act, MCL § 324.30301 *et seq.*, from the Michigan Department of Natural Resources and Environment ("MDNRE").

Section 401 of the Clean Water Act ("CWA"), 33 U.S.C. § 1341, requires, among other things, that an applicant for a federal license to conduct an activity that may discharge into the navigable waters must provide a certification from the state in which the discharge will originate a certification that the discharge will meet the water quality provisions of the CWA ("Section 401 Certification").

In an early discussion, MDNRE staff stated that MDNRE would not issue a Section 401 Certification (meaning that the NRC cannot issue its license) unless and until Detroit Edison first obtains a Part 303 permit. Because of the difficulties that such sequencing will create for the Project (as further described herein), Detroit Edison requests that MDNRE employ an alternative approach to Section 401 Certification for the Project.

As is explained below, both of the alternatives presented herein are permissible under the CWA and would allow the NRC to issue its license before Detroit Edison needs to obtain a Part 303 permit for the Project. Both alternatives involves no risk of adverse environmental impact because state law will still require Detroit Edison to apply for and obtain a Part 303 permit for the Project.

Detroit Edison's reasons for this request include the following:

1. MDNRE has clear authority to waive Section 401 Certification.

MDNRE has the authority to waive Section 401 Certification, which would allow the NRC to issue its license without Detroit Edison first being required to obtain a Part 303 permit. In an interim guidance document, "Clean Water Act Section 401 Water Quality Certification: A Water Quality Protection Tool for States and Tribes," dated April 2010 ("EPA Guidance"), the U.S. Environmental Protection Agency states that "[s]tates and tribes are authorized to waive §401 certification, either explicitly, through notification to the applicant, or by the certification agency not taking action." EPA Guidance, at p. 11 (copy attached as Att. A). See also *Envtl. Defense Fund, Inc. v. Alexander*, 501 F. Supp. 742, 771 (N.D. Miss. 1980) (Att. B) ("a state may make an affirmative decision to waive §401 certification"), and *City of Olmsted Falls, v. U.S.E.P.A.*, 266 F.Supp.2d 718, 726 (N.D. Ohio 2003) (Att. C) ("On its face, Section 401(a)(1) and its supporting regulations, allow an applicant for a Section 404 permit to submit an express waiver from the state in order to satisfy Section 401").

Our brief review identified several states that actively issue waivers under Section 401:[1]

- Alaska: to address a lack of staff resources, Alaska has developed detailed criteria to govern its issuance of waivers. The relevant factors are related to "the size of the wetlands fill, the type of activity being permitted, the proximity to a waterbody, and the wetlands functions and values." See Att. D.

- Minnesota: between 2001 and 2006, the state systematically waived certifications related to wetlands permits due to budget constraints. Minnesota still generally waives certification. See Att. E.

- Montana: the state's regulations appear to allow waiver of certification if the activity at issue will require a state-issued approval. We also located a Montana-issued waiver on the Internet. See Att. F.

- Texas: the state uses a two-tiered system. Smaller projects that agree to follow certain best management practices will be effectively waived, while other projects will be subject to individual review. In addition, attached is a copy of a waiver that had been issued by Texas's environmental agency for a similar project. See Att. G.

- Washington: we did not find any substantive guidance on when the state will issue a waiver, but found two examples of such waivers. See Att. H.

[1] Time constraints prevented us from reviewing every state's program, and the ones we were able to review were not researched in great detail.

- Alabama and Ohio: two cases we reviewed mention that these states had issued certification waivers for projects.

Montana's program, in particular, offers a common-sense approach: if a state-issued permit will be required anyway, any concerns the state may have can be addressed through that process instead of the certification process. Here, a waiver not would diminish Detroit Edison's duty to obtain permits required by, or MDNRE's ability to enforce, state laws such as Part 303, and MDNRE can address any concerns it has through the Part 303 permit process after the NRC license is issued.

Accordingly, Detroit Edison requests that MDNRE exercise the discretion allowed to it by law and issue a letter that expressly waives Section 401 Certification for the Project.[2]

2. The NRC license is needed first and will not obviate state permitting requirements.

The NRC license, if issued, would authorize construction and operation of the project subject to the conditions of the license and would not authorize any activity in regulated wetlands without separately required approvals in accordance with Part 303 and its implementing regulations at Mich Admin Code r 281.921 *et seq*. In accordance with 10 CFR § 52.104 (Duration of Licenses), operation is limited to 40 years following completion of Project construction and NRC certification under 10 CFR § 52.103(g) that all inspections, tests, and analysis acceptance criteria ("ITAAC") have been met. The NRC license and regulations do not require construction to commence within any particular amount of time or limit the duration of the construction period. Obtaining the NRC combined license reduces project risk, is necessary obtain financing, and is necessary for a decision to proceed with the Project. According to NRC Regulatory Guide 1.206 (which provides guidance regarding applications for combined licenses), the level of design required for the license is approximately 30 percent of the complete design (with the remainder verified by ITAACs). The Part 303 permit application, on the other hand, requires a much higher degree of design detail that will not be developed (typical of a ready to construct project) until much later in the Project. Thus, to support a Part 303 permit application at this time, Detroit Edison would need to artificially develop a level of design detail that is inconsistent with the current stage of the Project and that will change before construction begins. The application, therefore, would draw on MDNRE's resources to review a permit application that will certainly be revised or require renewal before construction begins.

3. Project implementation plans may change.

Even if Detroit Edison were to obtain a Part 303 permit at this time, for the reasons described above Detroit Edison's specific Project implementation plans are uncertain at this early stage and, if the plans change, Detroit Edison likely would need to duplicate some or all of the

[2] We are unaware of any MDNRE regulations formally governing when it may or may not waive Section 401 Certification. If MDNRE has any such regulations, or any relevant guidance documents, please let us know.

permitting process, which would result in wasted resources. A likely example of why implementation plans may change relates to the final engineering design timetable and related construction methods to be used. Final engineering design for the GE Hitachi Economic Simplified Boiling Water Reactor (GE ESBWR) is underway and is currently forecasted to be complete in approximately three years. As this design work progresses, new construction techniques (i.e., modularization) that are enabled through ever-advancing communication and logistics technologies likely will provide higher levels of construction effectiveness and efficiency. Therefore, it would be most efficient for all concerned if Detroit Edison obtains the NRC license, plans the Project, and then seeks a Part 303 permit when the time and plans are ripe to do so.

4. MDNRE may issue a conditional Section 401 Certification.

If MDNRE concludes that it cannot or will not waive Section 401 Certification,[3] as an alternative, MDNRE may issue a Section 401 Certification based on the condition that Detroit Edison must eventually obtain a Part 303 permit for any impacts to regulated wetlands. This is allowed under CWA Section 401(d), and the condition would become an enforceable requirement in the NRC license. *See PUD No. 1 of Jefferson County v. Washington Dept. of Ecology*, 511 U.S. 700 (1994) (Att. I). We are aware of at least two instances where this was done in other states. *See Friends of the Earth v. U.S. Navy*, 841 F.2d 927, 930 (9th Cir. 1988) (Att. J) (noting that the State of Washington had "conditioned its issuance of the 401 certification on the Navy submitting the homeport project to the [State Shoreline Management Act] permit process"); and U.S. EPA's Wetlands and 401 Certification Guidance at pp. 23-24 (Att. A) (describing Maryland certification that included conditions for applicant to obtain an approved grading and sediment control plan and watershed management plan).

Detroit Edison submits that there is no need to put in a federal permit that which is already required by state law. Therefore, a conditional approval is unnecessary and waiver should be the favored alternative.

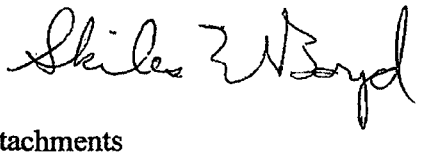
For the foregoing reasons, Detroit Edison requests that MDNRE expressly waive or, in the alternative, issue a conditional Section 401 Certification for the Project.

Detroit Edison respectfully urges MDNRE to favorably respond to this request by February 15, 2011. A response by this date would greatly assist Detroit Edison with its NRC license application and Project scheduling.

We would welcome an opportunity to discuss this matter with you. Please contact me if you would like to arrange a meeting or if you have any questions.

[3] In which case, Detroit Edison would respectfully request an explanation of any such decision.

Sincerely,



Attachments

cc: K. Gold
D. Harwood
A. Houssari
P. Smith
M. Solo
R. Westmoreland

8407971.4

Attachment 5
NRC3-11-0002

Supplemental Response to RAI letter related to Fermi 3 ER

RAI Question USACE-1
RAI Question USACE-2

NRC RAIs

RAI USACE-1

Provide a review and evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest (public concerns or rights). This review/evaluation should include supportive materials, including drawings, and references. This may be integrated with the Clean Water Act (CWA), Section 404(b)(1) Guidelines alternative analysis.

RAI USACE-2

Provide a Section 404 (b)(1) Guidelines Alternative Analysis Package. A suggested list and order of topics to be discussed and presented in the package is provided below. This alternative analysis should include supportive materials, including drawings, and references. This may be integrated with the Public Interest Review/Evaluation.

Combined Response

Supplemental requests for additional information related to RAIs USACE-1 and USACE-2 were provided directly by USACE to Detroit Edison on November 19, 2010. The response to USACE's supplemental requests is contained in Enclosure 1.

The response to USACE's supplemental requests was prepared utilizing the Clean Water Act (CWA) Section 404(b)(1) guidelines (40 CFR Part 230), the USACE public interest factors (33 CFR Part 320.4), and the USACE Detroit District generic master template document that facilitates consideration of the range of all possible impacts from projects within the purview of the USACE Regulatory Program. The supplemental response discusses the project alternatives considered, the relevant environmental issues associated with those alternatives, and the environmental impacts associated with the Fermi 3 project.

The evaluation of proposed actions and alternatives, and the assessment of impacts indicate that the construction and operation of the proposed Fermi 3 plant will comply with the CWA Section 404(b)(1) guidelines and is compatible with the public interest. The analyses clearly demonstrate that the Fermi site is:

- The Least Environmentally Damaging Practicable Alternative – the Fermi site is the practicable alternative site with the least impact to waters of the United States that does not have significant adverse impacts to other environmental resources.
- Compatible with the public interest – the construction and operation of Fermi 3 will not result in significant adverse impacts to relevant public interest factors.

In addition to compliance with state and federal requirements, implementation of appropriate and practicable steps will minimize potential adverse impacts of discharges and ensure that the

proposed construction and operation of Fermi 3 will not result in significant degradation of wetlands and the aquatic environment. Appropriate and practicable mitigation measures are proposed to offset the anticipated wetland impacts within USACE's jurisdiction. To aid in the USACE review, Table 1-1 of the enclosed document correlates the USACE supplemental RAI comments to the specific sections of the document.

Proposed COLA Revision

None

Attachment 1
NRC3-11-0002

Markup of Fermi 3 ER, Revision 1

ER Markup	Description of ER Markup
Section 1.1.5	Revised to reflect the addition of the new onsite transmission corridor.
Figure 2.1-3	Revised to reflect new site layout.
Figure 2.1-4	Revised to reflect new site layout.
Section 2.2.1.1	Revised to reflect change to the farmland acreage, and revised to indicate that the switchyard will no longer be placed on agricultural land.
Section 2.2.1.2.1	Revised to clarify the private/public status of Toll Road.
Section 2.2.2	Revised to indicate that Section 3.7 only discusses the offsite transmission system, as the new site layout proposes the construction of an onsite transmission system.
Section 2.2.2.2	Revised to reflect the addition of the new onsite transmission corridor. Revised to reflect the location change of the onsite switchyard.
Table 2.2-1	Revised to reflect changes to land-use acreage.
Section 2.3	Revised to insert three new references.
Section 2.3.1	Revised to reflect change in Fermi 3 construction and operation total impact acreage due to the site layout revision.
Section 2.3.1.1.4	Revised to reflect changes to delineated wetlands acreage due to completion of additional activities associated with wetland permitting onsite.
Section 2.4	Revised to insert three new references.
Section 2.4.1.1.1	Revised to reflect changes to land-use acreages.
Section 2.4.1.2.3	Revised to reflect changes to delineated wetlands acreage due to completion of additional activities associated with wetland permitting onsite. Revised to update open water acreage.
Section 2.4.1.9	Revised to clarify that this section pertains to only the offsite transmission corridor, as the new site layout proposes an onsite transmission corridor.
Section 2.4.2.9	Revised to clarify that this section pertains to only the offsite transmission corridor, as the new site layout proposes an onsite transmission corridor.

ER Markup	Description of ER Markup
Table 2.4-1	Revised to reflect changes to land-use acreages.
Figure 2.4-17	Revised to clarify that the figure represents the current onsite transmission corridor.
Figure 2.4-19	Revised figure of the Fermi site wetlands delineation to reflect latest information regarding onsite wetlands.
Section 2.5.3.2.1	Revised to update archaeological area of potential effect acreage due to increased size of the meteorological tower access road.
Section 2.5.3.2.2	Revised to update discussion of archaeological activities and their applicability due to site layout changes related to the meteorological tower.
Figure 2.5-27	Revised to reflect area of potential effect changes due to the site layout revision.
Figure 2.5-28	Revised to reflect area of potential effect changes due to the site layout revision.
Section 2.8.1	Revised to clarify that only the offsite transmission corridor is owned by ITC*Transmission*, as the new site layout proposes an onsite transmission corridor.
Section 3.7.3	Revised to update the distance from the Fermi 3 reactor to the Fermi 3 switchyard due to the site layout revision.
Section 4.0	Revised to reflect changes to acreages due to the site layout revision.
Section 4.1.1	Revised to reflect changes to acreages due to the site layout revision.
Section 4.1.1.1	Revised to reflect changes to acreages due to the site layout revision.
Section 4.1.1.2.2	Revised description of the use of agricultural land onsite due to the change in the switchyard location.
Section 4.1.1.2.3	Revised to reflect change to the refuge acreage due to the site layout revision.
Section 4.1.2	Revised to include discussion of impacts associated with the onsite transmission corridor.

ER Markup	Description of ER Markup
Table 4.1-1	Revised to reflect changes to acreages due to the site layout revision.
Section 4.2.1.2	Revised to reflect change to the area of disturbance acreage due to the site layout revision.
Section 4.2.1.6	Revised to include discussion of onsite transmission facilities.
Figure 4.2-1	Revised to reflect new site layout.
Section 4.3	Revised to insert four new references.
Section 4.3.1	Revised to reflect changes to acreages due to the site layout revision.
Section 4.3.1.1.1	Revised to reflect changes to acreages due to the site layout revision. Revised text to reflect the impacts of meteorological tower, dredge basin, onsite transmission, etc., changes.
Section 4.3.1.2.1	Revised to indicate impacts to the American Lotus are anticipated in the south canal. Due to the site layout revision, construction activities are no longer expected to impact the North or South Lagoons.
Section 4.3.1.2.2	Revised to reflect changes to acreages due to the site layout revision. Revised text to describe recent wetland permitting activities.
Section 4.3.1.4	Revised text to describe recent wetland permitting activities.
Section 4.3.1.5	Revised to include discussion of onsite transmission corridor.
Section 4.3.2	Revised description of impacts to the south canal due to the site layout revision. Revised description of impacts to the south canal due to the site layout revision.
Section 4.3.2.1	Revised to reflect changes to acreages due to the site layout revision.
Section 4.3.2.3	Revised to include discussion of impacts caused by construction of the onsite transmission corridor.
Table 4.3-1	Revised to reflect changes to acreages due to the site layout revision.
Table 4.3-3	Revised to reflect changes to acreages due to the site layout revision.

ER Markup	Description of ER Markup
Figure 4.3-1	Revised to reflect new site layout.
Figure 4.3-2	Revised to reflect new site layout.
Figure 4.3-3	Revised to reflect new site layout.
Figure 4.3-4	Revised to reflect new site layout.
Figure 4.3-5	Revised to reflect new site layout.
Table 4.6-1	Revised to clarify that the discussion pertains only to offsite transmission, as the new site layout proposes the construction of an onsite transmission system.
Section 4.7-1	Revised to reflect changes to acreages due to the site layout revision.
Section 4.7-4	Revised to reflect changes to acreages due to the site layout revision.
Section 4.7.4-1	Revised to reflect changes to acreages due to the site layout revision. Revised to clarify that the American Lotus will be impacted by filling of the south canal. Revised fox snake discussion.
Table 4.8-1	Revised to reflect changes to acreages due to the site layout revision. Revised to clarify that the discussion pertains only to offsite transmission, as the new site layout proposes the construction of an onsite transmission system.
Section 5.1.2	Revised to include discussion of the onsite transmission corridor.
Section 5.1.2.3	Revised to clarify the width of the onsite transmission corridor.
Section 5.6.1	Revised to include discussion of the onsite transmission corridor and switchyard.
Section 5.6.1.1	Revised to clarify which discussions related only to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.

ER Markup	Description of ER Markup
Section 5.6.1.2	Revised to include discussion of the onsite transmission corridor and switchyard. Revised to clarify which discussions related only to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.
Section 5.6.1.3	Revised to clarify which discussions related only to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.
Section 5.6.1.4	Revised to include discussion of the onsite transmission corridor. Revised to clarify which discussions related only to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system. Added flood plain discussion.
Section 5.6.1.7	Revised to clarify that no agency consultation regarding switchyard construction has occurred.
Section 5.6.3.1	Revised to include discussion on the visual impact of the onsite transmission corridor.
Section 5.6.3.4	Revised to include discussion on noise due to the onsite transmission corridor.
Section 5.6.4	Revised to insert one new reference.
Table 5.8-1	Revised to update sound levels caused by the onsite transmission corridor.
Figure 5.8-1	Revised to reflect new site layout.
Section 5.11.1	Revised to reflect changes to acreages due to the site layout revision.
Section 6.4.2.1	Revised distances between the meteorological tower and other structures, as the location of the meteorological tower was changed in the site layout revision.
Section 6.5.1.1	Revised to clarify that the discussion only pertains to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.

ER Markup	Description of ER Markup
Section 6.5.1.2	Revised to clarify that the discussion only pertains to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.
Section 9.2.3.1.1	Revised to reflect changes to acreages due to the site layout revision.
Section 9.2.3.2.1	Revised to reflect changes to acreages due to the site layout revision.
Table 10.1-1	Revised to reflect changes to acreages due to the site layout revision. Revised to include discussion of the impacts due to the onsite transmission corridor.
Table 10.1-2	Revised to reflect changes to acreages due to the site layout revision. Revised to clarify that the discussion only pertains to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.
Section 10.2.1.1	Revised to reflect changes to acreages due to the site layout revision.
Section 10.2.1.2	Revised to reflect changes to acreages due to the site layout revision. Revised to indicate American Lotus impacts are expected from filling the south canal.
Table 10.2-1	Revised to clarify that the discussion only pertains to the offsite transmission corridor, as the new site layout proposes the construction of an onsite transmission system.
Table 10.3-1	Revised to reflect changes to acreages due to the site layout revision. Revised to include discussion of the impacts due to the onsite transmission corridor.
Section 10.4.2.2.1	Revised to reflect changes to acreages due to the site layout revision.
Table 10.4-2	Revised to reflect changes to acreages due to the site layout revision.

Markup of Detroit Edison COLA
(following 126 pages)

The following markup represents changes Detroit Edison intends to reflect in a future submittal of the Fermi 3 COLA. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be different than presented here.

1.1.3 Reactor Information

The Applicant proposes to construct and operate an ESBWR designed by GE-Hitachi Nuclear Energy Americas, LLC (GEH) at the Fermi site in Monroe County, Michigan. According to the ESBWR Design Control Document (DCD), the reactor has a rated core thermal power of 4500 megawatts thermal (MWt) and a gross electrical output of approximately 1605 ± 50 megawatts electric (MWe). The reactor's standard net estimated electrical power output is approximately 1535 MWe (Reference 1.1-1). The NRC accepted the ESBWR Design Certification Application for review in a letter dated December 1, 2005 and expects review of the Application to continue through 2010 (Reference 1.1-2).

1.1.4 Cooling System Information

As discussed in Chapter 3, the GEH ESBWR reactor design proposes to dissipate waste heat from the Main Condenser and transfers this heat to the Normal Power Heat Sink (NPHS). The Fermi 3 NPHS consists of a hyperbolic natural draft cooling tower. The Auxiliary Heat Sink consists of mechanical draft cooling towers.

The Fermi Station Water System (SWS) provides the necessary makeup water for the cooling systems utilized by Fermi 3 from Lake Erie. The SWS withdraws water via an intake bay formed by two rock groins extending into Lake Erie.

Cooling tower blowdown water is discharged to Lake Erie through a new wastewater discharge outfall located in Lake Erie.

1.1.5 Transmission System Information

Insert 1

The International Transmission Company (ITC*Transmission*) proposes to service the Fermi 3 station through the installation of three new 345 kV transmission lines from the Fermi site to the Milan Substation. The new lines for Fermi 3 will run in a common corridor with transmission lines for Fermi 2, to a point just east of I-75. From the intersection of this Fermi site corridor and I-75, the three Fermi-Milan lines will run west and north for approximately 12 miles in a corridor shared with other non-Fermi lines. From this point, all non-Fermi lines turn north and continue on to their respective destinations and the three Fermi-Milan lines will continue west through an estimated 300-foot corridor for approximately 10 miles to the Milan substation. The ITC*Transmission* system transfers power from power plants to local distribution systems. The ITC*Transmission* system also carries power resulting from transfers from power plants to loads across the Eastern Interconnection. The 345 kV transmission system and associated corridors including the proposed route for Fermi 3 are exclusively owned and operated by ITC*Transmission*. The Applicant has no control over the construction or operation of the transmission system. The interconnection point is between Fermi 3 and the switchyard. It is assumed that the Milan Substation may also be expanded from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet to accommodate the three new transmission lines from Fermi 3. (Reference 1.1-3)

Insert 1

Onsite

A new transmission corridor has been identified on the Fermi site. This new transmission corridor will be approximately 170 feet wide and will include two sets of towers carrying both rerouted 345 kV lines serving Fermi 2 and the new 345 kV lines serving Fermi 3. The new transmission lines are needed to transmit power from the Fermi 3 generator to the Fermi 3 switchyard at the intersection of Toll Road and Fermi Drive. Onsite 120 kV support for Fermi 2 will be routed underground along the disturbed Fermi Drive corridor.

The two 345 kV transmission lines exiting the Fermi 2 switchyard are owned by ITC*Transmission*; however, the two 345 kV transmission lines to leave the Fermi 3 Power Plant are to be owned by Detroit Edison up to the proposed new Fermi 3 switchyard. Detroit Edison will continue to own the land on the Fermi site housing the new transmission corridor, but expects to contract with ITC*Transmission* to maintain these transmission lines and towers.

Offsite

Figure 2.1-3 Fermi Property Boundary

Insert 2


BERLIN TOWNSHIP
FRENCHTOWN TOWNSHIP
POST
SWAN CREEK
DIXIE HWY
GN. R.R.
PROPERTY LINE
LANGTON ROAD
BULLIT ROAD
BOUNDARY LINES ARE THE SAME AS PROPERTY LINES (1280 ACRES)
FERMI 2 COOLING POND OUTFALL
FERMI 2 BARGE SLIP
HYDROGEN FARM
LEROUX
FERMI DRIVE
MAIN GATE
TOLL ROAD
DIXIX ROAD
PROPOSED EAB RADIUS 2820'
FERMI 3 OUTFALL
GATOR ROAD
FERMI 2 WATER INTAKE
FERMI 3 WATER INTAKE AND COOLING TOWER OUTFALL
SOUTH LAGOON
BOOGERS ROAD
FERMI 3 BARGE SLIP
NUCLEAR TRAINING CENTER
NUCLEAR OPERATIONS CENTER
QUARRY LAKE
QUARRY LAKE ROAD
FOX ROAD
LAKE ERIE
PROPERTY LINE
ACORN ROAD
METEOROLOGICAL TOWER
POINTE AUX PEAUX ROAD
POINTE AUX PEAUX GATE
HAZEL
SYCAMORE
MAIN
0 .25 .5 .75 1
MILES

Figure 2.1-4 Fermi 3 Site Plan

Insert 3 Figure 2.1-4 Fermi 3 Site Plan

state-owned minerals beneath their land as long as the land has no pending lease or development. The state must sell the minerals to the surface landowner at fair market value at the landowner's request unless the state wants to reserve minerals to prevent damage in environmentally sensitive areas or for some other legitimate reason. A deed restriction is then added to the property that prohibits the mineral rights from being severed from the surface rights in the future (Reference 2.2-4). Since Detroit Edison owns the entire Fermi site and the associated exclusion areas for Fermi 2 and Fermi 3, Detroit Edison effectively controls mineral rights to the site with respect to this law.

Near the northeast corner of the Fermi site in the area of the Fermi 2 cooling towers, there is a former barge slip that was used to offload equipment during Fermi 2 construction (Figure 2.1-3). The Fermi 2 water intake is east of the Fermi 3 location and is situated between the two groins protruding into Lake Erie. Fermi 2 discharges about 20,000 to 30,000 gallons per minute into Lake Erie from the existing circulating water basin depending on the season.

The environment of the former Fermi 2 barge slip and offloading area is cleared gravel with some trees and weedy vegetation along a sandy inlet area with no permanent structures. The barge slip area used for Fermi 2 deliveries would require substantial dredging and other preparation work before it could be used for equipment delivery. Fermi 2 components were delivered and offloaded at the barge slip.

The Fermi site, including onsite waterways, roads, and railroads, is closed to public use. No additional waterways, highways, roads, or railroads would be closed to public use as a result of Fermi 3 preparation, construction, or operation activities. There are no current plans for site modifications such as a visitor's center, parks, or similar designations on the Fermi site.

In the eastern portion of the Fermi site near Boomerang Road and Lake Erie, there is a 492-foot communication tower on land leased by Detroit Edison to the tower operator for communication use.

Natural Resources Conservation Service (NRCS) maps show areas of prime farmland around the southwestern edge of the Fermi site in the agricultural field designated for ~~the~~ Fermi 3 ~~switchyard and~~ construction laydown on Figure 2.1-4. This part of the Fermi site is owned by Detroit Edison and is used as cropland. Since a large portion of the Fermi site is committed to industrial development and has been previously disturbed by site-related activities, the majority of the site would likely be exempted from the definition of prime farmland (Reference 2.2-5). The NRCS classifies most of the undeveloped areas of the Fermi site as "prime farmland if drained" (Reference 2.2-6). Parts of the approximately ~~69~~ 60 acre parcel of agricultural land are designated prime farmland and the parcel is currently used as farmland, so this parcel would most likely still be considered prime farmland even though it is part of the Fermi site. The prime farmland designation continues on a small portion of the Fermi site undeveloped area west of the Nuclear Operations Center and Nuclear Training Center; however, this small area is not farmed. Potential construction impacts to prime farmland on the Fermi site are addressed in Section 4.1.

Future land use plans for the area around the Fermi site show prime agricultural and open space as the dominant uses. Draft future land use plans project industrial uses south of Newport and in the I-275/Telegraph Road area.

No zoning issues for townships or counties within the vicinity are expected to affect the Fermi site. According to the Monroe County Planning Director, farmland preservation and conservation will be a new area of focus in the Monroe County Comprehensive Plan update anticipated to be finished in 2008. This drive to preserve farmland in the county will keep additional residential and other development from encroaching more closely on the Fermi site since a large portion of the remaining undeveloped land near Fermi is used for agriculture.

2.2.1.2.1 **Site Accessibility**

The Fermi 3 site is accessible by Lake Erie, road, and rail. The major highways and rail lines in the area are found mainly west of the site, and a number of smaller state and county roads serve the area (Figure 2.1-1 and Figure 2.1-2). Dixie Highway provides access to the Fermi site from I-75. Interstate 75 connects Detroit, Michigan to the north with Toledo, Ohio, to the south and continues across the United States to its terminus in Florida. Interstate 75 is the major transportation route in the vicinity, roughly following the Lake Erie shore through Monroe and Wayne Counties and running within 4.1 miles of the northwest side of the Fermi site at the closest point.

Detroit Edison maintains control of ingress to and egress from the Fermi site through the main gate. There is an auxiliary gate onsite, the Pointe Aux Peaux gate; however, this gate is kept locked at all times and requires a key for entry by authorized Detroit Edison personnel.

A plant emergency or a national crisis could result in closure of I-75 because of its status as a major interstate highway and its proximity to the Fermi site. There are two areas of traffic congestion along two of the nearest exit or evacuation routes to I-75 from Fermi, including the Nadeau Road and I-75 intersection as well as the east side of the Swan Creek Road and I-75 intersection. The Frenchtown Township 2002 Master Plan also states that many of the east-west oriented roads in the township, such as those that would be used to exit the Fermi site, do not span the entire township, but that there is more than enough capacity on north-south roads (Reference 2.2-12). For further discussion of this and other potential egress limitations, refer to the Fermi Evacuation Time Estimate provided in COLA Part 5.

US 24 (Telegraph Road) runs southwest-northeast in the vicinity of the site (5.8 miles northwest), then gradually zigzags southeast through parts of Ohio, Indiana, and Illinois, ending near Palmyra, Illinois. County Highway 125 is a paved, two-lane, secondary road that branches east from US 24 and runs north-south into the center of the city of Monroe, passing within about 4 miles west of Fermi 2. County Highway 125 dead-ends into the east-west County Road 50 in downtown Monroe. Interstate 275 connects Interstate 96 in northern Detroit to Interstate 94 in southern Detroit and ends about 4 miles northwest of Fermi 2.

called Fisher Street

Toll Road runs north from Fermi Drive (near the main gate) just outside the property boundary. Toll Road is a private gravel road with an easement for public use. This road is not heavily used, but provides access to the agricultural parcels just west of the Fermi site. Fermi Drive is also a private

public county road south of Langton Road; north of Langton Road, it is a

A single spur track off the Canadian National main rail line crosses the Fermi site in a west-east direction generally parallel to the route of Fermi Drive. Coming from the north toward the Fermi site, service on the Canadian National main line continues past the plant (about 4 miles west) and south into the rail yards of Toledo, and beyond to Columbus, Dayton, Chicago, Bellevue, and Tiffin (Reference 2.2-20).

Along a parallel path in the same area as the Canadian National line west of Fermi, Norfolk Southern also has two lines that traverse the 7.5 mile radius in the vicinity of Newport (lines are very close together and appear as one line in Figure 2.1-2). There are no spurs off the Norfolk Southern line in the vicinity of Fermi. Rail lines beyond the 7.5 mile radius are described in Subsection 2.2.3.

Further west, about 8 miles west of the Fermi site, is a CSX Transportation rail line running roughly parallel to the Canadian National and Norfolk Southern lines discussed above. This line also runs north through Detroit and south to Toledo, where it branches southwest (Reference 2.2-21).

The Windsor Airport is located about 27 miles northeast of the Fermi site in Ontario, Canada (Reference 2.2-22). Other large airports in the region are farther from the Fermi site and are discussed in Subsection 2.2.3 and Subsection 2.5.2.

2.2.1.2.7 **Pipelines**

Two major natural gas pipelines are present in the vicinity of the Fermi site, traversing the Fermi vicinity in a southwest-northeast direction. The nearest gas-transmission pipeline is a 22-inch diameter Panhandle Eastern Pipeline Company line running roughly southwest-northeast about 10 miles west of Fermi 3, as shown on Figure 2.2-2. There is another Panhandle Eastern line running parallel to the first one about 0.5 mile further west; this line has a 26 inch diameter. The pipelines carry natural gas.

In Monroe County, the main natural gas providers are Michigan Gas Utilities and Michigan Consolidated Gas. The smaller gas lines from these companies that serve homes and businesses are located in the more populated areas and along major road frontages (Reference 2.2-23). Large natural gas pipelines in the vicinity of the Fermi site are located in the far western portion of the 7.5 mile vicinity. They generally run from the Toledo area through Detroit, then branch in east-west directions north of Detroit. Locations of pipelines are shown on Figure 2.2-2 and Figure 2.2-6.

Several petroleum lines are present within the vicinity; all of these lines run in essentially the same corridor about five to 6 miles west of the Fermi site in a southwest-northeast direction roughly parallel to the route of I-75.

2.2.2 **Transmission Corridors and Offsite Areas**

offsite

The ~~proposed~~ transmission system for Fermi 3 is described in Section 3.7. In summary, three new 345 kV transmission lines and a separate switchyard are needed to serve Fermi 3. The route for the new lines will span approximately 29.4 miles within an assumed 300-foot right-of-way (ROW) along existing corridors to the Milan Substation. It is assumed that the Milan Substation may be expanded from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet to accommodate the three new transmission lines from Fermi 3.

area around each existing route and the proposed Milan transmission route for orientation. The land uses within 0.5 mile of existing and proposed 345 kV transmission corridors are detailed in Table 2.2-6. The existing Fermi-Brownstown 345 kV transmission corridors are maintained at an approximate 150 to 200 foot width range outside of the site.

Land use along the existing transmission line routes roughly corresponds with land use in the region around the Fermi site, which is largely agricultural with some developed areas. Refer to Subsection 2.2.3 for a listing of land uses in the 50-mile region. All of the existing Fermi transmission routes cross roads, and most cross major highways (I-75). None of the routes cross designated or protected natural areas. The routes to the Brownstown Substation cross Swan Creek and the Huron River.

2.2.2.2 Proposed Transmission System Modifications and Land Use

Three new transmission lines and a separate switchyard will be needed for Fermi 3 per System Impact Study Report (MISO G867) performed by ITC*Transmission* (Reference 2.2-51). The study indicated the use of new and existing towers, steel poles and/or combinations of these structures will be used in the construction of the new transmission lines to the Milan substation. Without the new transmission lines, the study also indicates that the full power output of Fermi 3 contributes to post contingency overloads on the system, most notably at the points of interconnection on the 345 kV, 230 kV, and 120 kV portions of the system. The study further finds that if Fermi 2 and Fermi 3 have switchyards tied together, unstable conditions may arise. Both 345 kV switchyards will be separate from the onsite 120 kV transmission system.

Insert 4

Offsite

In addition to the Department of Interior "Environmental Criteria for Electric Transmission Systems" and the Federal Power Commission "Guide Lines for the Protection of Natural Historic, Scenic, and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities," when this transmission route to the Milan Substation was originally considered for Fermi 2, the criteria used to select and evaluate the new transmission line route between Fermi and Milan Substation, included the following (Reference 2.2-52):

- Use the shortest route with minimum turns to minimize impact on property owners and property acquisition and construction costs.
- Follow property lines as much as possible to minimize impact on property owners.
- Route through less populated areas and avoid homes and buildings to the extent possible.
- Avoid trees, where practical, and use selective cutting and feathering techniques when wooded areas cannot be avoided to minimize impact on environmental and construction costs.

Several alternate route options for the new transmission line were studied during that previous selection process, and the route option proposed (Fermi to Milan Substation) was that which minimized the line's environmental impact at a reasonable cost.

The proposed route for the three new 345 kV transmission lines from Fermi to the Milan Substation will span approximately 29.4 miles within an assumed 300-foot wide ROW along the entire corridor,

Insert 4

Onsite

Within the Fermi site, there will be a short length of new transmission corridor needed to transmit power from the Fermi 3 generator to the Fermi 3 switchyard at the intersection of Toll Road and Fermi Drive (refer to Figure 2.1-4). This new transmission corridor will be approximately 170 feet wide and include two sets of towers. The towers will carry both rerouted Fermi 2 transmission lines and new Fermi 3 transmission lines. The new corridor will head west-southwest out of the Fermi 2 switchyard and Fermi 3 power block, turn northwest and cross the canal north of the proposed cooling tower location, then proceed northwest over a Berns Drain area that is a mosaic of phragmites/cattail wetland and along a forested wetland. Near the perimeter fence adjacent to Toll Road, the corridor turns southwest along the fence through woodlot forest, forested wetlands, and thicket until it enters the Fermi 3 switchyard. The switchyard is located in a prairie restoration area.

Onsite 120 kV support for Fermi 2 will be routed underground along the disturbed Fermi Drive corridor.

Since the first 18.6 miles of the transmission route travels within transmission corridors with towers and lines present, it is likely that the impact area would be smaller along this portion than the area potentially affected by the new construction along the 10.8 mile portion of the transmission route nearest to the Milan Substation which could be approximately 393 acres. It is likely that most of these 393 acres would be impacted due to construction of new transmission lines on new towers and steel poles along the transmission ROW. It has not been determined whether additional areas outside the assumed 300-foot corridor are needed for laydown of equipment. As discussed above, the interconnection studies are performed by ITC*Transmission*, including determining the route for these new transmission lines. As part of this process, Detroit Edison is not involved in the evaluation or decision making for proposed changes to the transmission system or possible design alternatives. Accordingly, Detroit Edison cannot reasonably provide the transmission system design alternatives considered by ITC*Transmission*.

The route to the Milan Substation would begin on the Fermi site at the proposed new Fermi 3 switchyard at the intersection of Toll Road and Fermi Drive ~~south of the existing Fermi 2 switchyard~~. It would follow the existing 4.5 mile common Fermi transmission corridor west across agricultural land uses to I-75. After crossing I-75, the route would continue west in the existing transmission corridor, crossing agricultural and low density residential areas and Old Town Golf Course through northern Monroe. The route crosses Stony Creek Road, Highway 125, and Telegraph Road (Highway 24), then crosses agricultural land and cuts through scattered forest and additional agricultural land before turning north near Steiner Road. From this point, the route continues almost directly north (parallel to and east of Exeter Road) through agricultural cropland with scattered forest and residential areas. It crosses the Panhandle Eastern Pipe Line Company natural gas line in northern Monroe County, then continues across agricultural areas until a point just north of Arkona Road in Wayne County, where it turns west. The 18.6-mile developed portion of this existing transmission ROW continues briefly to the west to a point midway between Haggerty Road and Martinsville Road. Up to this point, the route would pass mostly agricultural areas, with some nearby commercial and scattered industrial facilities present near the Monroe area and just before the route turns west. West of Haggerty Road, use of the 10.8-mile undeveloped portion of the existing ROW would begin as the route runs through rural residential and agricultural areas to the second grid interconnection at the Milan Substation in Washtenaw County.

From its beginning point, the 10.8 mile portion of the route would traverse the following features and land uses, and cross the following roads, from east to west as it runs toward the Milan Substation interconnection:

Haggerty Road to Martinsville Road - forest and undeveloped land.

Martinsville Road to Sumpter Road - mostly forest with some agricultural and rural residential areas.

Sumpter Road to Elwell Road - forest, large parcel of undeveloped land in beginning stages of development (adjacent to the north of ROW).

Elwell Road to Karr Road - agricultural with some forest.

Table 2.2-1 Acreage Associated with Land Uses on Fermi Site

	Area[1] Acres
Total Site	1260
Water	~~230~~ 215
Forest	256
Wetland	~~272~~ 273
Grassland	~~130~~ 168
Other	136
Developed Areas	~~206~~ 212
~~Onsite Transmission Corridor~~	~~30~~

Notes:
1. Acreages given are approximate based on Figure 2.4-5 and Table 2.4-1.

site-specific and regional data on the physical and hydrologic characteristics of these water bodies are discussed in the subsections below. This subsection contains data that providesa baseline of how these water bodies could affect, or be affected by the construction or operation of Fermi 3.

302

The existing and proposed site-specific and regional hydrosphere is summarized to provide a full evaluation of impacts on surface-water bodies and groundwater aquifers within the approximately 299,000 square mile area of the Great Lakes Drainage Basin (Reference 2.3-1). Within this basin, the Fermi site is 1260 acres. The site-specific area for the construction and operation of Fermi 3 is approximately ~~325~~ acres. Fermi 3 will be located within the same vicinity as Fermi 2, but further inland from the shoreline of Lake Erie. The topography of the site is flat to gently rolling plain and is located in the Swan Creek Watershed, which has an elliptical-shaped basin trending northwest-southeast and contributes a small water flow to the relatively large water capacity of Lake Erie.

The east side of the Fermi site is the shoreline of Lake Erie. The shoreline is on the outer part of the lake's western basin, which is the most important water body near the Fermi site. This subsection provides historical data and future projections concerning the hydrological characteristics of this particular region of Lake Erie. The hydrosphere of this region and the historical water levels of the area's major water bodies make it unnecessary to address seasonal drought conditions.

There are no significant impoundments, reservoirs, estuaries, or oceans located in this region that need to be considered when analyzing the water impacts on the construction and operations of Fermi 3. The site currently contains a man-made water basin that specifically supports the function of the circulating water system for Fermi 2. Fermi 3 will not rely on this water basin. Furthermore, construction and operation of Fermi 3 will not impact this water basin. The site contains two Quarry Lakes that were established following rock quarry operations in support of Fermi 2 site development activities. Fermi 3 will not rely on the Quarry Lakes.

2.3.1.1 Surface-Water Resources

This subsection describes the site-specific and regional surface-water resources at the Fermi site and in the site vicinity.

The Great Lakes Drainage Basin encompasses the Fermi site, and is shown on Figure 2.3-1. The figure also includes the five Great Lakes: Lake Erie, Lake Huron, Lake Michigan, Lake Ontario, and Lake Superior (Reference 2.3-17). As shown on Figure 2.3-1, the Fermi site is located on the western shoreline of Lake Erie.

The overall water system is shown on Figure 2.3-2 (Reference 2.3-2). Figure 2.3-2 shows a description of the hydrological cycle for the entire Great Lakes water system noting the approximate values pertaining to runoff, precipitation, evaporation, and flow capacity for each of the Great Lakes. The water contributions and water losses shown for Lake Erie demonstrate that it is a significant component of the water system.

2.3.1.1.3.4 Conclusions on Plant Interface With Lake Erie

As described above, the primary source of water for use by Fermi 3 is the western basin of Lake Erie. The western basin is also the primary offsite water body that could be impacted during the construction and operations of Fermi 3. The intake structure and discharge line are primary points of impacts which are described above.

The intake structure of Fermi 3 will allow the unit to function at full capacity at the historical low water level of the western basin. The construction of the shoreline barrier that runs along the eastern boundary of the Fermi site was initially designed to handle the most historical high water level of the western basin of Lake Erie that would potentially take place given the worst case scenario. Design bases flooding scenarios are addressed in FSAR Subsection 2.4.2, FSAR Subsection 2.4.3, and FSAR Subsection 2.4.5.

The information provided in Subsection 2.3.1 provides a sufficient baseline from which to judge the construction and operational impacts on the hydrology of Lake Erie. These impacts are discussed in Section 4.2 and Section 5.2. There are no known future hydrologic activities that will affect data accuracy.

2.3.1.1.4 Wetlands and Onsite Water Bodies

Insert 5

Detroit Edison performed a wetland investigation for the Fermi property in May and June, 2008. This investigation included a wetland delineation, and a functions and values assessment. The Fermi property has delineated ~~505~~ 509 acres of wetlands and ~~48~~ 45 acres of open water (not including open water areas in Lake Erie). The primary wetland type on the Fermi property is palustrine emergent marsh (PEM) comprising ~~322~~ 324 acres followed by forested wetland (PFO, ~~167~~ 169 acres) and scrub-shrub wetland (PSS, 16 acres).

For the functions and values assessment, the majority of the delineated wetland units are considered one large wetland system, hydraulically connected by direct, contiguous water ways or culverts under roads. Lagoons located to the north and the south of the proposed Fermi 3 site are hydraulically connected to Lake Erie through direct contiguous water ways. On the western side of the site are two canals and a stagnant waterbody. The canal northwest of the proposed Fermi 3 location (directly west of Fermi 2) flows to the North Lagoon. This canal is known as the overflow canal, and serves as an outfall for Fermi 2. The drainage canal is located directly to the west of the proposed Fermi 3 site, and flows to the South Lagoon. The stagnant waterbody is between the north and south canals. The wetlands to the west of the proposed Fermi 3 site are hydraulically connected to the north and south canals through culverts. The culverts provide a drainage flow path for the wetlands to the two canals and ultimately to Lake Erie. Through the North and South Lagoons, the two canals and the culverts, the wetlands are hydraulically connected to Lake Erie both to the north and to the south. Table 2.3-6 demonstrates that there is little monthly variation in lake level. The wetlands are hydrologically connected with Lake Erie and water levels typically fluctuate annually in unison with the larger waterbody, though at slightly different rates depending on resistance to flow for an individual waterbody. Seasonal water depths may vary depending on the long-term weather conditions. For example, during the spring thaw wetland water levels tend to

Insert 5

The 2008 wetland investigation report was provided to MDEQ and USACE in the fall of 2008 with a request for review and a jurisdictional determination. Jurisdictional determination letters were provided by the now MDNRE in November 2008 (Reference 2.3-xxx1) and March 2009 (Reference 2.3-xxx2) and by USACE in November 2010 (Reference 2.3-xxx3). The wetland delineation boundaries were updated in response to the jurisdictional determination letters. Additional updates to the wetland delineation were based on site visits and verbal and written feedback from MDNRE and USACE during 2010.

2.3-103 Driscoll, F.G., "Groundwater and Wells," 2nd Edition, Johnson (Well Screen) Division, St. Paul, Minnesota, 1986.

2.3-104 Detroit Edison, "Fermi 2, Offsite Dose Calculation Manual," Revision 14, 1999.

2.3-105 U.S. Nuclear Regulatory Commission, "Integrated Ground-Water Monitoring Strategy for NRC Licensed Facilities and Sites: Logic, Strategic Approach and Discussion," Advanced Environmental Solutions LLC for Division of Fuel, Engineering, and Radiological Research, Office of Nuclear Regulatory Research, NUREG/CR-6948, November 2007.

2.3-106 AECOM, "Water Quality Survey, The Detroit Edison Company, Fermi 3 Project, Final Report," November 2009.

2.3-xxx1. Michigan Department of Environmental Quality, Wetland Identification Report, Wetland Identification File Number 08-58-0003-W, November 7, 2008.

2.3-xxx2. Michigan Department of Environmental Quality, Wetland Identification Report, Modified Wetland Identification File Number 08-58-0003-WA, March 30, 2009.

2.3-xxx3. U.S. Army Corps of Engineers, Detroit District, Engineering & Technical Services, Regulatory Office, File No. LRE-2008-00443-1, November 9, 2010.

conditions. The most notable difference in the two photographs is the much higher water conditions in the lagoons in 1981 compared to 2005 and the difference in cover types present due to Fermi 2 construction activities in 1981.

2.4.1.1 Terrestrial Communities

Following are brief discussions of the floral and faunal components found at the Fermi site. The vicinity surrounding Fermi consists of similar habitats but is dominated by Lake Erie (about 50 percent), urban areas, rural residences, and agricultural lands.

2.4.1.1.1 Vegetation on Site and Vicinity

The flora at the Fermi site was studied during site reconnaissance between 2006 and 2008 and again in a detailed survey between 2008 and 2009 (Reference 2.4-95). Using current aerial photography of the Fermi property, plant community boundaries were drawn on a provisional basis. The property was then divided into a gridwork of approximately 1,000 feet square parcels. Pedestrian surveys were then made of all areas of the site, using the grid system to effectively examine the habitats on and areas of the property. The surveys were conducted during the spring, summer and fall seasons to account for the variation in flowering time for different plant species. Field inspection of the structure and species composition of these areas was used to refine the boundaries of the plant communities present. Within each terrestrial community identified, point to point transects were examined to determine cover type and dominant species. At least two transects were examined in each habitat area of significant size. For example, if five separated areas of the property were identified as the same habitat, at least two transects were examined in each of these tracts, assuming each tract was large enough to accommodate a 100 meter or longer transect. Random sampling of plants was done within all communities identified to more thoroughly examine microhabitats and better understand the species diversity present. The outcome of the field studies was used to refine the boundaries of the plant communities present and provide an understanding of the character of these communities as they exist on the Fermi property. The discussion that follows is based on the findings of these studies.

approximately 61

5.1

16.8

The 1260 acre Fermi site is composed of approximately ~~16.4~~ percent developed areas and ~~6.0~~ percent cropland. Terrestrial habitats account for ~~60.2~~ percent of the property. The remaining ~~17.4~~ percent are water bodies, e.g. Quarry Lake and the main body of Lake Erie that lies east and north of the site. Figure 2.4-5 illustrates the extent and location of the habitats identified and the developed areas on the Fermi site. Table 2.4-1 provides an accounting of the acres present of each habitat. Plant community descriptions (Table 2.4-1 and Figure 2.4-5) are defined biologically, which may differ from the regulatory definitions used in the wetlands delineation (Figure 2.4-19).

Studies of the flora at Fermi between 2006 and 2008 identified 216 plant species present. This should be considered a conservative number of species since in some instances specimens could not be identified beyond the genus. Table 2.4-2 provides a list of plant species observed during reconnaissance visits or reported as occurring. Plant identifications and nomenclature primarily follow that used in the *Michigan Flora* (Reference 2.4-4). Common names primarily follow those found in the *National List of Plant Species that Occur in Wetlands: North Central (Region 3)* (Reference 2.4-5 and Reference 2.4-95).

approximate 17

Early accounts of the Fermi site indicate that as recently as 1961, most of the site was in cultivation or had been otherwise disturbed. The NUS study (Reference 2.4-3) describes nearly all of the habitats on site as being in relatively early stages of succession. For example, most woodlots present in 1973 and 1974, which remain intact today, were nearly all once cleared land at one time. Over time these areas became revegetated by tree species representative of the area as well as some non-native species. But while the tree flora is mostly representative of other areas of southern Michigan, the ground cover remains diminished, presumably due to the lack of an adequate seed bank for ground cover species and probably alterations to soils conditions (fill material, mixing due to scrapping, shading, etc.). The terrestrial habitats present on the Fermi site today are described in the following paragraphs and the distribution of these is illustrated in Figure 2.4-5. The communities are categorized according to the 2006 Michigan Department of Natural Resources Terrestrial Systems for the Lower Peninsula (Reference 2.4-1) with minor modifications.

Grassland: Row Crops (GRC) (brown areas in Figure 2.4-5)

Grassland: Row Crop (GRC) areas are agricultural fields that are planted with a single species (usually corn or soybeans) and harvested annually. Approximately ~~55~~ 70 acres or ~~6.0~~ 5.6 percent of the property is completely GRC.

Grassland: Idle/Old Field/Planted (GOF) (orange areas in Figure 2.4-5)

Grassland: Idle/old fields/planted (GOF) are communities of opportunistic ~~plants~~ 64 that take over ground that had once been cleared for agriculture or other purposes. In some cases, these areas are initially planted with a cover grass, usually perennial brome or fescue when the area is to remain idle permanently or for the long term. The GOF communities at the Fermi site are dominated by smooth brome (*Bromus inermis*), but contain a good mix of opportunistic (weedy and invasive) native and introduced species, such as Canada thistle (*Cirsium arvense*), Canada goldenrod (*Solidago canadensis*), and flattop-fragrant goldenrod (*Euthamia graminifolia*). Invasive shrubs, such as multiflora rose (*Rosa multiflora*) and blackberry (*Rubus* spp.), may also be present but are not dominant. This is a disturbed community and offers limited value to wildlife, although it provides shelter to small mammals, birds, and reptiles and has some forage value. Approximately 75 acres or ~~5.2~~ 6.0 percent of the site is GOF.

Grassland: Right-of-way (GRW) (yellow areas in Figure 2.4-5)

Grassland: Rights-of-way (GRW) are linear features associated with roadways, railways, power lines, pipelines, etc. At Fermi approximately 29 acres or 2.3 percent of the property is right-of-way, including less than one percent along roadways. An existing power line right-of-way accounts for the majority of this classification. The power line right-of-way is periodically mowed to keep the area free of trees for reasons of safety in relation to line clearance issues. About one-half of the area is a prairie creation area while the remainder is unmanaged. The prairie was planted in 2003 by Detroit Edison with the assistance of a North American Wetland Conservation Act grant managed by Ducks Unlimited and the Natural Resources Conservation Service (NRCS). The area is dominated by big bluestem (*Andropogon gerardii*) and Indiangrass (*Sorghastrum avenaceum*). Broomsedge (*Andropogon virginicus*) is an undesirable and invasive grass that is relatively common in the area

Developed areas (DA) include buildings, parking areas, equipment storage ~~16.3~~ **16.8** oadways, maintained lawns, and similar areas. Approximat~~ely~~ ~~206~~ acres or ~~16.4~~ per he site is developed. Plant species present are th **212** ant~~ed~~ for ornamental value or undesirable weeds. Wildlife value is very low because of p nt species diversity, poor cover and exposure to frequent disturbance.

Lakes, Ponds and Rivers (LPR) (dark blue areas in Figure 2.4-5)

Lakes, Ponds and Rivers (LPR) account for 44 acres or 3.5 percent of the site. These water bodies include an unnamed stream draining east across the central portion of the site and Quarry Lake, an abandoned rock quarry from Fermi 1 construction. No significant plant communities as discussed here are present, except for noting that cut-leaf water-milfoil (*Myriophyllum pinnatum*), a noxious plant native to Europe, has been observed in the waters. These waters are discussed further in Subsection Aquatic Ecology.

Lake Erie (main body) 13.6

The main body ~~of~~ Lake Erie lies north and east of the project. Lake Erie accounts for about ~~186~~ 171 acres or ~~13.9~~ percent of the site. These aquatic areas are addressed in Subsection Aquatic Ecology.

2.4.1.1.2 Wildlife on the Site and Vicinity

Habitat diversity in an area generally contributes directly to the diversity of wildlife present in the same area. The more diverse the habitat, the greater the number of wildlife species that can be supported. The Fermi site and vicinity provide primarily a rural agricultural setting with small parcels of disturbed grassland, forest, and wetland habitats scattered throughout the area. The majority of the Fermi site proper is occupied by disturbed forest, lagoons, thickets, and developed areas. The site was extensively surveyed for wildlife in 1973 and 1974 by NUS Corporation (Reference 2.4-3). Wildlife observations were made during site reconnaissance between late 2006 and mid 2008 and during a detailed wildlife survey from mid-2008 until 2009 (Reference 2.4-96) to evaluate the diversity of species potentially present. The following discussions are based on the finding of these studies.

Mammals

The 1973-74 NUS study (Reference 2.4-3) listed 17 species of mammals directly or indirectly observed. The 2000 Wildlife Management Plan listed 41 species as potentially occurring on the property; 14 species were observed, 3 of which were newly observed. In 2002, Wildlife Habitat Program Re-certification document listed one additional newly observed mammal, bringing the total number of mammals observed on the property to 21. Field studies were made for the Fermi 3 work from late 2006 to mid 2008. Mammals were recorded on the basis of direct observation, tracks, and scat, anytime while on the property, but the most intense study periods occurred concurrently with the flora studies described in Subsection Vegetation on Site and Vicinity. During the 2007-2008 studies, 13 of the 21 species listed for the site were observed. Table 2.4-3 provides a composite list of mammals observed at the site.

USACE–recommended methodology (Reference 2.4-93), supplemented with vegetation community measurements for species richness, diversity and cover and wildlife observations. Thirteen functions and values typically considered by regulatory and conservation agencies when evaluating wetlands are used as part of the New England Method. These include: groundwater recharge/discharge, floodflow alteration, fish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics and endangered species habitat.

Insert 6

~~Thirty-seven~~ Forty wetland units covering ~~505~~ 509 acres of wetlands and ~~48~~ 45 acres of open water were delineated on the Fermi property (Figure 2.4-19). Areas within the delineation boundary did not include open water areas in Lake Erie. The primary wetland type on the Fermi property is palustrine emergent marsh (PEM) comprising ~~322~~ 324 acres followed by palustrine forested (PFO, ~~167~~ 169 acres) and palustrine scrub-shrub (PSS, 16 acres).

Wetlands dominated by woody vegetation having a basal area larger than 3" diameter at breast height (dbh) were classified as PFO. Some herbaceous and woody vegetation with <3" dbh may be present, but contribute less than 50% combined of the basal area. Dominant vegetation in the PFO wetlands include silver maple (*Acer saccharinum*), shellbark hickory (*Carya laciniosa*), swamp white oak (*Quercus bicolor*), American elm (*Ulmus americana*), and eastern cottonwood (*Populus deltoides*). The shrub layer in PFO wetlands was dominated by American elm saplings, silky dogwood (*Cornus amomum*), and green ash (*Fraxinus pennsylvanica*) saplings. Herbaceous vegetation was sparse during delineation. Common species included black raspberry (*Rubus* spp.), mayapple (*Podophyllum peltatum*), reed canary grass (*Phalaris arundinacea*), poison ivy (*Toxicodendron radicans*), and Virginia creeper (*Parthenocissus quinquefolia*). Due to the intermittent hydrology of these PFO wetlands, a significant proportion of herbaceous species were plants that favor upland areas. Soils are hydric and saturated with pockets of standing water throughout the PFO wetlands. Approximately ~~167~~ 169 acres of wetland were delineated as PFO including: B, D, F, G, I, L, O, P, S, T, V, X, Y, BB, GG, and KK (Figure 2.4-19).

Wetlands dominated by woody vegetation smaller than 3" dbh but greater than 3.2' in height were classified as PSS. PSS wetlands may have some woody plants >3" dbh or some herbaceous vegetation that, combined, contribute less than 50% of ground cover. Common shrub species in PSS wetlands include silky dogwood, green ash, and Hawthorn (*Crataegus* spp.). PSS wetlands on the Site were largely early successional woody communities located on the fringes of PFO and upland or PFO and PEM wetland habitats. Approximately 16 acres of wetland were delineated as PSS including: E, K, Q, HH, and JJ (Figure 2.4-19).

PEM wetlands are characterized by greater than 50% of the ground surface covered by herbaceous vegetation, or woody vegetation less than 3.2' tall. PEM wetlands were dominated by reed canary grass, common reed (*Phragmites australis*), sedge species (*Carex* spp.), narrow-leaf cattail (*Typha angustifolia*), water lily (*Nymphaea* spp.), and coontail (*Ceratophyllum demersum*). Approximately 324 ~~322~~ acres of wetlands were delineated as PEM and include: A, C, J, M, N, R, W, ~~Z,~~ AA, CC, DD, EE, FF, ~~and~~ II (Figure 2.4-19). Wetlands delineated as PEM span a range of periodically inundated wet meadows to deep water marsh systems. Due to the well-developed stands of invasive plants including common reed and reed canary grass, vegetation diversity was relatively low in PEM

, WW, XX, YY, ZZ, the south canal, and fringes around open waters H and U

Insert 6

The 2008 wetland investigation report was provided to MDEQ and USACE in the fall of 2008 with a request for review and a jurisdictional determination. Jurisdictional determination letters were provided by the now MDNRE in November 2008 (Reference 2.4-xxx1) and March 2009 (Reference 2.4-xxx2) and by USACE in November 2010 (Reference 2.4-xxx3). The wetland delineation boundaries were updated in response to the jurisdictional determination letters. Additional updates to the wetland delineation were based on site visits and verbal and written feedback from MDNRE and USACE during 2010.

wetlands. There is significant build up of plant duff in PEM wetlands primarily from large, persistent stands of common reed.

Open water habitat is characterized by inundation to a depth greater than 4 feet with no emergent vegetation present. Several open water habitats are located within the delineation boundary. Some open water habitats were delineated with an aerial photograph. Most open water habitats are not flagged and do not have data points within their boundaries. There are ~~more than 100~~ approximately 45 acres of open water habitat within the site property~~. Open water habitats that were flagged include H and U~~ (Figure 2.4-19) (not including open water areas in Lake Erie)

With the exception of a few wetlands isolated by berms or roads, the majority of wetland communities at the Fermi property are hydrologically connected and thus, for the purposes of the functions-values assessment, considered one wetland system. A functions-values assessment was completed for woody (PFO and PSS) and non-woody (PEM) wetland communities to provide distinctions in functions and values where necessary to complete an overall assessment for the wetland system at the Fermi property. The principal functions of the wetland system include floodflow alteration, sediment/toxicant retention, nutrient removal and fish and wildlife habitat. Additional functions and values this wetland system is suitable to provide, though not considered principal functions, are production export, sediment/shoreline stabilization, uniqueness/heritage and endangered species habitat. The wetland system was not considered well suited for groundwater recharge/discharge, recreation, educational/scientific value, or visual quality/aesthetics.

Floodflow alteration, sediment/toxicant retention and nutrient removal: The Fermi property's wetland complex is large relative to the watershed, relatively flat with storage potential and contains hydric soils and dense vegetation suitable to absorb and slow water flow. The wetland system is highly suitable to reduce flood damage by retaining and gradually releasing floodwater following precipitation events. Fermi 2, including cooling towers and control centers, is located downstream and in the floodplain of the wetland system. In the event of a large storm that results in floodflow from the watershed and excess water backing in from Lake Erie, the wetland system could slow and detain floodwaters for gradual release. The wetland system is highly suitable for trapping sediments, toxicants and pathogens as well as nutrient retention. There are potential sources of excess sediment, toxins, and nutrients upstream in the agriculturally dominated watershed. The Clean Water Act status for the Monroe County portion of the Ottawa-Stony watershed cites excessive nutrient levels as a documented impairment in waterbodies (Reference 2.4-94). There is opportunity for sediment trapping and nutrient uptake in diffuse, slow moving and deepwater areas of the Fermi property wetlands that are edged or interspersed with dense herbaceous and woody vegetation.

Fish and wildlife habitat: The deepwater PEM of the Fermi wetland system is suitable to support fish habitat. There is an abundance of cover objects, the wetland is large and part of a larger, persistent, contiguous watercourse with slow velocity. The wetlands have sufficient size and depth to retain open water areas during the winter. Direct observation of fish species were observed in the wetland. The diverse wetland communities present across the entire wetland system provide suitable habitat for a significant number of wildlife species. While there has been notable direct and

The discussion within this subsection pertains only to the offsite transmission corridor.

2.4.1.7 Ongoing Ecological and Biological Studies

Other than the terrestrial site reconnaissance conducted in 2007 and 2008, and the detailed terrestrial surveys conducted in 2008 and 2009, no formal monitoring of the terrestrial environment has been conducted on the Fermi site since the construction of Fermi 2. The only recent study is that of the Detroit Edison/NAWCA transmission right-of-way prairie planting that was surveyed for plant species occurrences in 2005 and 2007.

2.4.1.8 Regulatory Consultation

The USFWS and MDNR were consulted for information on known occurrences of federal and state listed protected species and habitats. The identification and discussion of important species above was based in part on the information provided by these consultations.

offsite

2.4.1.9 Transmission Corridors and Offsite Areas

offsite

The 345 kV transmission system and associated corridors are exclusively owned and operated by ITC*Transmission.* The Applicant has no control over the design of the transmission system. Accordingly, the terrestrial ecology that interfaces with the transmission corridors is based on publicly available information, and reasonable expectations of the configurations that ITC*Transmission* would likely follow based on standard industry practice. However, the information described in this subsection does not imply commitments made by ITC*Transmission* or Detroit Edison, unless specifically noted.

The offsite transmission system will consist of three 345 kV lines running from the Fermi site north, then west to the Milan Substation, located approximately 1.5 miles northwest of Milan, a distance of about 29.4 miles. The route is located in portions of Monroe, Wayne and Washtenaw counties and is illustrated in Figure 2.2-3. The three 345 kV lines for Fermi 3 will run in a common corridor, with transmission lines for Fermi 2, to a point just east of I-75. From the intersection of this Fermi site corridor and I-75, the three Fermi-Milan lines will run west and north for approximately 12 miles in a corridor shared with other non-Fermi lines within an assumed 300-foot wide right-of way (ROW) in which the vegetation has been managed to exclude tall woody vegetation. In this section of the route, reconfiguration of existing conductors would allow for the use of existing transmission infrastructure to create the new lines. In Wayne County, where Arkona Road and Haggerty Road intersect, all non-Fermi lines turn north and continue on to their respective destinations and the three Fermi-Milan lines will continue west for approximately 10.8 miles to the Milan Substation. To accommodate the new transmission lines, it is assumed the Milan Substation may be expanded from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet, utilizing maintained grassed areas and cropland.

2.4.1.9.1 Vegetation

Major vegetation types occurring in and adjacent to the transmission corridor are illustrated in Figure 2.2-3. The plant communities found in and along the corridor are similar to those described in Subsection Vegetation on Site and Vicinity. Table 2.4-17 provides an accounting of the area of each land use/vegetation type found within the corridor, using a 300-foot width.

Overflow and Discharge Canals

One clay-lined canal, approximately 5 to 10 feet in depth and 70 feet in width, originates in the central portion of the Fermi site and extends north where it flows into Swan Creek. This canal is termed the overflow canal. The overflow canal was previously utilized as a cooling water discharge/overflow canal for operation of Fermi 1, but was taken out of use when Fermi 1 was temporarily shut down in the mid-1960s. Currently, the Fermi site utilizes the canal as Outfall 009. The outfall and discharge points of the Fermi site are further discussed in Subsection Water Quality. A second canal (discharge canal), approximately 5 to 10 feet in depth and 70 feet in width, originates in the central portion of the Fermi site and extends south where it flows into the South Lagoon. This canal serves as a drain path for the western wetlands area. Between the two canals is a stagnant waterbody.

Drainage Ditches

Several ditches located throughout the Fermi site drain surface-water runoff to Swan Creek and the adjacent wetlands. The drainage ditches are regularly maintained and equipped with concrete culverts to divert runoff from the surface roads. The ditches are not ideal to support any significant aquatic species.

Quarry Lakes

The Quarry Lakes are located in the southwestern portion of the Fermi site. The two lakes are approximately 50 feet deep ~~and cover an area of approximately 100 acres~~. The Quarry Lakes were created when water filled the abandoned rock quarries which were used for site development and construction of Fermi 2 (Reference 2.4-79). Although the Quarry Lakes are currently not utilized for any recreational or commercial use, they have been used in the past for scuba diving and recreational fishing by plant personnel.

Waters within the DRIWR

The DRIWR is a conservation area along the western basin of Lake Erie and along the Detroit River. The boundaries of the refuge are segmented into eleven units which include coastal wetlands, marshes, islands, shoals, and waterfront lands along approximately 48 miles of the western Lake Erie shoreline (Figure 2.4-7).

The Lagoona Beach Unit of the DRIWR surrounds the Fermi site on the northern, western, and southern borders of the Fermi site. Detroit Edison and the USFWS signed a cooperative agreement in 2003. The Lagoona Beach Unit includes approximately 656 acres of land and is divided into four sections, DRIWR-1 through DRIWR-4 shown on Figure 2.4-7. DRIWR-1, located in the north-northeast portion of the Fermi site, contains approximately 162 acres of land and consists primarily of coastal wetlands and palustrine systems, including freshwater emergent wetlands and lake areas that are semi-permanently flooded. DRIWR-2, located in the northwest portion of the Fermi site, includes approximately 161 acres of coastal wetlands, upland forests, wet meadows, and coastal prairies, with palustrine scrub-shrub systems consisting of broad-leaved deciduous vegetation. The area is seasonally inundated. DRIWR-3, the southwest section, encompasses approximately 22 acres of upland forest and palustrine forested land with broad-leaved deciduous

The discussion within this subsection pertains only to the offsite transmission corridor.

Man-induced stresses onsite have included farming and agricultural activities in the past, and operation of Fermi 1 and 2. Catastrophic natural environmental stresses may include massive infestations, epidemics, drought, or significant weather storms and/or climatic changes. Other natural stresses include the presence of invasive species including zebra mussels and Phragmites. Invasive species are further discussed in Subsection Nuisance and Invasive Species. There have been no recorded environmental catastrophes on or near the Fermi site.

offsite

2.4.2.9 Transmission Corridors

offsite

The 345 kV transmission system and associated corridors are exclusively owned and operated by ITC*Transmission*. The Applicant has no control over the design of the transmission system. Accordingly, the aquatic ecology that interfaces with the transmission corridors is based on publicly available information, and reasonable expectations of the configurations that ITC*Transmission* would likely follow based on standard industry practice. However, the information described in this subsection does not imply commitments made by ITC*Transmission* or Detroit Edison, unless specifically noted.

The offsite transmission system will consist of 345 kV lines running from Fermi west to the Milan Substation, located approximately 1.5 miles northwest of Milan, a distance of about 29.4 miles. The route is located in portions of Monroe, Wayne and Washtenaw counties and is illustrated in Figure 2.2-3. The three 345 kV lines for Fermi 3 will run in a common corridor, with transmission lines for Fermi 2, to a point just east of I-75. From the intersection of this Fermi site corridor and I-75, the three Fermi-Milan lines will run west and north for approximately 12 miles in a corridor shared with other non-Fermi lines within an assumed 300-foot wide right-of way (ROW) in which the vegetation has been managed to exclude tall woody vegetation. In this section of the route, reconfiguration of existing conductors would allow for the use of existing infrastructure to create the new lines. In the area where Arkona Road and Haggerty Road intersect, the non-Fermi lines turn north and continue on to their respective destinations and the three Fermi-Milan lines will continue west for approximately 10.8 miles to the Milan substation. This western 10.8 miles of the corridor is undeveloped; no lines or towers are present, and where vegetation is present the maintenance has been minimal, except to keep tall woody vegetation removed. New transmission system infrastructure will be needed along this western section of the transmission corridor within the assumed 300-foot wide ROW. To accommodate the new transmission lines, it is assumed that the Milan Substation may also be expanded from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet, utilizing maintained grassed areas and cropland where no there is no aquatic habitat.

2.4.2.9.1 Aquatic Communities and Principal Aquatic Species

Aquatic communities within or adjacent to the new transmission route include several small streams and numerous small drainage ditches. The route does not cross any lakes, ponds, or reservoirs. Stoney Creek, which is located in the developed eastern portion of the route, is the largest stream crossed by the transmission route and is discussed in Subsection Principal Aquatic Habitats in the Vicinity of the Fermi Site. Wetlands are associated with some of the drainages (Figure 2.4-7) and are discussed in Subsection Wetlands and Onsite Water Bodies.

2.4-88 Reutter J.M., C.E. Herdendorf, and G.W. Sturm, *Impingement and Entrainment Studies at the Bay Shore Power Station, Toledo Edison Company*, Clear Technical Report No. 78b, The Ohio State University Center for Lake Erie Area Research, Columbus, OH, 1978.

2.4-89 Reutter, J.M., C.E. Herdendorf, G.W. Sturm. *Impingement and Entrainment Studies at the Acme Power Station, Toledo Edison Company*, Clear Technical Report No. 78A, The Ohio State University Center for Lake Erie Area Research, Columbus, OH, June 1978.

2.4-90 Michigan Department of Environmental Quality, Surface Water Quality Division, *A Biological Survey of Stony Creek and Amos Palmer Drain, Monroe County, Michigan*, Report Number 151, December 1996.

2.4-91 Michigan Department of Environmental Quality, Surface Water Quality Division, *A Biological Survey of Stony Creek and its Tributaries, Amos Palmer Drain and Ross Drain, Monroe County*, Report Number 087, February 1998.

2.4-92 Makaerwiczl, J.C. et al, "Phytoplankton composition and biomass in the offshore waters of Lake Erie: Pre- and post- Dreissena introduction,1983-1993,". *Journal of Great Lakes Research* 25.1, 1999.

2.4-93 U.S. Army Corps of Engineers, *The Highway Methodology Workbook Supplement: Wetland Functions and Values: A Descriptive Approach*, 1999.

2.4-94 U.S. Environmental Protection Agency, "Ottawa-Stony Watershed," http://cfpub.epa.gov/surf/huc.cfm?huc_code=04100001, accessed 4 August 2008.

2.4-95 Black & Veatch Corporation, Fermi 3 Terrestrial Vegetation Survey Final Report, Prepared for The Detroit Edison Company, November 2009.

2.4-96 Black & Veatch Corporation, Fermi 3 Terrestrial Wildlife Survey Final Report, Prepared for The Detroit Edison Company, November 2009.

2.4-97 AECOM, "Aquatic Ecology Characterization Report, Detroit Edison Company Fermi 3 Project, Final Report," November 2009.

2.4-xxx1. Michigan Department of Environmental Quality, Wetland Identification Report, Wetland Identification File Number 08-58-0003-W, November 7, 2008.

2.4-xxx2. Michigan Department of Environmental Quality, Wetland Identification Report, Modified Wetland Identification File Number 08-58-0003-WA, March 30, 2009.

2.4-xxx3. U.S. Army Corps of Engineers, Detroit District, Engineering & Technical Services, Regulatory Office, File No. LRE-2008-00443-1, November 9, 2010.

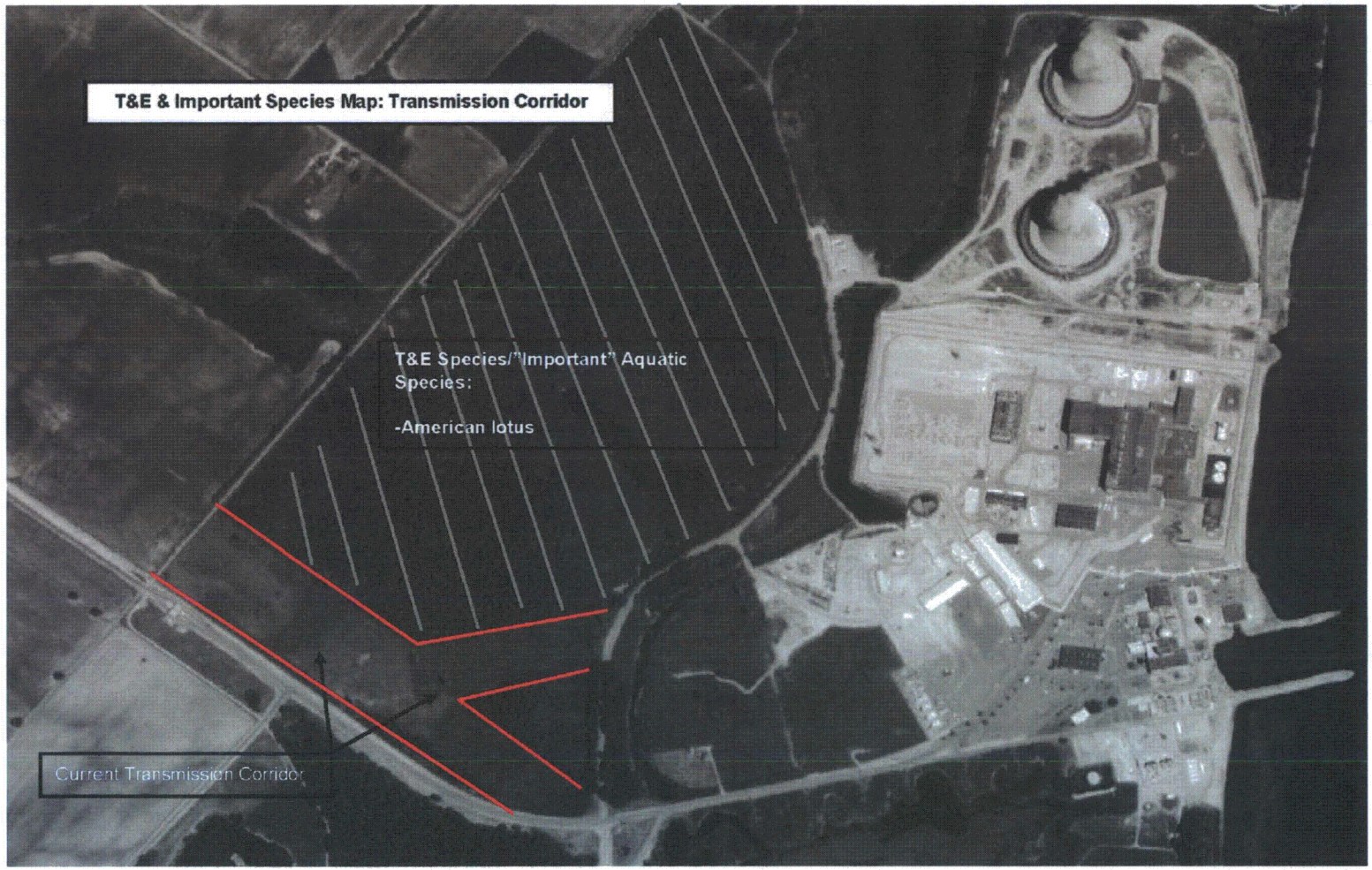
Table 2.4-1 Approximate Acres per Plant Community Present on the Fermi Site

Habitat[1]	Acres	% of Site
Coastal Emergent Wetland (CEW) Open Water	35	2.8
Coastal Emergent Wetland (CEW) Vegetated	238	~~18.8~~ 18.9
Grassland: Right-of-Way (GRW)	29	2.3
Grassland: Idle/Old Field/Planted (GOF)	75	~~5.2~~ 6.0
Grassland: Row Crop (GRC)	~~55~~ 64	~~6.0~~ ~~5.6~~ 5.1
Shrubland (SHB)	113	9.0
Thicket (TKT)	23	1.8
Forest: Coastal Shoreline (FCS)	47	3.7
Forest: Lowland Hardwood (FLH)	92	7.3
Forest: Woodlot (FWL)	117	9.3
Developed Areas (DA)	~~206~~ 212	~~16.4~~ ~~16.3~~ 16.8
Lakes, Ponds, Rivers (LPR)	44	3.5
Lake Erie (main body)	~~186~~ 171	~~13.9~~ 13.6
Totals	1260	100

1. Habitats are based on Michigan's Wildlife Action Plan, Michigan Department of Natural Resources (Reference 2.4-1).

Current On-site

Figure 2.4-17 T&E & Important Species Map: Transmission Corridor



Hatched area indicates wetland habitat. The only T&E and/or important aquatic species identified in the current transmission corridor was the American lotus. More specific information is further discussed in Appendix 2B.

Figure 2.4-19 Fermi Site Wetlands Delineation

Insert 7

Insert 7


SWAN CREEK
OPEN WATER
OPEN WATER
DD 0.83 ac PFO
CC & DD 86.36 ac PEM
LANGTON ROAD
NN 2.47 ac PSS
I 39.74 ac PFO
5.55 ac OPEN WATER
LAKE ERIE
TOLL ROAD
F 31.07 ac PFO
C 48.18 ac PEM
U 0.15 ac PEM
U 3.52 ac OPEN WATER
OPEN WATER
DOXY ROAD
A 1.88 ac PEM
E 2.67 ac PSS
FERMI DR.
E 2.04 ac PSS
D 1.37 ac PFO
N 1.86 ac OPEN WATER
H 0.10 ac PEM
B 0.78 ac PFO
SOUTH CANAL 1.97 ac PEM
OPEN WATER
3.45 ac OPEN WATER
WW 0.28 ac PEM
FF 0.38 ac PEM
BB 11.80 ac PFO
KK 1.62 ac PFO
GATOR RD.
EE 0.77 ac PEM
N 11.13 ac PEM
O 0.72 ac PFO
OPEN WATER
W 4.59 ac PEM
Y 1.14 ac PFO
M 161.65 ac PEM
OPEN WATER
CRITICAL PATH
KX 0.25 ac PEM
0.55 ac OPEN WATER
Z2 0.11 ac PEM
17.24 ac OPEN WATER
AA 0.80 ac PEM
L 83.12 ac PFO
OPEN WATER
YY 0.21 ac PEM
FOX RD.
G 5.29 ac PFO
R 1.97 ac PEM
LAKE ERIE
POINTE AUX PEAUX ROAD
K 0.56 ac PSS
O 2.04 ac PSS
JJ 1.37 ac PSS
V 0.34 ac PFO
T 3.71 ac PFO
S 1.41 ac PFO
J 2.80 ac PEM
P 0.21 ac PFO
NO SCALE

2.5.3.2.1 Area of Potential Effect Delineation

5.5

The area of potential effect (APE) is defined as "...the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). In consultation with the SHPO, two APEs were delineated, one for archaeological resources and one for above-ground resources. Overall, the APE for archaeological resources is limited to construction-impacted ground within the Fermi site. To reduce the likelihood of additional archeological surveys as more detailed construction plans are developed, the APE covers a broader expanse of the Fermi site than the current construction impact areas described in Chapter 4 for non-cultural resource impacts. At the outset of the archaeological fieldwork, the archaeological APE included a series of interconnected roadway grades (60 acres), a stone quarry (48 acres), two spoil disposal zones (11 acres and 12 acres), and two previously affected Fermi site locations comprised of a 37-acre tract and a 172-acre tract. Additions to the Fermi site redesign consisted of a 53-acre "EF2 Parking Warehouse, etc." tract on the northwest margin of the site, a 24-acre construction laydown area and a ~~4.5~~-acre meteorological (MET) tower, both located at the southern margin of the site. In addition, the APE includes a tentative access road corridor from the MET tower site to Pointe Aux Peaux Road. Acreage values include areas that are based on an initial proposed site layout. The projected impact areas shown in Figure 2.5-27 encompass the current postulated APE. The current archaeological APE encompasses approximately ~~549~~ acres (Figure 2.5-27).

551

At the determination of the Michigan SHPO, the APE for above-ground resources was reduced from the 10-mile radius set out in NUREG-1555 to an area encompassing the Fermi site and the communities of Estral Beach, Stony Point, and Woodland Beach, with boundaries as follows:

> Beginning at the approximate intersection of Masserant Road with the Lake Erie shoreline, due southwest to the approximate intersection of Sandy Creek Road with the Lake Erie shoreline; north to North Dixie Highway; due northeast along North Dixie Highway to Port Sunlight Road; south on Port Sunlight Road to Masserant Road; east on Masserant Road to the point of beginning (Figure 2.5-28).

For the new transmission lines, the preliminary survey of APE for both archaeological resources and above-ground resources measured 1.5 miles on either side of an assumed 300 feet wide corridor centerline. The transmission line route from the Fermi 3 project area north to the Sumpter-Post Road junction will utilize an existing transmission line route. Therefore, the APE for both archaeological and above-ground resources included only the undeveloped portion of the new transmission line route from the Sumpter-Post Road junction in Wayne County to the existing Milan substation in Washtenaw County.

2.5.3.2.2 Prefield Research and Field Methods

Prior to the cultural resources survey, documents housed at the SHPO, OSA, Monroe County Historical Museum, and Monroe County Library System Ellis Reference and Information Center were consulted to obtain information pertaining to historic land use and the existence of known historic sites in the Fermi 3 area and along the new transmission line route to the Milan substation.

A desk-top analysis was conducted in 2010 for those portions of the MET tower site and tentative access road corridor that were not subjected to field survey in 2009 and the new 345 kV transmission corridor. This desk-top analysis indicated that no further field surveys of these area were required.

a portion of the

The initial Phase I archaeological survey began in November 2007 and was completed in April 2008. Survey of the Construction laydown area and MET tower site and tentative access road was conducted on October 20, 2009. The methods employed in these studies entailed a combination of pedestrian surface inspections and shovel testing. Walk-over surface examinations were limited to areas exhibiting surface visibility of greater than 50 percent. Both surface inspection and shovel testing were carried out along 50-foot transects, with shovel tests spaced as 50-foot intervals. This approach was modified where access was hampered by saturated soils or flooding. Wet and flooded areas were commonly encountered throughout the undeveloped portions of the property; therefore, opportunistic shovel testing at drier elevations was routinely carried out. Similarly, the extensive made lands and spoil deposits comprising much of the property were avoided when they could be recognized and confirmed through field verification. Shovel test soils were screened through ¼- inch metal hardware cloth and trowel sorted. Each unit was backfilled upon the completion of field examination. Shovel test excavations were restricted to a maximum depth of 1 foot below the existing ground surface.

The above-ground resources survey began in December 2007 and was completed in April 2008. Architectural historians photographed and mapped resources within the APE that were at least 50 years old and "...possess a degree of integrity above the norm for the area...". Resources were photographed showing the façade and one other elevation in the same image. Where this was not possible, resources were photographed to obtain the view that would best allow for assessment of age and integrity. For complexes containing more than one building, such as farmsteads, streetscape views of the overall property were obtained to illustrate the buildings' relationship to each other. The location of each resource was plotted on a USGS quadrangle map, and photographic details (e.g., photograph number, date, and direction of view) were recorded on standard photography logs.

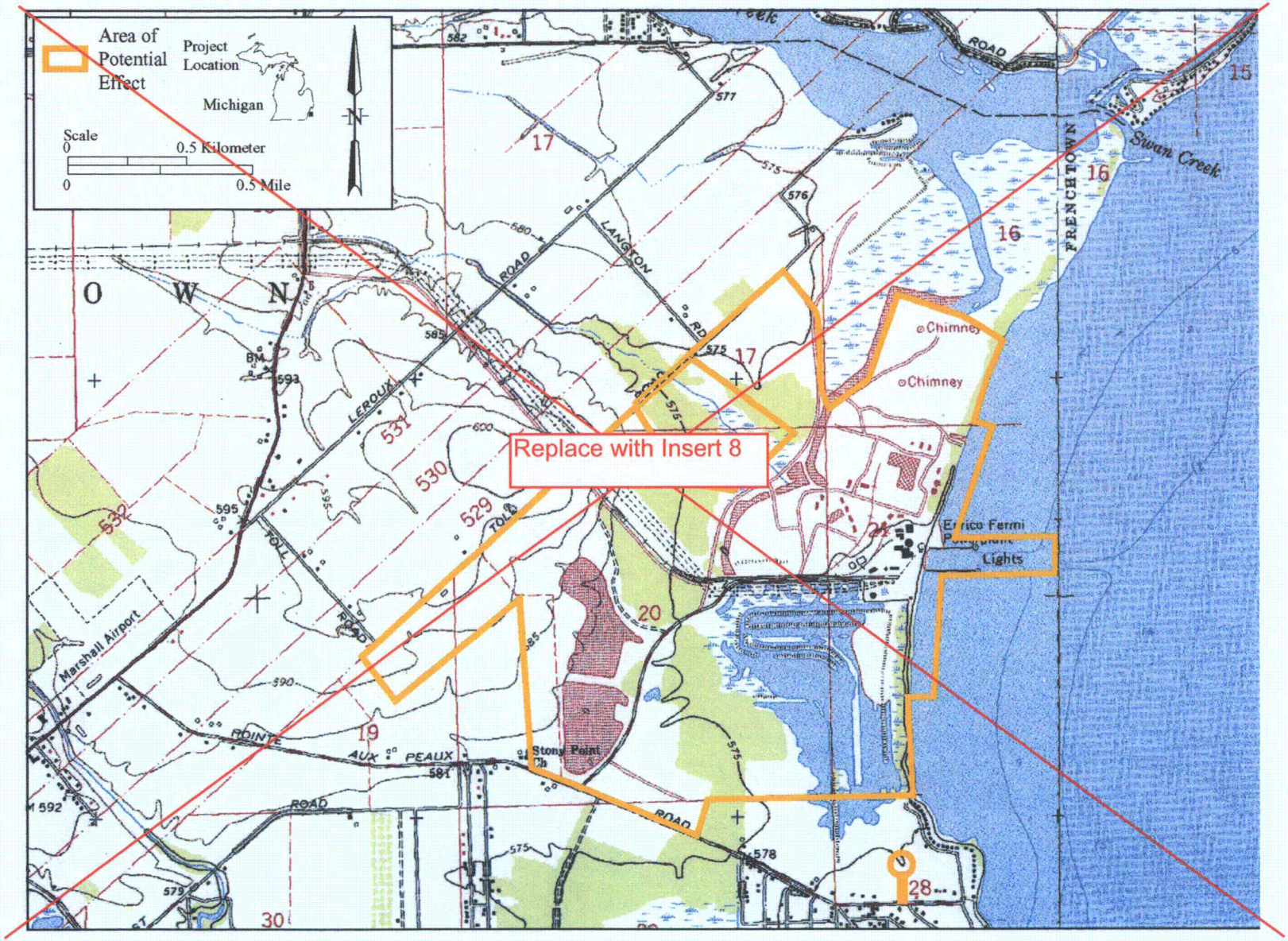
The field view for the transmission route preliminary survey took place on June 18 2008. During the field view, the transmission line route was evaluated for the existence of potentially significant above-ground resources. At that time, the transmission line study area was also visually inspected from existing roadways for evidence of obvious disturbance and the existence of landforms that are known to contain archaeological sites (e.g., sandy hummocks).

2.5.3.3 Consultation

In preliminary SHPO consultation, the OSA noted that the project area, especially the Lake Erie shoreline, is sensitive for archaeological resources, and the area had not been systematically examined. Based on the archaeological sensitivity of the Fermi site and the lack of prior systematic surveys in the area, the OSA required an archaeological survey of the project area. The SHPO further identified a preliminary APE for above-ground resources. Subsequent consultation resulted in a modified APE and scope of work as detailed in the preceding subsection. A report has been provided to the SHPO regarding the above ground resources of the site and vicinity.

Inquiries were made with Native American tribal agencies having historical ties to the Fermi site geographic area. These consultations did not result in any concerns regarding the further development of the Fermi site.

Figure 2.5-27 Fermi 3 Project Archaeological Area of Potential Effect



Insert 8 Figure 2.5-27

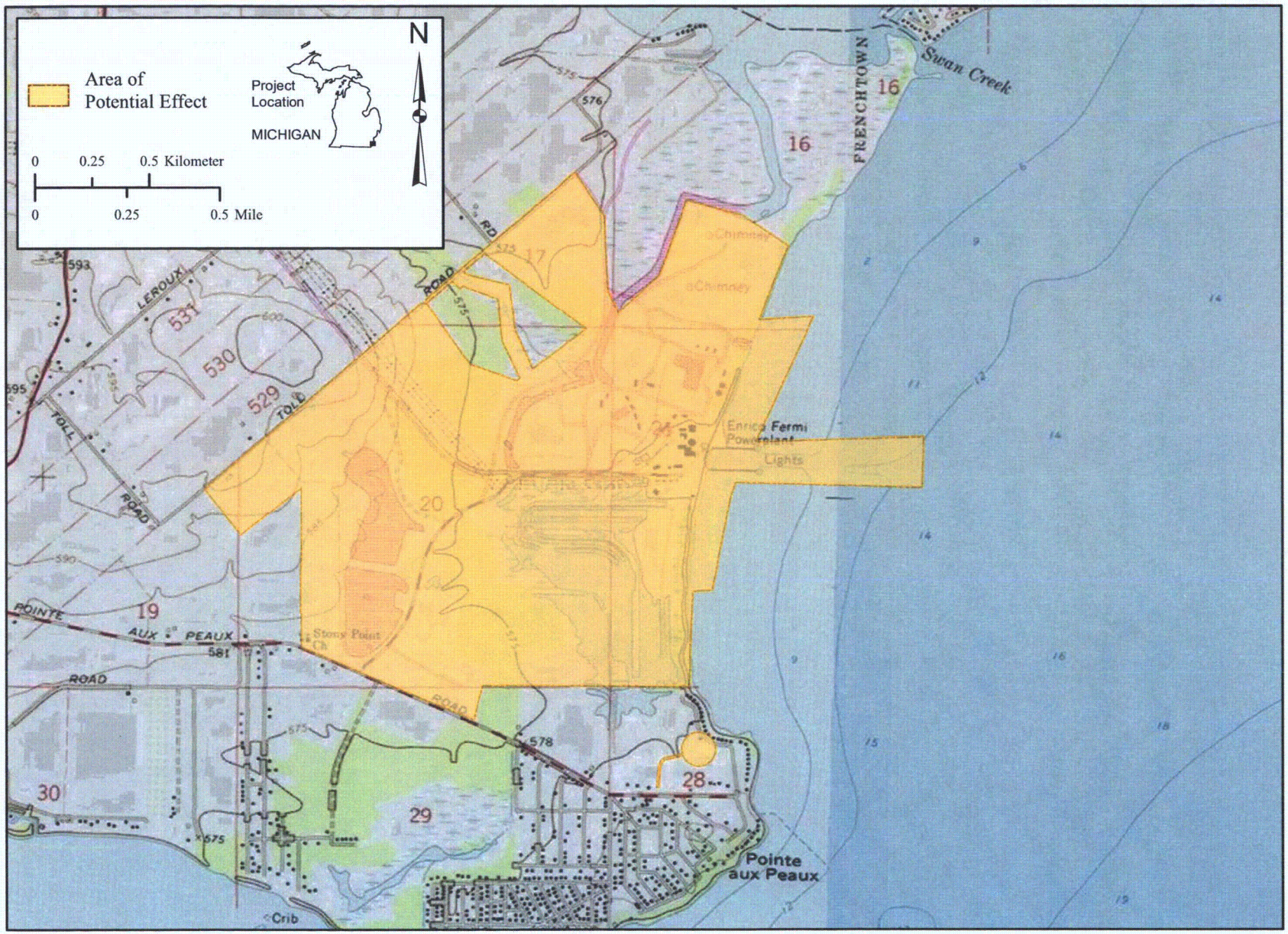
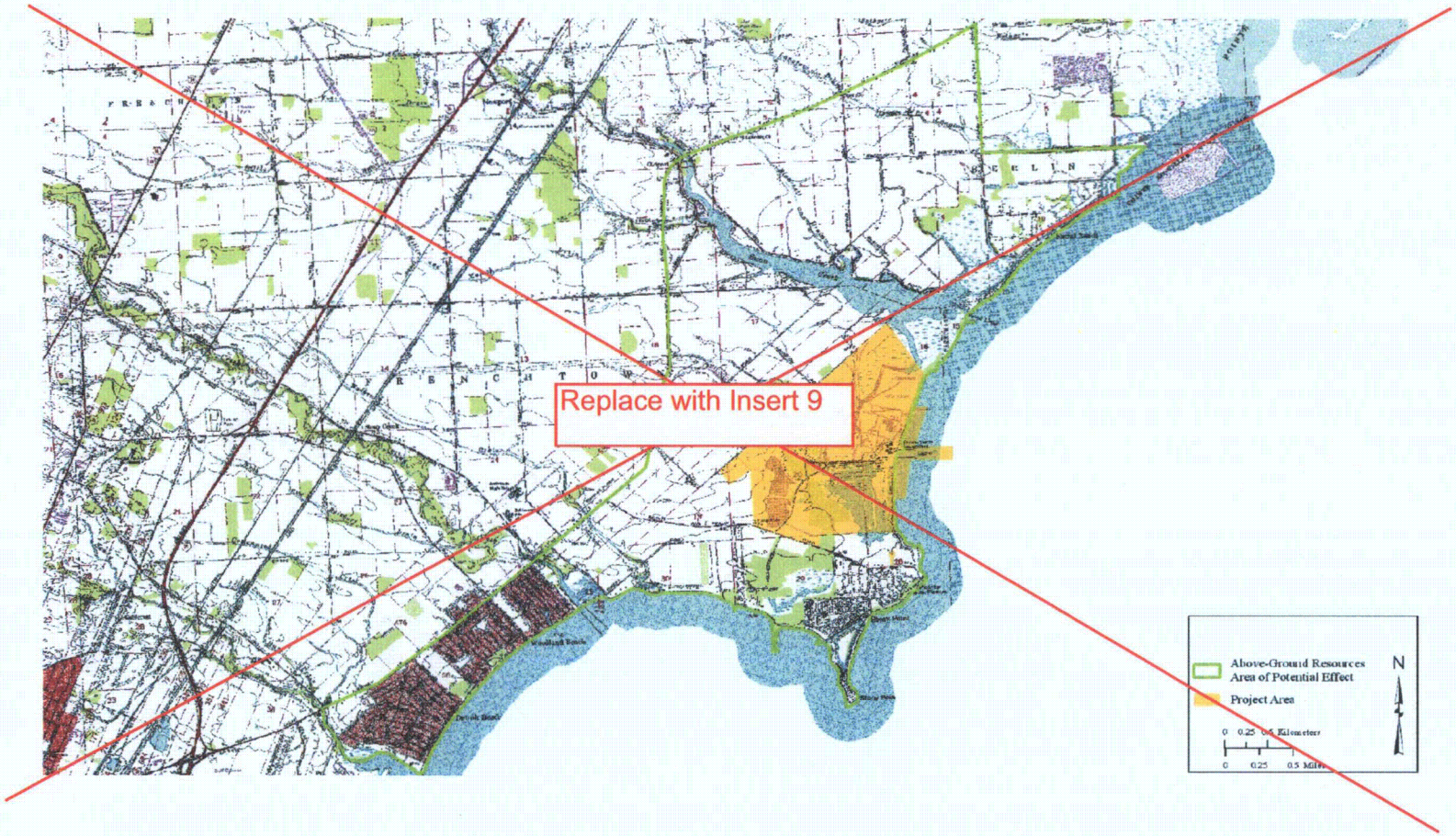


Figure 2.5-27. Fermi 3 Archaeological Area of Potential Effect

Figure 2.5-28 Fermi 3 Project Above-Ground Cultural Resources Area of Potential Effect



Insert 9 Figure 2.5-28

Figure 2.5-28. Fermi 3 Project Above-Ground Cultural Resources Area of Potential Effect

2.8 Related Federal Project Activities

The purpose of this section is to identify Federal activities directly related to the proposed project in order to: (1) determine the need for other Federal agencies (i.e., cooperating agencies) to participate in the preparation of the environmental impact statement; and (2) assess the interrelationship and cumulative environmental impacts of the proposed project and related federal activities.

The scope of this review is limited to directly-related Federal project activities that affect land acquisitions or use, transmission line routing, plant siting and water supply, construction or operation of Fermi 3, or the need for power. Actions related to the granting of licenses, permits, or approvals by other Federal agencies are not discussed in this section.

2.8.1 Federal Actions Related to Land Acquisitions or Use Affecting Fermi 3 Project

No Federal actions associated with the acquisition and/or use of the proposed site and transmission corridors or any other offsite property needed for the proposed project were identified. Fermi 3 is sited on the existing Enrico Fermi (Fermi) site that is owned by the Applicant. While no Federal actions are associated with the acquisition or use of the land for the construction or operation of Fermi 3, Detroit Edison and the USFWS entered a Cooperative Agreement (Agreement) September 25, 2003 concerning portions of the Fermi site. Under the Agreement, Detroit Edison authorized the USFWS to include certain lands and waters on the Fermi site within the DRIWR. The Agreement allows either party to end the agreement either in whole or in part through mutual agreement, or at the option of either party, upon 90 days written notice to the other. Therefore, lands currently operated as part of the DRIWR, subject to the National Wildlife Refuge System rules, will be removed from the Agreement. However, the Applicant intends to return all available wetlands, that can be returned, to the DRIWR following construction.

offsite

The 345 kV transmission system and associated corridors are exclusively owned and operated by ITC*Transmission*. The Applicant has no control over the construction or operation of the transmission system. ITC*Transmission* has identified the need for additional transmission lines and an undeveloped corridor to accommodate Fermi 3. New transmission lines associated with Fermi 3 will largely be placed within existing transmission corridors, and existing infrastructure within the corridors will be used. Activities associated with the transmission system may require the acquisition of new right-of-ways, and will involve the construction of new transmission towers. However, it is not expected that these activities will require any Federal action.

offsite

2.8.2 Plant Siting and Cooling Water Source and Supply

No directly related Federal activities or relevant cooperating agencies that affect plant siting or water supply were identified. Fermi 3 utilizes a closed-cycle hyperbolic natural draft cooling tower for the Normal Power Heat Sink (NPHS), and mechanical draft cooling towers for the Alternative Heat Sink. Makeup cooling water for the cooling towers is drawn through an intake bay formed by two rock groins extending into Lake Erie.

points of interconnection on the 345 kV, 230 kV, and 120 kV portions of the system. The study also finds if Fermi 2 and Fermi 3 have switchyards tied together, that unstable conditions may arise. In addition to the new transmission lines and switchyard, upgrades to existing transmission (and possibly subtransmission) lines will be needed to facilitate the new generation on the system.

Transmission line and switchyard design will meet or exceed the requirements established in the National Electrical Safety Code (NESC) (Reference 3.7-2), which provides rules for electrical safety, electrical clearances, structural design loadings, and material strength factors. Modifications to the existing system will comply with relevant local, state, and industry standards including NESC and various American National Standards Institute/Institute of Electrical and Electronic Engineers, Inc. standards. The standards include the rules in Sections 23, 25, and 26 of the NESC.

3.7.3 Construction Methods

The Fermi 3 switchyard will be located approximately ~~3500 ft.~~ 3000 ft. to the west of the Fermi 3 reactor, and will be separate from the existing 345 kV and 120 kV switchyards utilized by Fermi 2.

The new transmission lines from the Fermi 3 switchyard will be 345 kV lines and will be located in existing corridors to the Milan substation.

The study performed by ITC*Transmission* indicated the use of towers, steel poles and/or combinations of these structures will be used in the construction of the new transmission lines. (Reference 3.7-1) The three 345 kV lines for Fermi 3 will run in a common corridor, with transmission lines for Fermi 2, to a point just east of I-75. From the intersection of this Fermi site corridor and I-75, the three Fermi-Milan lines will run west and north for approximately 12 miles in a corridor shared with other non-Fermi lines. From this point, all non-Fermi lines turn north and continue on to their respective destinations and the three Fermi-Milan lines will continue west for approximately 10 miles to the Milan substation.

3.7.4 Transmission Line Noise

There are two categories of electrical noise effects of power transmission lines: corona effect caused by electrical stresses at the conductor surface resulting in air ionization noise, and field effects caused by induction to objects in proximity to the conductors. The audible noise produced by corona effect and ground level electric field effect are the primary concerns.

Audible noise is typically at its maximum during or following rain or during fog. The maximum noise level is kept below the level which would result in a number of complaints (approximately 52.5 dB(A) per Reference 3.7-3) through the use of typical design standards to properly size conductors and specify corona-free hardware.

Ground level electric field effects of overhead power transmission lines relate to the possibility of exposure to electric discharges from objects in the line's field. The likely range of maximum vertical electric field is 4-6 kV/m (Reference 3.7-3) for a 345 kV transmission line.

include such items as cooling tower structures, nonsafety-related circulating water lines, nonsafety-related fire protection lines, the new switchyard, and onsite interconnections

Construction activities include the following general types of activities:

- Driving of piles
- Subsurface preparation
- Installation of foundations
- Placement of backfill, concrete, or permanent retaining walls within an excavation
- In-place assembly, erection, fabrication, or testing

This applies to any of the following SSCs and facilities:

- Safety-related SSCs, as defined in 10 CFR 50.2
- SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures
- SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function
- SSCs whose failure could cause a reactor scram or actuation of a safety-related function
- SSCs necessary to comply with 10 CFR 73
- SSCs necessary to comply with 10 CFR 50.48 and Criterion 3 of 10 CFR 50, Appendix A
- Onsite emergency facilities, i.e., technical support and operations support centers that are necessary to comply with 10 CFR 50.47 and 10 CFR 50, Appendix E

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The development of this chapter predated promulgation of Interim Staff Guidance which provided implementation guidance for the LWA Rule. Accordingly, the chapter sections do not individually distinguish between Pre-construction and Construction impacts. However, Section 4.8 provides a tabular binning of these impacts.

4.1 Land-Use Impacts

This section describes the effects of site preparation and construction of Fermi 3 and the impacts on land use from construction. Subsection 4.1.1 describes construction impacts on land use of the site and vicinity. Subsection 4.1.2 describes construction impacts on land use along transmission lines and within transmission access corridors. Subsection 4.1.3 describes construction impacts on historic and cultural resources in the site and vicinity, along transmission corridors, and in offsite areas. The Chapter 4 introduction provides an overview of the Fermi 3 construction schedule and key construction activities.

4.1.1 The Site and Vicinity

Construction impacts on land use at the Fermi site and vicinity are discussed in this subsection. The Fermi site is located in Monroe County, Michigan, with a property boundary that encompasses

Insert 10

Changes to "Insert 10" provided as part of markup in RAIs GE3.1-1/TE4.3.1-1 in NRC3-10-0014, dated March 24, 2010 (ML100850542)

Various acreage values are presented throughout the Environmental Report (primarily in Chapter 4). Acreage values are primarily determined from two perspectives: 1) land use and terrestrial ecology impacts and 2) construction affected areas. Acreage values for land use and terrestrial ecology may vary from those presented for construction affected area impacts. Figure 4.2-1 shows the construction affected areas. Areas highlighted on Figure 4.2-1 include Unit 3 New Construction Affected Areas (Permanent Impact), Unit 3 New Construction (Temporary Impact), and Previously Affected Areas and Unit 3 Construction Affected Areas (Permanent Impact). These designations allow for determination of the permanent and temporary impacts from Fermi 3 to newly impacted areas and previously affected areas. Figure 4.2-1 shows approximately ~~290~~ 302 acres used for construction and operation of Fermi 3 (total permanent and temporary impacts). This total impact acreage can be separated into the following categories:

- Unit 3 new construction affected areas (permanent impact) - approximately ~~16~~ 43 acres
- Previously affected areas and Unit 3 construction affected areas (permanent impact) - approximately ~~108~~ 112 acres
- Unit 3 new construction (temporary impact) - approximately ~~168~~ 147 acres

Figure 4.3-1 shows the Fermi 3 ecological impacts to developed and undeveloped areas. There are differences between the undeveloped areas and the areas that were not previously affected as shown on Figures 4.3-1 and 4.2-1, respectively. Some of the areas identified as being previously impacted on Figure 4.2-1 have subsequently been re-vegetated and would now be considered undeveloped areas. Acreage values in Table 4.3-1 are determined based on the terrestrial ecology impacts shown in Figure 4.3-1 and are used in the land use and terrestrial ecology impact evaluations.

Table 2.4-1 provides approximate areas per plant community on the Fermi site. The description for each area is provided in Section 2.4.1. Undeveloped land can be defined as either pristine or successional. Pristine is a natural area that has not been degraded by human disturbance or intervention characterized as a self-sustaining native-dominated plant and wildlife community. Successional is an undeveloped area that has experienced human or natural disturbance and is characterized as a successional plant community that is predominantly native or non-native species tolerant of the disturbance or plant species representing an early or a secondary successional stage rather than a climax community. Succession is the progression of one type of plant community to another, usually ending in a stable, long-term plant community that changes little over long periods of time. It can provide clues about the state of a given tract, based on plant species composition and known or observed disturbance factors. Typically, areas that previously supported a plant community but which have been disturbed go through changes in plant species composition and soil, temperature or light conditions. Undisturbed areas generally tend to be more stable, with similar plant composition over long periods, slowly moving towards a climax plant community. By consideration of plant community composition, an evaluation of the ecological state, whether undisturbed or disturbed, can be made.

(new impact)

1260 acres. For purposes of the land use analysis, the Fermi 3 site is considered the same as the entire Fermi property. The vicinity is the 7.5-mile area surrounding the Fermi site, which includes mostly Monroe County, a small portion of Wayne County, and Lake Erie. The vicinity includes both United States and Canadian waters. Monroe County comprises the majority of the vicinity; therefore, it is the focus of the vicinity land use impact discussions included in this subsection.

190

The total new construction area anticipated to be disturbed for onsite construction activities is approximately ~~189~~ acres. Impacts will be confined to designated areas as outlined on Figure 2.1-4. About ~~27~~ acres permanent impact areas will be lost to other uses until after decommissioning of Fermi 3. The remaining ~~162~~ acres will be disturbed on a short-term, temporary basis. Most of the land that will be occupied by Fermi 3 and associated facilities was disturbed during construction of Fermi 1 and Fermi 2; however, some construction will occur in areas that have been undisturbed for longer periods of time. Figure 2.1-4 indicates the areas proposed for use during Fermi 3 construction.

43

147

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The conversion of ~~2~~ acres of the Lagoona Beach Unit of the Detroit River International Wildlife Refuge (DRIWR) from wetland and forest to developed use for Fermi 3 and associated structures constitutes the main irreversible and irretrievable land use impact for Fermi 3 construction. More than 90 percent of Lake Erie coastal wetlands have been lost to development in Monroe County, emphasizing the importance of the remaining land uses of this type (Reference 4.1-1).

4.1.1.1 Site and Vicinity Land Use Impacts

Construction of Fermi 3 will result in alterations to onsite land use. Some of these alterations are unavoidable and irreversible; others are unavoidable, but are temporary. As noted above, some of the areas designated for Fermi 3 were prepared or altered during the construction and the operation of Fermi 1 and Fermi 2.

13

Table 2.2-1 and Table 2.2-2 list land uses on the Fermi site and in the vicinity before construction of Fermi 3. During construction of Fermi 3, there will be a ~~slight~~ reduction (approximately ~~2 to 3~~ acres) in wetland and forested areas and a corresponding increase in the developed area acreage attributable to permanent impacts of construction activities on the Fermi site.

The various areas potentially affected by construction of Fermi 3 and the acreage within each area are provided in Table 4.1-1; these areas are also depicted on Figure 2.1-4. The site preparation and construction activities that will involve major impacts are clearing, grading, excavation, and dewatering. Explosives may be used during excavation work for Fermi 3 construction. The major types of construction impact that could result from these activities are alteration of existing vegetation, alteration of topography, and alteration of site drainage patterns and water quality.

The planned removal of the structures formerly used for Fermi 1 will free approximately 7 acres for use during Fermi 3 construction. Note - Fermi 1 disassembly may be carried out independently or in conjunction with activities related to Fermi 3. This acreage is adjacent to the area where the Fermi 3 water intake and barge slip would be constructed.

Approximately 125 acres of the Fermi site will be permanently occupied by facilities associated with Fermi 3

New construction for Fermi 3 would have an impact in the construction areas because forest and wetland areas that are part of the DRIWR would be cleared for construction of several facilities and construction areas associated with Fermi 3 and the relocation of the Fermi 2 parking and warehouse area. Note - These Fermi 2 relocations may be carried out independently or in conjunction with activities related to Fermi 3.

112 302

Of the approximately ~~290~~ total acres estimated to be disturbed for the construction of Fermi 3, approximately ~~108~~ acres overlap currently developed or previously altered areas. It is estimated that approximately 12 acres would contain the permanent structure footprint associated with Fermi 3 (primarily the power block area, cooling tower area, intake area, and auxiliary structures, as shown in Figure 2.1-4). Acreage not containing permanent structures ~~would be reclaimed after~~ 259 construction to the maximum extent possible and, where practicable, would be replanted or allowed 19 to revegetate naturally. The combined Fermi 2 and Fermi 3 projected acreage for permanently 302 affected areas (excluding temporary impacts) is approximately ~~243~~ acres. The ~~290~~ total acres of impact onsite from Fermi 3 construction and ~~the 2~~ acres of land use (that would permanently change from wildlife refuge to high density development) are both substantially less than the 1235 acre threshold that the NRC considers a SMALL impact (refer to NUREG-1555, Section 4.1.1). It can therefore be concluded that the Fermi 3 land use impact during construction would be SMALL, and would not require mitigation.

As stated in Section 2.6, construction activities in support of Fermi 3 are not anticipated to adversely affect the geology of the site. Accordingly, the geological effects would be SMALL, and no mitigation measures would be needed.

4.1.1.2 Land Use Plan and Zoning Compliance

4.1.1.2.1 Local Monroe County and Frenchtown Township Land Use

The construction of Fermi 3 will comply with Monroe County and Frenchtown Township land use plans and policies and will comply with county zoning regulations and their specified uses. Monroe County land use planning documents, including the 1985 Comprehensive Plan (which is undergoing an update) emphasize county goals of retaining agricultural land uses while encouraging a strong economy. Development of the Fermi site has been consistent with county goals, leaving large portions of the natural wetland areas onsite intact while developing a power plant that provides economic benefits to the county and surrounding communities. The updated Monroe County Comprehensive Plan will not include changes to the planned use of the Fermi site or its immediate surroundings.

Michigan's local governmental structure involves land use planning and zoning authority that can be exercised by various entities. Counties, townships, cities, and villages work together and sometimes have overlapping jurisdictions concerning land use matters, as explained in Subsection 2.5.2. This is the case for the Fermi site, where the authorities of Frenchtown Township and Monroe County both apply.

As described in Section 2.2, according to Frenchtown Township zoning and existing land use maps included in the Frenchtown Township Master Plan, the Fermi site is included in an area zoned

during construction activities. The final location of these controls would be based on site conditions prior to and during construction activities.

With the use of construction equipment at the site, there is the potential for spills of gasoline, oil, and other fluids from various possible pollutant sources such as vehicle fueling stations, loading and unloading areas, vehicle equipment maintenance activities, and material storage and handling. Spill prevention, control, and response measures will be implemented as part of the Pollution Incident Prevention Plan (PIPP) for Fermi 3. A more detailed discussion of the PIPP is provided in Subsection 4.2.1. Accordingly, the impacts of hazardous material spills are expected to be SMALL, and no mitigative measures are needed.

Soil compaction will occur as construction machinery traverses the construction areas. However, many of the areas where compaction would occur will eventually be covered with permanent structures or will become areas maintained with grass cover. Those areas used temporarily and allowed to revegetate after construction completion would recover more slowly, but would be able to regenerate vegetation and forest cover despite the soil compaction. Detroit Edison plans to restore as many impacted areas as possible to the natural state they were in before construction of Fermi 3.

Aggregate and equipment storage may be located in the possible laydown area shown on Figure 2.1-4.

The excavated material from the power block and circulating water pipe runs will be processed and used as backfill and structural fill for the cooling tower and circulating water pipe run area. Other than these excavated areas, no onsite borrow pit is anticipated to be used for Fermi 3 construction. An estimated quantity of 265,000 yd^3 of excavated material is expected to be excess, which will be disposed of in onsite construction laydown and parking areas and used for filling in canals. The use of an onsite construction landfill is not anticipated.

Therefore, it is anticipated that the land use impact from excavated material will be SMALL due to the relatively small net excess of spoils materials disposed and the availability of disposal areas.

Dredged material excavated during water intake structure and barge slip or dock construction is expected to be returned to the Spoils Disposal Pond encircled by Boomerang Road, as shown on Figure 2.1-4.

According to the Natural Resources Conservation Service (NRCS), soil types that are considered prime farmland are present on the Fermi site, as discussed in Section 2.2. NRCS online soil survey data and maps show several small areas of prime farmland (Subsection 2.2.1.2.3.1) that may be temporarily ~~or permanently~~ affected by Fermi 3 construction (Reference 4.1-2). These small areas of prime farmland are currently on agricultural land in the west-southwest portion of the site. The ~~northern portion~~ agricultural land in the west-southwest portion of the site will be used for ~~the~~ Fermi 3 ~~switchyard, otherwise it would be only~~ as a surface to store construction materials. The ~~majority of the~~ land would be usable as agricultural cropland again after construction of Fermi 3 is complete. Land use in this area of the site would temporarily change for the duration of construction (about

construction laydown

(

)

five years), but would then revert to agricultural use ~~with the exception of the approximate 10 acre Fermi 3 switchyard area~~.

Besides the agricultural field in the southwest corner of the site, prime farmland likely also existed on the Fermi site previous to construction of Fermi 1 and Fermi 2. Portions of the site were farmed in the 1940s and 1950s, as is evident from historical photographs. Irreversible conversion of unique agricultural lands by Fermi 3 construction onsite would not occur because the impact to designated prime farmland areas would be temporary and reversible. Prime farmland will not be significantly impacted by construction of Fermi 3, and similar quality farmland is available throughout the vicinity.

There are four soil map units covering approximately 30 percent of the Fermi site that the NRCS categorizes as Land Capability Class II. Class II soils have moderate limitations on their use that reduce the suitable vegetation choices and require moderate conservation practices. Land Capability Class I soil, the most favorable class of soil that has few limitations on its use, is not present on the Fermi site (Reference 4.1-2).

Productivity of the land in the vicinity is high. However, the land on the Fermi site is occupied mostly by forest, wetland, and developed areas and is not productive in the agricultural sense. The farmed parcel in the southwest corner of the site contains prime farmland and may be temporarily impacted by construction laydown activities. Approximately five years of production could be lost from this parcel during construction. The farmland parcel would be able to return to productive agricultural use after the construction period (Reference 4.1-2).

Overall impacts to soils and agricultural land use are expected to be SMALL, and no mitigation measures are needed.

4.1.1.2.3 Federal, Regional, and State Land Use Plans

The DRIWR Lagoona Beach Unit comprises 656 acres of the 1260 acre Fermi site. The U.S. Fish and Wildlife Service (USFWS) manages the DRIWR and has published a Comprehensive Conservation Plan for the refuge (Reference 4.1-3). The Comprehensive Conservation Plan states that there are several options for acquisition of land for the refuge other than outright purchase of land. One of these alternative methods, a cooperative agreement, was used for acquisition of the Lagoona Beach Unit of the DRIWR on Fermi property (Reference 4.1-3). Detroit Edison has a 2003 Cooperative Agreement with the USFWS for the onsite portion of the DRIWR that allows Detroit Edison and the USFWS to share management of the refuge areas, but that allows Detroit Edison to retain ownership and control of those areas. The agreement allows Detroit Edison to withdraw from or revise the agreement at any time. Detroit Edison expects to revise the agreement to reflect the approximately 534 acres expected to be available for inclusion in the refuge after construction. This revision in the size of the Lagoona Beach Unit of the DRIWR is consistent with the 2003 Cooperative Agreement, the Comprehensive Conservation Plan, and land acquisition procedures for the refuge. Even though Fermi 3 will reduce the acreage that can be included in the DRIWR, Fermi 3 construction would be compatible with the plans and agreements governing the DRIWR. Therefore, construction impacts on land use plans would be SMALL, and no mitigation measures are needed.

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4.1.1.4 Site Restoration and Management Actions

Preventive measures implemented to reduce construction activity impacts would be targeted toward erosion control, controlled access roads for personnel and vehicular traffic, and restricted construction zones. The site preparation work would be completed in two stages, the first of which would consist of stripping, excavating, and backfilling the areas needed for structures and roadways. The second stage would entail developing the site with the necessary facilities to support construction, such as construction offices, warehouses, trackwork, large unloading facilities, water wells, construction power, construction drainage, and similar facilities. In addition, temporary structures would be razed and holes would be filled. Grading and drainage work would be designed and executed with the goal of avoiding and minimizing erosion during the construction period.

The Fermi 3 site surface and subsurface features would be stabilized and restored in accordance with permit requirements and conditions after completion of construction activities. Disturbed areas would be restored consistent with existing and native vegetation. A Site Redress Plan that addresses site restoration is not required for Fermi 3 because Detroit Edison will not seek a safety-related Limited Work Authorization (LWA-2) permit. Permanently disturbed locations would be stabilized and contoured to blend with the surrounding area in accordance with design specifications. Revegetation of disturbed areas would be compliant with site maintenance and safety requirements, and stabilization and restoration methods would comply with applicable laws, regulations, permit requirements and conditions, good engineering and construction practices, and recognized environmental best management practices.

4.1.2 Transmission Corridors and Offsite Areas

As stated in NUREG-1555, Section 4.1.2:

> In some cases transmission lines may be constructed and operated by an entity other than the applicant. In such cases, impact information may be limited and the reviewer should proceed with the assessment using the information that can be obtained.

The 345 kV transmission system and associated corridors are exclusively owned and operated by ITC*Transmission*. The Applicant has no control over the construction or operation of the transmission system. Accordingly, the construction impacts are based on publicly available information, and reasonable expectations of the configurations and practices that ITC*Transmission* would likely follow based on standard industry practice. However, the information described in this subsection does not imply commitments made by ITC*Transmission* or Detroit Edison, unless specifically noted.

As discussed in Subsection 2.2.2, three new 345 kV transmission lines are proposed to serve Fermi 3. A study completed by ITC*Transmission* and Midwest ISO concluded that the existing transmission system from Fermi to the electric grid would need additional lines to sufficiently transport power produced at Fermi 3 without overloading the transmission system in the Fermi area.

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The approximate route and impact areas associated with the short length of new transmission corridor that would be constructed within the Fermi site is shown on Figure 2.1-4 and described in Subsection 2.2.2.2.

In the onsite portion of the 345 kV transmission corridor, the Fermi 2 transmission lines are owned by ITC*Transmission*, while the Fermi 3 transmission lines will be owned by Detroit Edison up to the point of their interconnection with the new Fermi 3 switchyard. Outward from the Fermi 3 switchyard interconnection, ITC*Transmission* will own the lines and other transmission system equipment. Detroit Edison will maintain ownership and control of the land in the new onsite transmission corridor; however, it is expected that Detroit Edison would contract with ITC*Transmission* to maintain the transmission towers and lines located on Detroit Edison property.

Construction of the Fermi 3 switchyard, clearing of the onsite transmission line ROW, construction of the transmission towers, and stringing of the transmission lines will all be accomplished using methods that minimize impacts to wetlands and forest vegetation. The drainage area within this portion of the Fermi site will be spanned by the transmission lines; however, impacts to the drainage area are expected to be minimal because construction activities associated with the transmission structure installation are not expected to occur within the drainage area. The Fermi 3 switchyard will be constructed in the prairie restoration area at the intersection of Fermi Drive and Toll Road. The switchyard will permanently convert approximately 10 acres of the DRIWR from restored native grass vegetation to a developed use. The onsite transmission corridor will convert approximately an additional 6 acres of the DRIWR from woodlot forest, forested wetlands, and thicket to a developed use.

The onsite transmission line ROW and associated access pathways will have a combined temporary and permanent impact of approximately 8 acres (approximately 5.7 acres of permanent impacts to forested areas, and approximately 2.3 acres of temporary impacts to scrub-shrub and emergent wetland vegetation near the drainage area). Within the 4.7 acre forested area of the ROW near Toll Road, there will be approximately 1.53 acres of permanent impact to a forested wetland. Impacts to wetlands will be minimized as much as possible in this area through placement of the transmission line ROW adjacent to the Toll Road ROW so that the narrowest possible portion of the forested wetland would be impacted. Complete avoidance of wetland impacts in this area was not practicable because of the need for transmission lines to travel from the Fermi 3 power block to the Fermi 3 switchyard without impacting existing structures or other areas required for Fermi 3 construction (refer to Figure 2.1-4).

Insert 11 (continued)

During construction of the transmission system, forest clearing will be limited to the 170-foot wide ROW to minimize impacts to existing vegetation and wildlife habitat. To the extent feasible, the transmission towers will be placed in locations outside forested areas and outside the central portion of the drainage area so that inundation of the transmission structures with water would be less likely. The drainage area holds water at varying levels depending on the amount of recent precipitation in the surrounding area and any seiche events that may occur in Lake Erie. The temporary access pathways to the transmission tower locations will approach the towers from both the southeast and northwest directions so equipment will not cross the drainage area. During construction, when these temporary access pathways to the transmission tower locations are used, matting will be laid over the pathways as necessary to minimize impacts to underlying emergent wetland vegetation (largely phragmites and cattails). Transmission lines will also be strung onto the towers without equipment crossing the drainage. When construction within the area is complete, the matting will be removed and the area will be allowed to recover. The areas around the towers will be revegetated through seeding or natural regrowth.

Each of the eight transmission towers outside the forested areas along the onsite transmission corridor would temporarily impact an approximately 0.2 acre area around the tower to accommodate construction vehicles and activities. The permanent impact for each tower along the route would be approximately 0.03 acre to accommodate the tower and foundation locations.

Refer to Subsections 4.4.1.1 and 4.4.2.4.5 for descriptions of construction-related noise and visual impacts on the Fermi site.

Preventive measures implemented to reduce onsite transmission corridor construction impacts would be targeted toward erosion control, minimizing the chances of spills, minimizing temporary access pathway impacts, and restricting construction within forested and wetland areas, near the drainage area, and around each transmission tower.

Transmission tower foundation excavation work and other construction activities will be designed and executed using Best Management Practices (BMPs) with the goal of avoiding and minimizing erosion. The Soil Erosion and Sedimentation Control Plan for Fermi 3 construction activities will be implemented throughout construction on all areas of the site, including the onsite transmission line corridor. Spill prevention, control, and response measures will also be implemented as part of the Pollution Incident Prevention Plan (PIPP) for Fermi 3.

Insert 11 (Continued)

Disturbed areas will be restored consistent with existing and native vegetation as soon as practical after completion of construction in each area of the transmission corridor. Revegetation of disturbed forest areas would be compliant with site maintenance and ITC*Transmission* safety standards, and stabilization and restoration methods would comply with applicable laws, regulations, permit requirements and conditions, good engineering and construction practices, and recognized environmental best management practices.

In light of the measures described above that will be taken to avoid and minimize impacts from construction of the onsite transmission corridor, impacts to land use on the Fermi site are expected to be minimal.

Offsite

Table 4.1-1 Acreage Affected by Various Facilities Associated with Fermi 3

	Area Acres
Total Site	1260[2]
Current Fermi 2 Total Developed Area	209
Nuclear Training Center and Nuclear Operations Center	1.5
Spoils Area (surrounded by Boomerang Road)	12
Decommissioned Fermi 1 Area	7
Transmission Line Corridors (onsite 345 kV and 120 KV)	~~45~~ 30 (to western site boundary)
(all lines offsite along Fermi Drive to Dixie Highway)	54 (western site boundary east to Dixie Highway)
New Construction Areas Affected	
Fermi 3 Power Block (Fabrication Area, Construction Offices, and Batch Plant included in this area)	~~101~~ 87
Fermi 2 New Parking ~~and~~ Warehouse	~~5~~ 23
~~Fermi 3 Construction Parking~~	~~36~~
~~Possible Construction Laydown Area~~	~~119~~
Fermi 3 Switchyard	10
Fermi 3 Meteorological Tower	~~1~~ 6
Fermi 3 Simulator, Administrative Building	7
Total Onsite New Construction Areas Affected (not including Fermi 2 developed area)	~~189~~ 190
Newly Developed Offsite Transmission Corridor[3]	1069

Cooling Tower,

, and Access Infrastructure

and Access Road

offsite

Notes:

1. Acreages given are approximate based on Figure 2.1-4.
2. Acreages in this table do not total 1260 because most of the remaining acreage is occupied by the undeveloped areas of the Detroit River International Wildlife Refuge.
3. New transmission line acreage overestimated by assuming a 300-foot corridor would be impacted along the entire 29.4 mile route. Actual impacts are likely to be much less because 18.6 miles of the new corridor will largely use existing structures.

Fermi 3 Construction Areas (Laydown, Access, Other) 143

Newly Developed Onsite Transmission Areas 8

significant impoundments, reservoirs, estuaries, or oceans located in the region that need to be considered when analyzing the water impacts on the construction of Fermi 3. The North and South Lagoons are discussed in Subsection 4.2.1.4.

The uppermost hydrogeologic unit present at the site is the shallow overburden. Several different geologic materials with varying properties comprise the overburden, and the groundwater is unconfined. The bedrock aquifer lies beneath the overburden at the site, and is generally confined. The upper bedrock unit at the site is the Bass Islands Group, which is underlain by the Salina Group. There are no sole source aquifers on the site or in the vicinity.

4.2.1.2 Construction Activities

302

This section identifies construction activities that could result in impacts to the hydrology at the Fermi 3 site. Fermi 3 construction is anticipated to disturb approximately ~~290~~ acres, which includes the Fermi 2 developed area. Figure 4.2-1 shows the various areas that will be affected by construction. The following construction activities are identified:

- Clearing additional land at the project site and constructing infrastructure such as roads and stormwater drainage systems
- Construction of new buildings (reactor containment structures, turbine building, cooling tower, electrical substation, and other related structures)
- Construction of additional parking lots and roads that will support the construction and operation of Fermi 3
- Construction of both the station water intake structure for water withdrawn from Lake Erie and the discharge pipe for water discharged to Lake Erie
- Construction of docking facilities for barges/vessels that will be used to bring in materials and machines
- Temporary disturbance of existing vegetated areas to establish construction laydown areas, concrete batch plants, sand/soil/gravel stockpiles, and construction worker parking areas
- Backfilling of onsite water bodies with excavation materials or materials brought in from offsite
- Dewatering of foundation excavations during construction
- Installation of underground piping such as sanitary, stormwater, and fire protection piping
- Installation of underground piping to the cooling tower, the discharge piping from the cooling tower to the intake groins area, and makeup water piping from the intake to the circulating water system

4.2.1.3 Construction Water Sources

The main water source utilized during construction will be Lake Erie. Due to its large volume, it will have sufficient capacity to meet construction water needs. Construction activities at Fermi 3 are expected to require water amounts of approximately 350,000 to 600,000 gallons per day for

areas west of Doxy Road with the palustrine emergent marsh areas that are directly connected with Swan Creek and Lake Erie. These culverts allow free flow of surface water throughout the interconnected palustrine emergent marsh areas. Therefore, the surface water level in the majority of the palustrine emergent marsh areas is directly controlled by the surface water elevation of Lake Erie and Swan Creek, rather than groundwater levels, so dewatering will not impact the palustrine emergent marsh areas.

Palustrine forested and palustrine shrub-scrub areas on the Fermi site are for the most part contiguous with the palustrine emergent marsh areas. Therefore, these areas are hydraulically connected with the palustrine emergent marshs, so the groundwater level in these areas is influenced by the surface water levels in Swan Creek and Lake Erie.

Figure 2.3-36 provides hydrographs from June 2007 to May 2008 for monitoring wells and piezometers at the Fermi site. Monitoring Wells MW-381S, MW-388S, and MW-393S monitor the groundwater in the overburden and are located away from the palustrine emergent marsh areas near the palustrine forested and shrub-scrub areas. At MW-381S and MW-393S the groundwater level in the shallow wells varied approximately 5 to 7 feet, while at MW-388S the groundwater level varied approximately 4 feet over the year of measurements, with all three wells showing the same fluctuation trend. During this time no improvement or deterioration in the palustrine forested and shrub-scrub areas was reported. This 4 to 7 foot natural variation in the groundwater level in the overburden indicates that groundwater level variations do not negatively impact the palustrine forested and shrub-scrub areas, rather precipitation is likely the dominant water component for the palustrine forested and shrub-scrub areas.

The modeled estimated drawdowns in the bedrock aquifer potentiometric surface beneath the palustrine forested and shrub-scrub areas range from less than 1 foot to approximately 3 feet, as shown on Figures 2.3-41 and 2.3-42. A slug test in clay at Piezometer P-389 yielded a horizontal hydraulic conductivity estimate of 0.13 feet/day. Laboratory test results for (vertical) hydraulic conductivity in samples of clay collected from P-385S, MW-387S, and MW-384S are 5.8E-5 feet/day, 6.2E-5 feet/day, and 3.7E-5 feet/day, respectively. These vertical hydraulic conductivity values for the clay overburden are lower than the hydraulic conductivity in the bedrock. It is anticipated that the lower hydraulic conductivity glacial/lacustrine soils will buffer any drawdown within the bedrock aquifer, resulting in less drawdown in the overburden than in the bedrock. The lowered potentiometric level in the bedrock aquifer in the wetland areas will result in more surface water infiltration to the bedrock than would otherwise occur; however, based on earlier discussion, any groundwater impacts associated with dewatering are not anticipated to significantly impact the wetlands. Accordingly, impacts to wetlands in the site vicinity will be SMALL, and no mitigative measures are needed.

4.2.1.6 Transmission Facilities

Subsection 3.7 describes the three new 345 kV transmission lines proposed to serve Fermi 3. The 29.4-mile route of the new 345 kV transmission lines would use 18.6 miles of an existing route running along a corridor already used for transmission structures and lines. Additionally, a short (10.8-mile) tract of an existing undeveloped corridor would be used along the route to the Milan

Insert 12

Insert 12

Onsite

Within the Fermi site, there will be a short length of new transmission corridor as described in Subsection 2.2.2.2. Hydrological impacts of this construction will be confined to designated areas as outlined on Figure 2.1-4. Onsite transmission construction activities result in approximately 5.7 acres of permanent impacts and 2.3 acres of temporary impacts.

Figure 4.2-1 Construction Affected Areas

~~Figure 4.2.1-1 Fermi Property Boundary~~

Insert 13 Figure 4.2-1 Construction Affected Areas

UNIT 3 NEW CONSTRUCTION AFFECTED AREAS (PERMANENT IMPACT)

UNIT 3 NEW CONSTRUCTION (TEMPORARY IMPACT)

1500' 750' 0 1500' 3000'

1" = 1500'

PREVIOUSLY AFFECTED AREAS AND UNIT 3 CONSTRUCTION AFFECTED AREAS (PERMANENT IMPACT)

PREVIOUSLY AFFECTED AREAS

WATER BODY/ CHANNEL

Figure 4.2.1–1 Fermi Property Boundary

4.3 Ecological Impacts of Construction

This section describes the potential impacts from the construction of Fermi 3 on the ecological resources at the Fermi site and in the vicinity and those associated with the transmission corridor construction activities. The vicinity considered includes a 7.5 mile radius area around the Fermi site (Figure 2.2-1). The section is divided into two subsections: Terrestrial Ecosystems and Aquatic Ecosystems. For purposes of characterization, wetlands are principally described as terrestrial ecosystems. The subsections summarize relevant information from field studies and other existing data in accordance with the guidance in NUREG-1555 and Regulatory Guide 4.2, Revision 2. The Chapter 4 introduction provides an overview of the Fermi 3 construction schedule and key construction activities.

During construction, several activities will be directed at protecting the terrestrial and aquatic environment, including using BMPs to reduce the risk of stormwater runoff, erosion, and pollutant spills, as outlined in the SESC Plan and the PIPP for the Fermi 3 site. The requirements for the SESC Plan and the PIPP are described in more detail in Subsection 4.2.1. BMPs that are used will be consistent with the practices discussed in Guidebook of Best Management Practices for Michigan Watersheds (Reference 4.3-1). As part of Reference 4.3-1, BMPs are categorized into one of eight categories:

- Construction Site Preparation
- Housekeeping
- Managerial
- Runoff Conveyance and Outlets
- Runoff Storage
- Sedimentation Control Structures
- Vegetative Establishment
- Wetlands

Each of these categories contains several BMPs that will be implemented as the conditions warrant. For each of the BMPs, Reference 4.3-1 provides more detailed information including a description of the BMP, the basis for implementing the BMP, the application of the BMP, relationship with other BMPs and how other BMPs can be used to compliment each other, considerations during the planning phase, considerations during the implementation phase and post-construction considerations.

4.3.1 Terrestrial Ecosystems

This subsection describes the impacts of construction on the existing terrestrial ecosystem as described in Subsection 2.4.1. Figure 4.3-1 shows the undeveloped areas that would be impacted by the construction of Fermi 3. The site layout for Fermi 3 is shown in Figure 2.1-4. The total impact area for Fermi 3 is ~~290~~ 302 acres, which includes the aquatic area impacts, as discussed in Subsection 4.3.2. Fermi 3 construction would disturb approximately ~~189~~ 200 acres of terrestrial habitat

on the Fermi site. The terrestrial habitats impacted are illustrated in Figure 4.3-2. Of this ~~189 acres~~ 200 acre area, permanent impacts are expected to occur to approximately ~~27~~ 53 acres and temporary impacts to approximately ~~162~~ 147 acres. Temporarily disturbed sites are to be replanted following completion of construction.

The Fermi 3 site layout has been designed to minimize terrestrial ecosystem impacts to the greatest extent possible. Currently developed and previously disturbed grounds are used wherever possible. Unavoidable impacts to wetlands are anticipated, but have been minimized as much as possible. No Federally-listed threatened or endangered species under the Endangered Species Act would be impacted. Four Michigan-listed species, two plants and two animals, may be affected, and preventative measures are provided to ensure the continued existence of these species in the state (see Subsection 4.3.1.2.1).

4.3.1.1 Terrestrial Communities

The following sections discuss the potential impacts to vegetation and wildlife related to construction of Fermi 3.

4.3.1.1.1 Vegetation on the Site and in the Vicinity

Construction activities would result in the permanent clearing and grubbing of portions of the impact area shown in Figure 4.3-1. No impacts are expected in the site vicinity, with the exception of those areas associated with the offsite transmission system, as discussed in Subsection 4.3.1.5. Permanent and temporary impacts to plant communities on the Fermi site are summarized in Table 4.3-1. New development would affect approximately ~~27~~ 200 acres of undeveloped land; ~~27~~ 53 acres would be permanently impacted and ~~162~~ 147 acres would be temporarily impacted. The overall and cumulative impacts of Fermi 3 construction activities to terrestrial vegetative communities are considered SMALL, and no further mitigation measures are warranted.

Notwithstanding the above conclusion, it is Detroit Edison's intention that about ~~86~~ 74 percent, or approximately ~~162~~ 147 acres, would be restored by re-vegetation using species native to the Fermi vicinity. Areas available for restoration are shown in Figure 4.3-2 and labeled as temporary impact areas. The restoration would alleviate any adverse impacts to these communities by planting species native to the region and appropriate for the area being re-vegetated. The restored habitat is expected to provide improved species composition in the plant communities and enhanced wildlife habitat by providing both improved forage and shelter for wildlife in the area. Other activities directed at protecting the environment will include using BMPs to reduce the risk of stormwater runoff, erosion, and pollutant spills, as outlined in the SESC Plan and the PIPP for the Fermi 3 site. The requirements for the SESC Plan and the PIPP are described in more detail in Subsection 4.2.1.

Following is a brief discussion of each terrestrial community that would be impacted, based on the information provided in Subsection 2.4.1.

Coastal Emergent Wetland (Vegetated)

Approximately ~~2.3~~ 1.7 acres of this community would be permanently impacted. This represents less than one percent of the 238 acres of the community present onsite and ~~less than 0.2~~ 0.1 percent of the 1550

9.6 acres (switchyard) will be permanently impacted and 13.5 acres (construction area)

associated with the onsite transmission corridor.

acres found in the vicinity. ~~Approximately one acre could be permanently impacted by the construction of the new meteorological tower.~~ Most of these areas are ~~located at the periphery of the impact area~~. The boundaries of these areas are identified on Figure 2.4-19. Whenever possible, construction activities will be restricted in these areas to further minimize permanent impacts to these important habitats. ~~The impact areas along the west and south edge of the current spoils disposal area (adjacent to Lake Erie) are not expected to be impacted due to soil disturbance but may receive secondary impacts from alterations in water discharges from the spoils area. These impacts are discussed in Subsection 4.3.2.~~ The project impacts to this community are considered SMALL, and no mitigative measures are needed.

The permanent impact

Grassland: Right-of-Way

less

This community includes 29 acres located on the Fermi site, of which ~~approximately 26 acres~~ will be temporarily impacted by use as construction worker parking during Fermi 3 construction. ~~This~~ area represents slightly ~~more~~ than ~~2~~ 1 percent of the 1209 acres present in the project vicinity. Although the area includes mostly native plant species, the area is artificial in the sense that it was planted, as discussed in Subsection 2.4.1.1.1. Because this is a planted area and the area is small compared to what is present in the vicinity, the project impacts to this community are considered SMALL, and no mitigative measures are needed.

The temporary impact area will be restored.

Grassland: Idle/Old Field/Planted

43 17.6 25.7 and

laydown areas

Approximately ~~19~~ 43 acres of this community present onsite would be impacted, ~~11.5~~ 25.7 acres permanently and ~~7.3~~ 17.6 acres temporarily. Onsite there are about 75 acres of this community present. The majority of the permanent impacts are associated with the power block and cooling tower construction. Temporary impacts are primarily associated with the Fermi 3 construction parking ~~area~~ and will be re-vegetated following construction. As discussed in Subsection 2.4.1.1.1, these grassland habitats occupy mostly land that was previously disturbed and are composed of early succession and often non-native plant species. In addition, these grasslands provide poor quality wildlife habitat, primarily due to a lack of forage species. About 6,932 acres of this community occurs in the vicinity. The permanent loss of ~~11.5~~ 25.7 acres represents about ~~0.2~~ 0.4 percent of the community in the vicinity. The project impacts to this community are considered SMALL, and no mitigative measures are needed.

Grassland: Row Crop

64

Approximately ~~all of 70~~ 64 acres of this community present onsite would be impacted, representing less than one-half of one percent of the 23,465 acres present in the vicinity. ~~Approximately 10 acres of row crop would be permanently impacted by the construction of the new switchyard.~~ Portions of the area would be graveled for parking or equipment and materials storage during construction. Following construction, the area could be used once again for crop production. Since this impact is temporary, effects on a project basis are considered SMALL, and no mitigative measures are needed.

About 1 acre in the vicinity of the meteorological tower will be permanently impacted.

Shrubland

35 38.5 two

Approximately ~~30~~ percent of this community present onsite would be impacted, approximately ~~three~~ acres permanently and ~~31~~ acres temporarily. This is an early succession community that has developed on lands that were previously disturbed (cleared or filled) during the construction of Fermi 2 as discussed in Subsection 2.4.1.1.1. While some wildlife utilizes the area for shelter, other habitats in the immediate and surrounding vicinity provide opportunities for shelter and perhaps better foraging. On the Fermi site, 113 acres of this community were mapped during site visits. The onsite acreage of Shrubland habitat is unclear because of inconsistencies between USGS data and onsite observations. USGS data indicate 95 acres of Shrubland in the vicinity (refer to Table 2.2-2), which is less than the observed habitat (113 acres). One possible explanation is that USGS data were collected before subsequent expansion of Shrubland had occurred, resulting in the recent larger estimate. However, because this is an early succession community, the project impacts to the community are considered SMALL, and no mitigation measures are needed.

permanently

Thicket

7 1.7

Approximately ~~26~~ percent of the 23 acres (i.e., ~~approximately 6~~ acres) of this community present onsite would be ~~temporarily~~ impacted. This is an early succession community that has developed on lands that were previously disturbed (cleared or filled) during the construction of Fermi 2 as discussed in Subsection 2.4.1.1.1. Wildlife use of the area is mostly for shelter. ~~Temporarily impacted areas are primarily associated with construction parking areas and will be re-vegetated following construction.~~ Due to the small area of ~~temporary~~ loss and early succession character of this community, the project impacts to the community are considered SMALL, and no mitigative measures are needed.

permanent

Forest: Lowland Hardwood

4.8

Approximately ~~25~~ acres of this community present onsite would be temporarily impacted. As described in Subsection 2.4.1.1.1, this is a natural community and probably represents the most mature plant community on the Fermi site. Wildlife use the community for shelter, and some foraging is available due to the presence of mast producing species, mostly oaks. The area to be temporarily impacted is associated with the construction laydown areas. This same area will be re-vegetated following construction. The temporary loss to the community from the project is considered SMALL based on the amount of similar community in the vicinity, and no mitigative measures are needed.

permanently , approximately

Forest: Woodlot

8.4

Approximately 117 acres of this community are present onsite. Of this total ~~,~~ 5 percent (i.e., approximately ~~6~~ acres) would be ~~temporarily~~ affected by Fermi 3 construction. As described in Subsection 2.4.1.1.1, this community occurs entirely on previously cleared and/or filled land. The plant species present are mostly not representative of native forested areas in the region but local wildlife do utilize the area for shelter and limited foraging. The temporarily impacted areas, those associated with the Fermi 3 construction parking area, would be re-vegetated following

There will be 6.3 acres of temporary impacts.

construction. Due to the early succession character of this community, the project impacts to the community are considered SMALL, and no mitigative measures are needed.

Forest: Coastal Shoreline

One acre near the meteorological tower will be permanently impacted.

The Coastal Shoreline Forest plant community encompasses about 47 acres of land or 3.7 percent of the Fermi site. ~~None of this area would be directly impacted by Fermi 3 construction, with the possible exception of noise within 600 feet of any active nests during the breeding season.~~ This is a dynamic plant community composed of opportunistic, early succession (pioneer) species. The area is dominated by cottonwoods and willow, some quite large. Shrub growth varies from dense to sparse depending on lake exposure and the extent of ponding that occurs. The habitat value of the area is primarily limited to roosting or nesting by birds, notably bald eagles. Because of the nesting eagles, measures to avoid disturbance near this habitat during April to June, including excessive noise, will be used to limit impacts to bald eagles. Because ~~none~~ only a small portion of this habitat will be affected directly and preventive measures to avoid indirect impacts will be in effect, the project impacts to the community are considered SMALL, and no mitigation measures are needed.

4.3.1.1.2 Wildlife on the Site and in the Vicinity

The footprint for Fermi 3 is designed to utilize developed and previously disturbed areas to minimize the impact to wildlife. Potential impacts to wildlife from construction activities could include:

- Takes or displacement of wildlife
- Fugitive dust and equipment emissions
- Bird collisions with elevated construction equipment
- Pollutant spills
- Noise

Takes or Displacement of Wildlife

The normal movement of equipment, clearing and excavation are expected to result in some takes of small wildlife but mostly the displacement of certain wildlife. To benefit wildlife, Detroit Edison will adhere to permit conditions that may restrict the timing of certain construction activities, such as avoiding primary nesting periods for birds, such as the bald eagle that is discussed in Subsection 4.3.1.2.1. Mortality is expected to be limited to the least mobile wildlife, such as small mammals and reptiles. Larger mammals and birds will leave the area when there is disturbance. The wildlife disturbed is expected to be primarily common species that readily adapt to changing environments, such as raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and skunk (*Mephitis mephitis*). The wildlife is expected to move outward from the impact area to neighboring habitats both onsite and offsite, making the impact to wildlife SMALL with no mitigative measures needed.

designated critical habitat listed by the USFWS under the Endangered Species Act (Reference 4.3-2) would be impacted. The Michigan Department of Natural Resources (MDNR) stated that while there are no occurrence records for these species in the vicinity, terrestrial species may occur in the vicinity. Field studies in 2007 identified one animal and one plant that are State listed that occur on the Fermi site. Table 4.3-2 provides a list of the protected species occurring or potentially occurring on the Fermi site. Following are discussions of the State protected species and important habitats.

4.3.1.2.1 **Important Species**

Bald Eagle

The bald eagle is a Michigan threatened species. Three nests occurred on the Fermi site in the winter of 2007-2008 in the Coastal Shoreline Forest immediately adjacent to Lake Erie. Two nests were located north of Fermi 2, and one nest was south of Fermi 2. Normally one pair of eagles will occupy one of the three nests each winter. In May 2008, the nest south of Fermi 2 was gone, apparently blown out of the tree during winter storms. One nest, approximately 750 feet east of the Fermi 2 cooling towers, was occupied.

Formerly listed as an endangered species, the bald eagle nationwide (except in parts of Arizona) was federally de-listed in 2007, but continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. MDNR eagle management guidelines impose activity restrictions within a one-quarter mile radius around active nests from mid-March to the end of June, if young are in the nest. However, because bald eagles are abundant in Michigan, the MDNR is in the process of de-listing the species for Michigan. When the state de-listing process is complete, the MDNR will follow USFWS guidelines for bald eagle management. These guidelines suggest a radius of 660 feet around the nest during the breeding season (Reference 4.3-4). The restricted area is imposed because bald eagles are extremely sensitive to human activity during the first 12 weeks of the breeding season. These guideline limitations will be adhered to during Fermi 3 construction.

American Lotus

and the south canal

The American lotus (a Michigan threatened species) is a wetland plant common in moderately shallow areas of the South and North Lagoons on the Fermi site. Although the species reaches a northern limit of its distribution in southeast Michigan, healthy populations are scattered throughout this portion of the state. American lotus grows from thick and creeping underground tubers that make it impossible to determine how many plants are actually present in a given area. The plants, however, are hardy and relatively easy to transplant.

~~Construction activities are not expected to affect the North Lagoon and, therefore, no American lotus in this area should be affected. American lotus occurring along the west edge of the south lagoon may be temporarily affected by the construction and utilization of the laydown area southeast of the Fermi 3 cooling tower area~~. Because state populations of American lotus are healthy, MDNR endangered species specialists have indicated that plants expected to be impacted by Fermi 3 construction activities should be transplanted to other areas of the lagoons on the Fermi site or

Construction activities in the south canal are expected to affect the American lotus.

~~possibly offsite to minimize adverse impact. Detroit Edison intends to engage in further consultation with the MDNR in developing the appropriate mitigation strategy that will ensure that the impact to this species will be SMALL.~~

Arrowhead

The arrowhead (a Michigan threatened species) has not been observed on the Fermi property. Subsection 2.4.1.2.2.2 provides life history and distribution information about the species. Most of the habitat that might have been suitable for the species has been invaded by common reed (*Phragmites australis*). Therefore, impacts from Fermi 3 activities are anticipated to be SMALL, and no mitigative measures are needed.

Eastern Fox Snake

The eastern fox snake (a Michigan threatened species) was sighted two times on the Fermi property, in June 2008. The Michigan Natural Features Inventory has recorded nine occurrences for Monroe County, with the most recent report in 2007 (Reference 4.3-5). The snake was found along the cattail marshes or wetland shorelines around woody debris. The life history of the eastern fox snake is discussed in Subsection 2.4.1.2.2.1. Fermi 3 construction activities are primarily located away from potential habitat for the eastern fox snake and the snake would be expected to move away from these activities. Therefore, the impact to this species from the project is considered SMALL, and no mitigative measures are needed.

4.3.1.2.2 **Important Habitats**

Important habitats for the Fermi site are described in Subsection 2.4.1.2.3 and include the DRIWR and areas of wetlands as discussed below.

Detroit River International ~~Wildlife Refuge~~ 26.2

7 18.5 45

The DRIWR Lagoona Beach Unit is located entirely within the Fermi property and includes a total of 656.4 acres (Figure 2.4-6). The Fermi 3 construction impact area includes approximately ~~61~~ acres, or about ~~9~~ percent of the Lagoona Beach Unit as illustrated in Figure 4.3-3; ~~2~~ acres would be permanent impacts and ~~59.3~~ acres temporary impacts. The area of each section of the Lagoona Beach Unit and the area of that unit to be impacted is provided in Table 4.3-3. The agreement between Detroit Edison and the USFWS that established the wildlife refuge allows for modifications to the agreement (such as Fermi 3) by either party at any time (Reference 4.3-6). The construction impacts of reducing the effective area of the DRIWR are principally land-use impacts, which discussed in Subsection 4.1.1.1. The importance of DRIWR as an ecological habitat is principally due to it being a wetlands area. Accordingly, the construction impacts are bounded by the overall wetlands impacts, as discussed below.

Wetlands Insert 14 38.27

Detroit Edison conducted a wetlands investigation to ~~delineate wetland~~ boundaries and assess functions and values of the wetlands present on the Fermi property. The results of the wetland investigation are summarized in Subsection 2.4.1.2.3. Impacts to approximately ~~49.47~~ acres of

Insert 14

The 2008 wetland investigation report was provided to MDEQ and USACE in the fall of 2008 with a request for review and a jurisdictional determination. Jurisdictional determination letters were provided by the now MDNRE in November 2008 (Reference 4.3-xxx1) and March 2009 (Reference 4.3-xxx2) and by USACE in November 2010 (Reference 4.3-xxx3). The wetland delineation boundaries were updated in response to the jurisdictional determination letters. Additional updates to the wetland delineation were based on site visits and verbal and written feedback from MDNRE and USACE during 2010.

5.26 6.84 5.28 20.89 62 23.75

wetland and open water habitat regulated by the MDEQ and USACE are anticipated within the construction impact area at the Fermi property (see Figure 4.3-5). This acreage includes ~~13.32~~ acres of emergent marsh (PEM), ~~17.37~~ acres of forested wetland (PFO), ~~4.10~~ acres of scrub-shrub wetland (PSS), and ~~14.68~~ acres of open water. Of this acreage, approximately ~~39.44~~ acres (~~80~~ percent) are temporary impacts that would be restored following construction. Characteristics of these wetlands are discussed in Subsection 2.4.1.2.3. ~~Delineation data from the wetland investigation will be submitted to the MDEQ and USACE for a Jurisdictional Determination (JD) of the wetlands~~. In sum, the construction impacts are projected to be MODERATE. Accordingly, Detroit Edison will prepare a mitigation plan for Fermi construction activities that will be submitted to the MDEQ and USACE.

Impacts to wetlands as part of Fermi 3 construction activities are a matter that must be carefully considered due to the importance of these habitats. Measures are taken to first avoid impacts and when that is not possible, impacts are minimized to the greatest extent possible. Work in areas adjacent to wetlands, such as the parking lot construction, would utilize silt fencing to protect the wetland from siltation and entry by construction equipment. Other BMPs would apply as appropriate. Wherever possible, disturbed areas would be revegetated as soon as possible following disturbance to avoid impacts from stormwater runoff. Plantings will be of tree species or seed mixes of grasses and forbs appropriate for the Fermi region.

4.3.1.3 Other Projects within the Area with Potential Impacts

No major projects have been identified in the vicinity that would add cumulatively to the impacts associated with the construction of Fermi 3. This includes consideration of terrestrial communities, important species and habitats, and other terrestrial resources considered in Subsection 4.3.1.

4.3.1.4 Regulatory Consultation

Affected Federal and State agencies were contacted or consulted regarding potential impacts to the terrestrial ecosystem resulting from the construction of Fermi 3. The USFWS, the MDNR Natural Heritage Program (Reference 4.3-2), and the Michigan State University Extension Michigan Natural Features Inventory program (Reference 4.3-7) were consulted in 2007 regarding Federal and State protected species and sensitive habitats.

delineation have been

The MDEQ and USACE ~~will be~~ consulted regarding wetlands. A wetland investigation, including a wetland delineation was completed for the Fermi property in May and June 2008. A summary of the wetland ~~report~~ is provided in Subsection 2.4.1.2.3. ~~The results of the delineation will be submitted to the MDEQ and USACE with a request for a JD of wetlands on the Fermi site.~~ The ~~JD~~ updated wetland delineation and jurisdictional determinations will be the basis from which impacts to wetlands and the need for mitigation will be determined. Federal and State permit applications for working in wetlands will be submitted to these agencies at a later date, but prior to any construction activities.

Insert 15

4.3.1.5 Transmission Corridors and Other Offsite Areas

As stated in NUREG-1555, Section 4.1.2:

Insert 15

Onsite

The layout and construction plan associated with the onsite transmission line is discussed in Section 4.1.2.

As discussed, the construction of the transmission line onsite will include the Fermi 3 switchyard, clearing of onsite transmission line ROW, construction of towers, and stringing of the transmission lines. Direct impacts to terrestrial habitats will be minimized to the extent possible, but are expected to result in permanent impacts to 15.5 acres (Grassland: Row Crop 9.6 acres; Thicket 1.7 acres; Forest: Woodlot 3.9 acres, and Coastal Emergent Wetland (vegetated) 0.3 acre). Temporary impacts would occur to 2.2 acres of Coastal Emergent Wetland (vegetated). Impacts to the terrestrial habitats on the Fermi site from activities associated with construction of the onsite transmission corridor are expected to be SMALL.

Offsite

4.3.1.5.5 Other Projects within the Area with Potential Impacts

No major projects have been identified in the vicinity of the transmission corridor that would add cumulatively to the impacts associated with the construction of Fermi 3. This includes consideration of terrestrial communities, important species and habitats and other terrestrial resources.

4.3.1.5.6 Regulatory Consultation

Regulatory consultation with USFWS and MDNR is noted in Subsection 4.3.1.4. These agencies as well as the MDNR Natural Heritage Program and Michigan State university Extension Natural Features Inventory program were consulted in 2007 and 2008 regarding Federal and State protect species and sensitive habitats.

4.3.2 Aquatic Ecosystems

This subsection provides an assessment of the potential temporary and permanent impacts that Fermi 3 construction activities will have on the aquatic ecosystems associated with Lake Erie, onsite impoundments, and streams adjacent to and within the Fermi site (see Figure 2.4-3 and Figure 2.4-4).

As described in Subsection 2.3.1 the following surface water bodies are located adjacent to and within the Fermi site:

- Man-made overflow and drainage canals, circulating water reservoir, and drainage ditches
- The Quarry Lakes and other water bodies and wetlands within the DRIWR
- Swan Creek
- Stony Creek
- Lake Erie and its associated bays

Permanent loss of aquatic habitat is limited to the areas affected by the construction of the station water intake structure, barge slip, parking garage, and the EF2/EF3 common warehouse (Figure 4.3-4). The station water intake structure is located within the existing intake bay for Fermi 2 and will require additional dredging and construction of bulkheads within the intake bay resulting in potential loss of aquatic habitat. The barge slip will also be constructed within the existing intake bay for Fermi 2. However, the area does not support established aquatic habitat (i.e. vegetation, structure) and species diversity within the area is generally low; therefore, impacts will be small.Additional construction impacts to aquatic habitats will result from dredging of the existing barge slip and station water intake embayments. Dredging of the barge slip and intake structure embayment will result in the temporary loss of benthic biota due to disturbance of substrate, physical impacts to individuals, as well as short-term declines in phytoplankton productivity and zooplankton density due to increased turbidity. Additional discussion of these impacts is provided in Subsection 4.3.2.2.

, the north canal,

s

Construction of the parking garage and the EF2/EF3 common warehouse will include completely filling in the isolated central canal and portions of the ~~north and~~ south canals. Impacts from filling in

While portions of the canals will be filled, hydrologic connectivity with the lagoons will be maintained through the installation of culverts.

these areas will result in the loss of aquatic communities and aquatic organisms that currently reside in these areas. These include the loss of fringing wetland habitats, aquatic vegetation, fish and benthic species as well as reptile and amphibians. Impacts to the isolated central canal are considered SMALL due to the isolated nature of aquatic organisms living there. This system has no hydrological connection with the other on-site waterbodies and supports a low diversity and low abundance of organisms. The filling of the north canal and the partial filling of the ~~north and~~ south canal systems will result in mostly habitat loss along the canal banks. Loss of aquatic organisms will be SMALL due to their ability to leave the affected area into other portions of the north and south canals, Swan Creek and the southern lagoon. Movement of aquatic species is expected s during dewatering and backfilling. Indirect impacts to aquatic systems, such as increases in sedimentation and water flow throughout onsite and adjacent water bodies are also expected. These indirect impacts are accounted for in the temporary impacts identified on Figure 4.3-4. These effects could cause temporary losses to benthic habitat and biota due to siltation, as well as short-term declines in phytoplankton productivity and zooplankton densities in the immediate area affected by construction.

Recolonization of affected water bodies is expected. These water bodies are expected to be colonized by native species common to the surrounding habitats. These common species are further discussed in Subsection 2.4.2.

To reduce sediment loading and effluent runoff into onsite water bodies, a construction SESC plan and PIPP will be developed and in place prior to the start of construction. All applicable BMPs will be incorporated into appropriate construction plans and procedures.

4.3.2.1 Impacts to Impoundments and Streams

The greatest potential for adverse impacts to fisheries resources during construction comes from increased sedimentation and turbidity due to construction-related erosion and temporary discharges that will potentially impact important aquatic habitats. Activities that contribute to increased sediment/silt loads into onsite impoundments, surface drainages, and to adjacent streams include increased road traffic (dust from traffic settling into water bodies; increased traffic causing minor road erosion), site clearing and grading, loss of vegetated buffer zones that trap sediment and silt, and site dewatering which collectively lead to increased sedimentation and siltation of the water bodies.

Siltation caused by increased sedimentation could result in the temporary loss of benthic habitats and biota associated with the onsite drainage systems and canals. Increased turbidity from the runoff could limit phytoplankton productivity and decrease zooplankton densities within these water bodies, as well. While this may temporarily reduce food resources for forage fish species, these effects will be limited in duration and temporary in nature, terminating upon the completion of Fermi 3 construction.

Vegetation, associated with the onsite drainage systems, canals, and wetlands, functions as filters and barriers that trap silt and sediment (refer to Subsection 4.3.1 for vegetation listing). Plants growing in these types of habitats thrive in high nutrient conditions, making these areas ideal buffer zones for sediment and silt runoff. The filtering capacity of these plants also aids in the removal of

potentially harmful nutrients from construction effluents and run-off. Effects to the aquatics of the onsite drainage systems and canals would be similar to those naturally occurring to this system during periods of heavy inundation and flooding, and therefore impacts would be expected to be SMALL.

Wetland and coastal habitats, such as those identified within the DRIWR, routinely experience habitat changes associated with heavy rains and flooding events. These episodic events are representative of those expected as a result of surrounding construction activities (erosion, increased sedimentation and turbidity). The aquatic biota found in these types of habitats are highly adapted to survive in dynamic aquatic regimes, and therefore can be expected to recover from these effects quickly without significant decreases in overall health and sustainability. Wetlands are further discussed in Subsection 4.3.1.2.2.

Historically, onsite aquatic resources have been subjected to heavy sediment deposition associated with clearing of adjacent lands for agricultural purposes as well as with the construction of Fermi 2. Increased erosion and turbidity in and around the identified water bodies likely occurred as a result of these activities. The presence of established aquatic communities in these water bodies (described in Subsection 2.4.2) demonstrates the ability of these resources to recover from such perturbation. Because of the highly adaptive nature of the onsite aquatic system, impacts to aquatic resources at the Fermi site due to construction activities are expected to be SMALL.

Construction activities associated with Fermi 3 Construction as well as transferal of Fermi 2 structures will permanently impact approximately ~~2.75~~ 9.34 acres of wetland and ~~7.28~~ 5.18 acres of open water habitats (see Figure 4.3-5). This acreage includes ~~2.23~~ 5.77 acres of emergent marsh (PEM), and ~~0.52~~ 3.57 acres of forested wetland (PFO) In addition, construction may lead to soil erosion and sedimentation into onsite drainage systems, canals, Swan Creek, and other waters within the DRIWR. Erosion and sedimentation may cause some temporary disruption and modification of the onsite drainage systems and may provide a surface conveyance of silt and sediment to aquatic habitats. This input of materials will be minimized and controlled through the use of BMPs established in the SESC Plan. BMPs include the utilization of silt fencing, hay bales, turbidity curtains, and sediment traps. BMPs are discussed in more detail in Section 4.3. These measures will be installed prior to the start of construction activities and will be maintained on a routine basis. Accordingly, impacts to these habitats will be SMALL,

Excess material excavated during construction will be placed in a designated spoils area. Stormwater runoff from the spoils area and other areas of disturbed soil will be controlled by BMPs established in the SESC Plan. These practices may include use of silt fences and hay bales to prevent silted runoff from indirectly impacting the onsite drainage systems and canals. Areas subjected to sediment deposition during local precipitation periods will likely return to pre-construction conditions upon completion of construction.

Permanent construction–related losses to aquatic biota are expected to be limited to portions of the DRIWR associated with construction of the NDCT and filling in of certain onsite water bodies (Central Canal, South Canal, and the North Canal). Construction impacts on the DRIWR are discussed in Subsection 4.3.1.2.2.

benthic biota speciation). Therefore, impacts to the biota are expected to be temporary, consistent with activities to which local populations of organisms have adapted.

Dewatering associated with the construction of Fermi 3 includes dewatering the excavation site for the reactor unit including portions of the onsite canals. The Groundwater Modeling System software (Reference 4.2-5) was used to simulate groundwater flow with two barrier alternatives. Option 1 is a reinforced diaphragm concrete wall, and Option 2 represents a grout curtain or freeze wall. Under the Option 1 simulation, the aquifer water levels beneath the Quarry Lakes will be lowered less than 1 ft. Under the Option 2 simulation, the water levels beneath the Quarry Lakes will be lowered approximately 2 ft (Subsection 4.2.1.5).

Construction activities conducted on Lake Erie are not expected to significantly impact surface water biota (see Subsection 4.3.2.4.2).

Insert 16

4.3.2.3 Impact to the Transmission Corridors and Offsite Areas

Transmission corridor construction activities are expected to include the installation of three transmission lines in an assumed 300-foot wide corridor, 29.4 miles long between the Fermi site and the Milan Substation, located near Milan, MI. The route is illustrated and described in Subsection 2.4.1.9. Vegetative communities and land use along the corridor are illustrated in Figure 2.2-3. ITC*Transmission*, which owns and operates the transmission system in southeastern Michigan, will be responsible for the construction and maintenance of the new transmission infrastructure. The three 345 kV lines for Fermi 3 will run in a common corridor, with transmission lines for Fermi 2, to a point just east of I-75. From the intersection of this Fermi site corridor and I-75, the three Fermi-Milan lines will run west and north for approximately 12 miles in the corridor shared with other non-Fermi lines within an assumed 300-foot wide right-of way (ROW). The western 10.8 miles of the ROW is undeveloped, with no lines or towers erected. Where vegetation is present, the maintenance has been minimal, except to keep tall woody vegetation removed. It is assumed that the Milan Substation may require an expansion from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet to accommodate the three new transmission lines from Fermi 3. There are no aquatic resources in this assumed expansion area.

Construction impacts to aquatic resources along the eastern 18.6 miles of the transmission corridor are expected to be SMALL, since the reconfiguration of existing conductors would largely allow for the use of existing infrastructure to create the new lines, and access for installing additional lines is good (as the plant life has been managed to exclude tall woody vegetation). Existing aquatic habitats in this portion of the corridor will be spanned and best management practices will be used to protect aquatic habitats crossed by the new lines. This includes, but is not limited to, the use of silt fencing, hay bails and similar practices to ensure the protection of aquatic habitats in close proximity to construction activity.

The western 10.8 miles of the transmission corridor is undeveloped. Potential impacts to aquatic resources in this portion of the corridor are discussed in the subsections that follow.

Insert 16

Onsite

The layout and construction plan associated with the on-site transmission line is discussed in Section 4.1.2.

As discussed the construction of the transmission line will include Fermi 3 switch yard, clearing of on-site transmission line ROW, construction of towers, and stringing of the transmission lines. Direct impacts to aquatic habitats will be avoided during construction. Indirect impacts may occur during construction of temporary access pathways to the towers. Temporary matting will be utilized to minimize these impacts.

Construction measures will be utilized to avoid and minimize impacts for the construction of the on-site transmission corridor. Impacts to the aquatic habitats at the Fermi site are expected to be SMALL.

Offsite

an SESC Plan. Any small spills of construction-related hazardous fluid would be mitigated according to the PIPP. Impacts to aquatic communities from construction activities are expected to be SMALL.

4.3.3 References

4.3-1 Michigan Department of Environmental Quality, Technical Manuals, MDEQ – BMP Design Manuals, http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3714-118554--,00.html, accessed 29 April 2008.

4.3-2 Michigan Department of Natural Resources, Natural Heritage Program, http://www.michigan.gov/dnr/0,1607,7-153-30301_31154_31260-54441--,00.html, accessed 5 March 2008.

4.3-3 State of Michigan, "Natural Resources and Environmental Protection Act (Act 451 of the Michigan Public Acts of 1994)," Part 365 Endangered Species Act, http://www.legislature.mi.gov/(S(k3qiry55fgux1yywldqkm345))/mileg.aspx?page=getobject&objectname=mcl-451-1994-iii-1-endangered-species-365, accessed 21 March 2008.

4.3-4 U.S. Fish and Wildlife Service, "National Bald Eagle Management Guidelines," May 2007, http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf, accessed 21 March 2008.

4.3-5 Michigan State University Extension, Michigan Natural Features Inventory, Rare Species Explorer, "Pantherophis gloydi, Eastern Fox Snake," http://web4.msue.msu.edu/mnfi/explorer/species.cfm?id=11505, accessed 30 April 2008.

4.3-6 Establishment of the Lagoona Beach Unit of the Detroit River International Wildlife Refuge, "Cooperative Agreement Between Detroit Edison and U.S. Fish and Wildlife Service," September 25, 2003.

4.3-7 Michigan State University Extension, Michigan Natural Features Inventory, Monroe County, http://web4.msue.msu.edu/mnfi/data/cnty_dat.cfm?county=Monroe, accessed 7 February 2008.

4.3-xxx1. Michigan Department of Environmental Quality, Wetland Identification Report, Wetland Identification File Number 08-58-0003-W, November 7, 2008.

4.3-xxx2. Michigan Department of Environmental Quality, Wetland Identification Report, Modified Wetland Identification File Number 08-58-0003-WA, March 30, 2009.

4.3-xxx3. U.S. Army Corps of Engineers, Detroit District, Engineering & Technical Services, Regulatory Office, File No. LRE-2008-00443-1, November 9, 2010.

Table 4.3-1 Potential Impacts to Terrestrial Communities on the Fermi Site from Construction of Fermi 3

Plant Community	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Area of Community Onsite (acres)	Total Area of Community in Vicinity[1] (7.5 mile radius) (acres)	Percent of Community in Vicinity Permanently Impacted
Coastal Emergent Wetland (CEW) Open Water	0	0	35	66,520	0
Coastal Emergent Wetland (CEW) Vegetated	~~2.3~~	~~0.8~~	[illegible]	1550	0.1
Grassland: Right-of-Way	~~0~~	~~25.8~~	[illegible]	1209	~~0~~
Grassland: Idle/Old Field/Planted (GOF)	~~11.5~~	~~7.3~~	75	932	~~0.2~~
Grassland: Row Crop (GRC)	~~9.5~~	~~60~~	~~70~~	23,465	<0.1
Shrubland (SHB)	~~3.3~~	~~31~~	113	(Note a)	Note a
Thicket (TKT)	~~0~~	~~6.3~~	23	Note b	--
Forest: Coastal Shoreline	~~0~~	0	[illegible]	Note c	--
Forest: Lowland Hardwood (FLW)	0	~~24.9~~	[illegible]	3331	0
Forest: Woodlot (FWL)	~~0~~	~~6.3~~	[illegible]	3318	~~0~~
Lakes, Ponds, Rivers	~~0~~	~~0~~	44	Note d	--
Lake Erie (main body)	Note e	Note e	~~186~~	Note e	
	~~116.2~~[2] ~~26.~~				
	~~6~~	~~162.4~~			
Total Impacts (Permanent + Temporary) = ~~189~~acres					

1. Figures taken from Subsection 2.2.1.2.3

Notes:

a. Table 2.2-7 indicates 95 acres of Shrubland in the vicinity, while 113 acres were mapped just on the Fermi site. Based on visual observations in 2007 that many acres of this disturbed or early succession habitat are present in the vicinity but it is uncertain how the study used to produce Table 2.2-7 Table 2.2-7 categorized the community recognized herein as Shrubland. Therefore, no percent of the regional community impacted is provided.

b. Included in Shrubland based on land use breakdown in Subsection 2.2.1.2.3.

c. Included in Forest: Lowland Hardwood based on land use breakdown in Subsection 2.2.1.2.3.

d. Included in Coastal Emergent Wetland (Open Water) based on land use breakdown in Subsection 2.2.1.2.3.

e. Impacts to aquatic ecosystem are addressed in Subsection 4.3.2, therefore not included here.

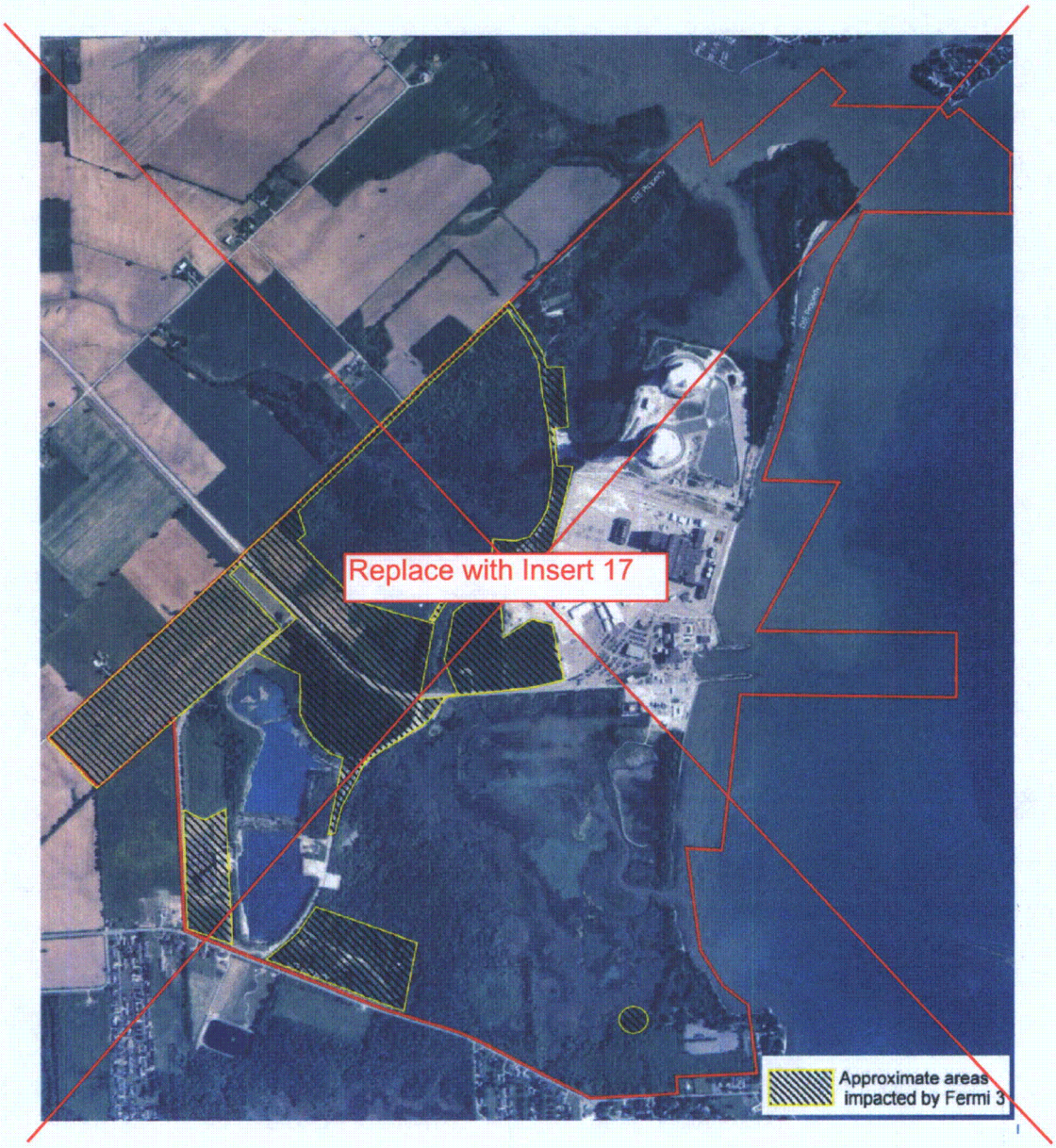
Table 4.3-3 Acreage of Detroit River International Wildlife Refuge, Lagoona Beach Unit, Impacted by Fermi 3

Refuge Unit	Area Size (acres)	Area Impacted (acres) Permanent	Area Impacted (acres) Temporary
NE	161.7	0	0
NW	161.1	~~1~~	~~32.9~~
SE	311.2	~~1~~	~~4~~
SW	22.4	0	~~22.4~~
Totals	656.4	~~2~~	~~59.3~~

15.9 → 0; 2.6 → ~~1~~; 18.5 → ~~2~~

22.7 → ~~32.9~~; 3.5 → ~~4~~; 0 → ~~22.4~~; 26.2 → ~~59.3~~

Figure 4.3-1 Fermi 3 Impacts to Undeveloped Areas (yellow lines) on Fermi Site (red line)



Insert 17 Figure 4.3-1

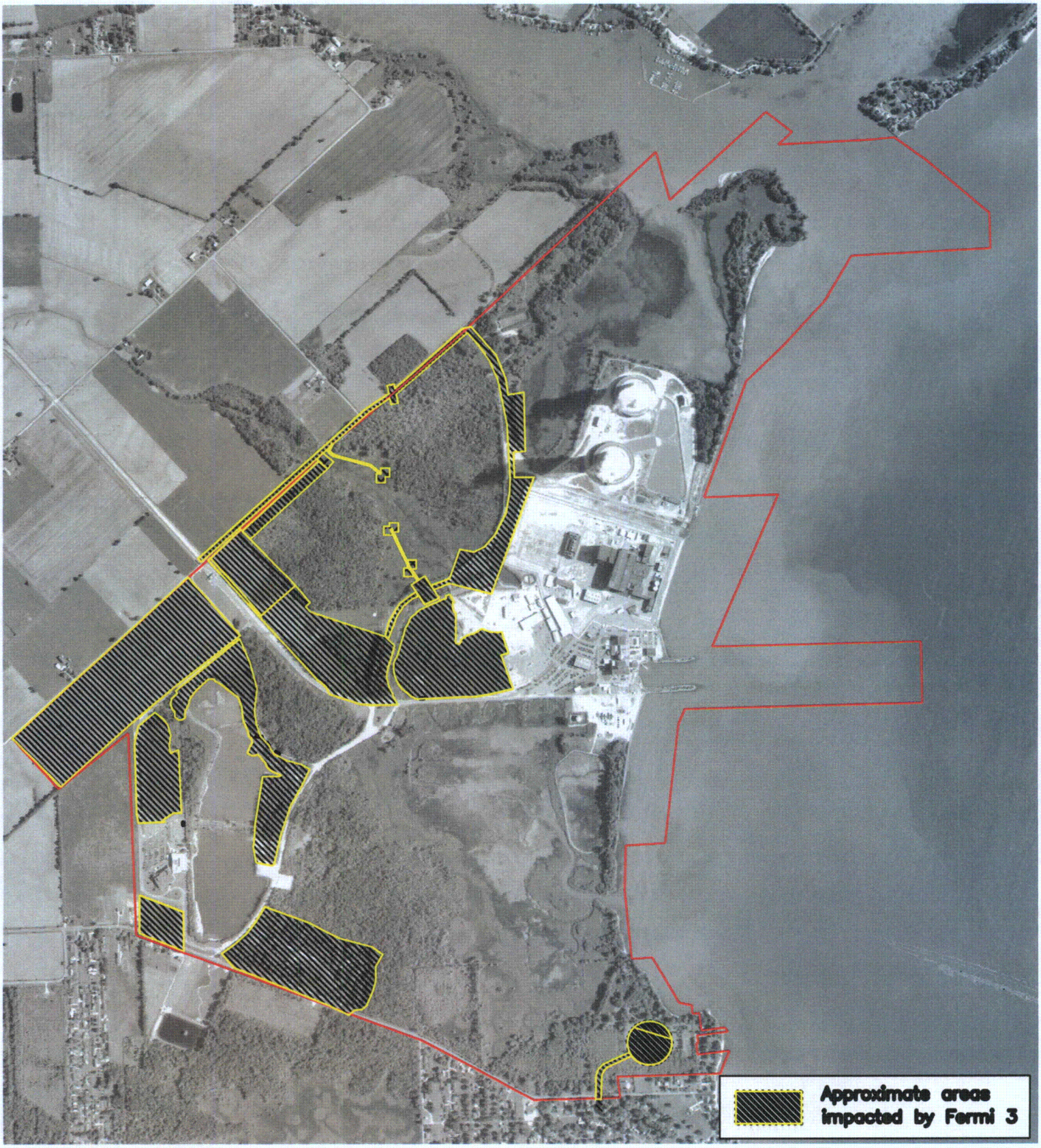
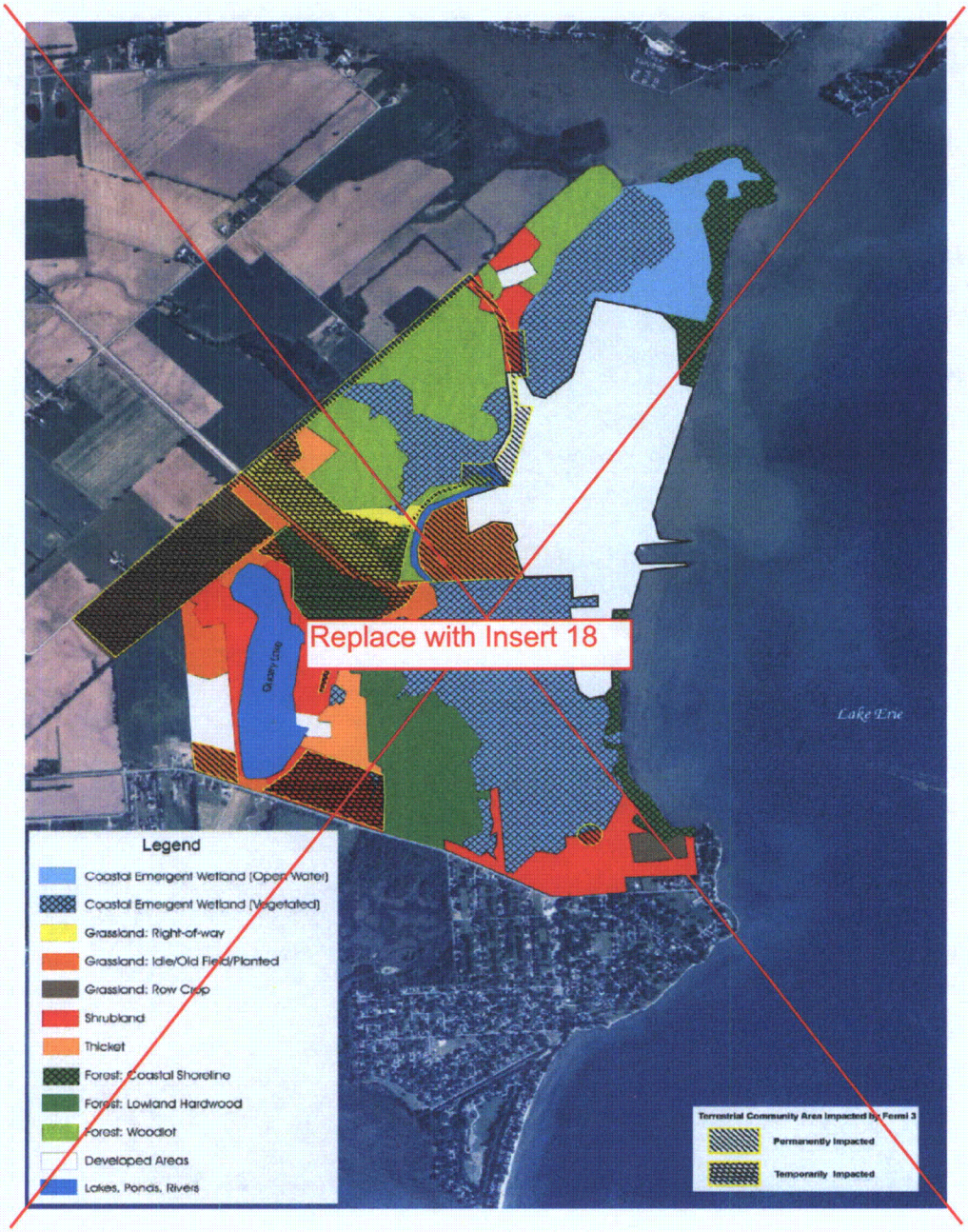


Figure 4.3-2 Permanent and Temporary Impacts to Undeveloped Areas from Fermi 3 Construction Overlaid on Existing Terrestrial Communities



Insert 18 Figure 4.3-2

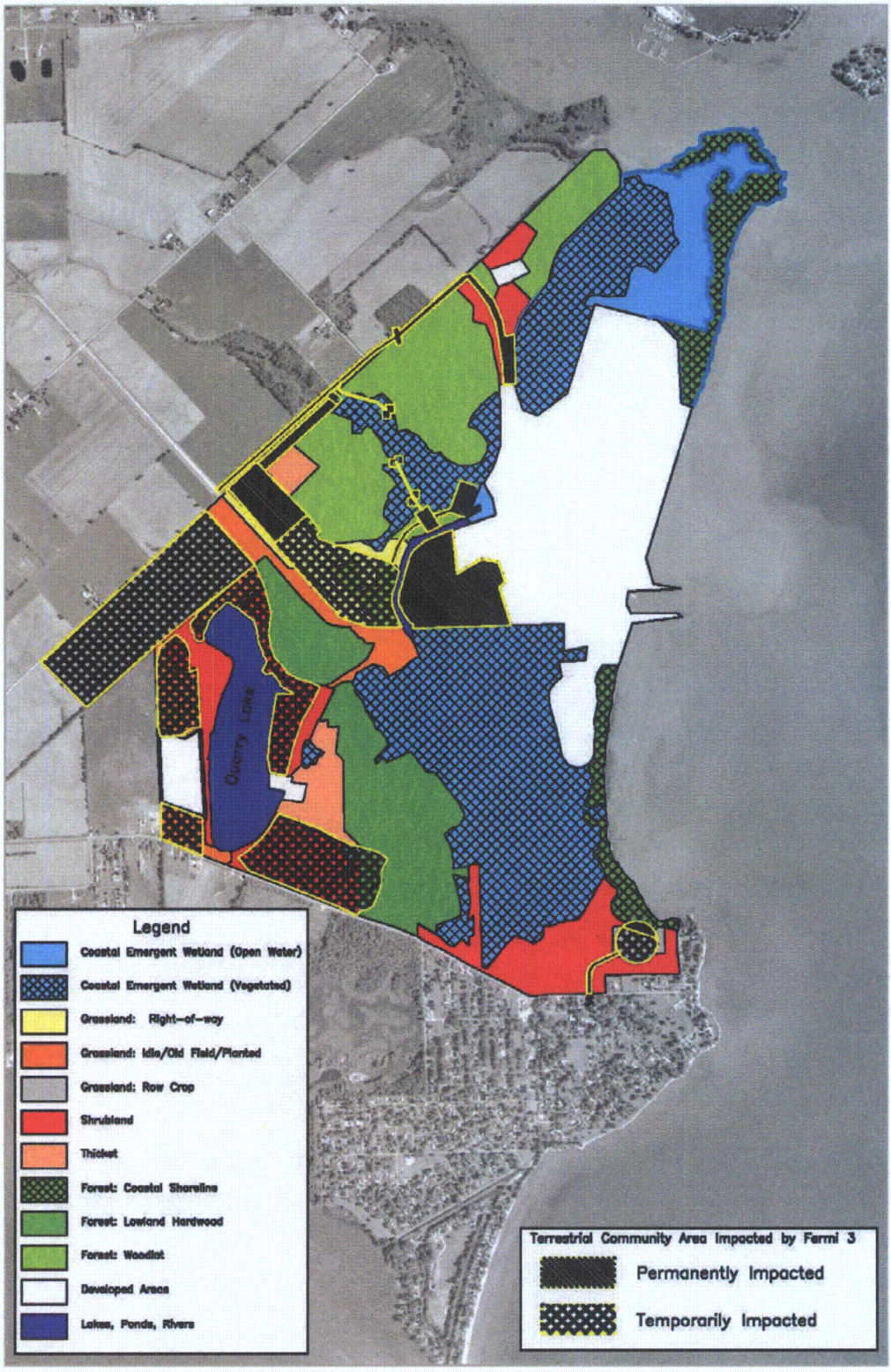
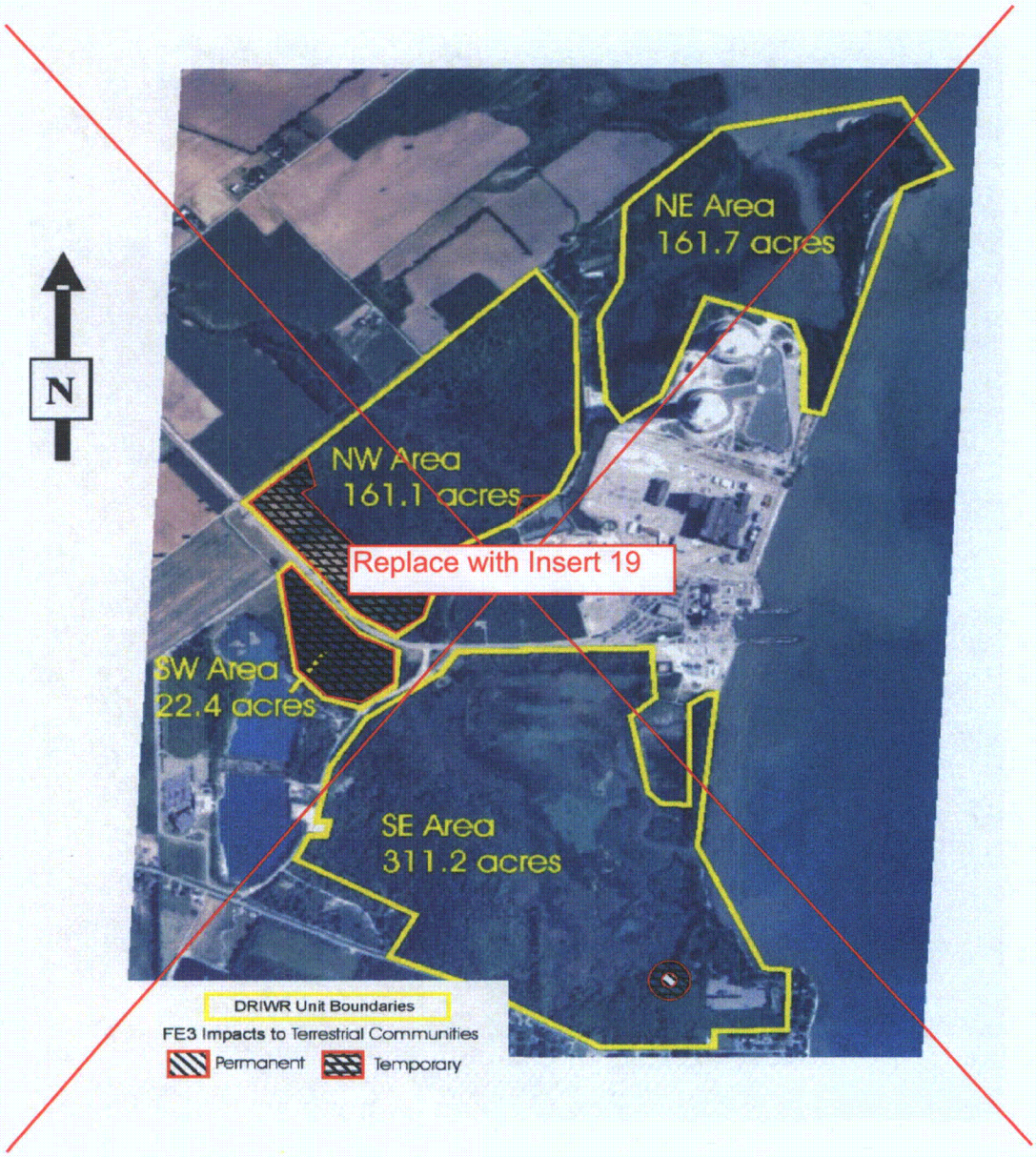
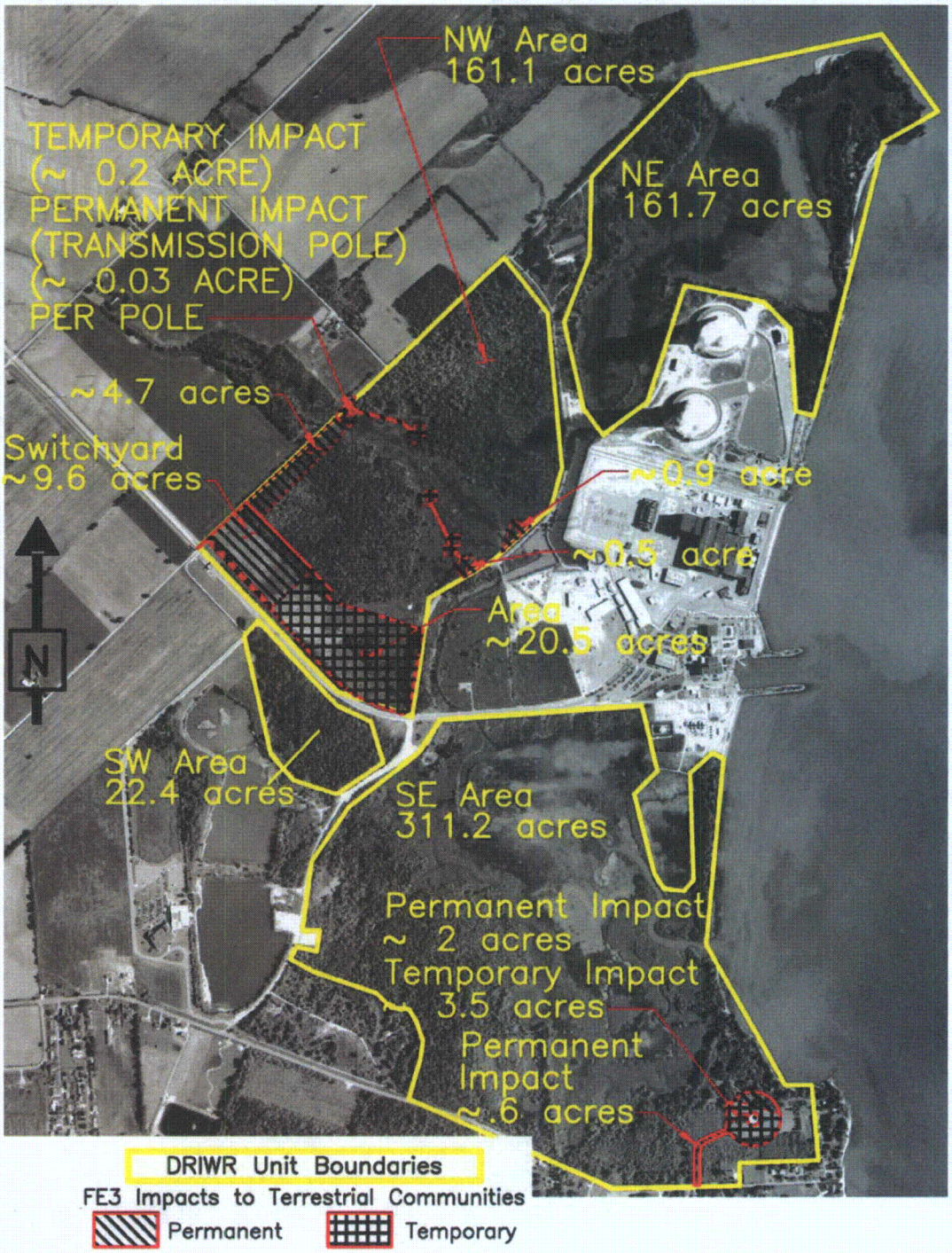


Figure 4.3-3 Permanent and Temporary Impacts to DRIWR, Lagoona Beach Unit from Fermi 3 Construction Overlaid on Existing Terrestrial Communities



Insert 19 Figure 4.3-3

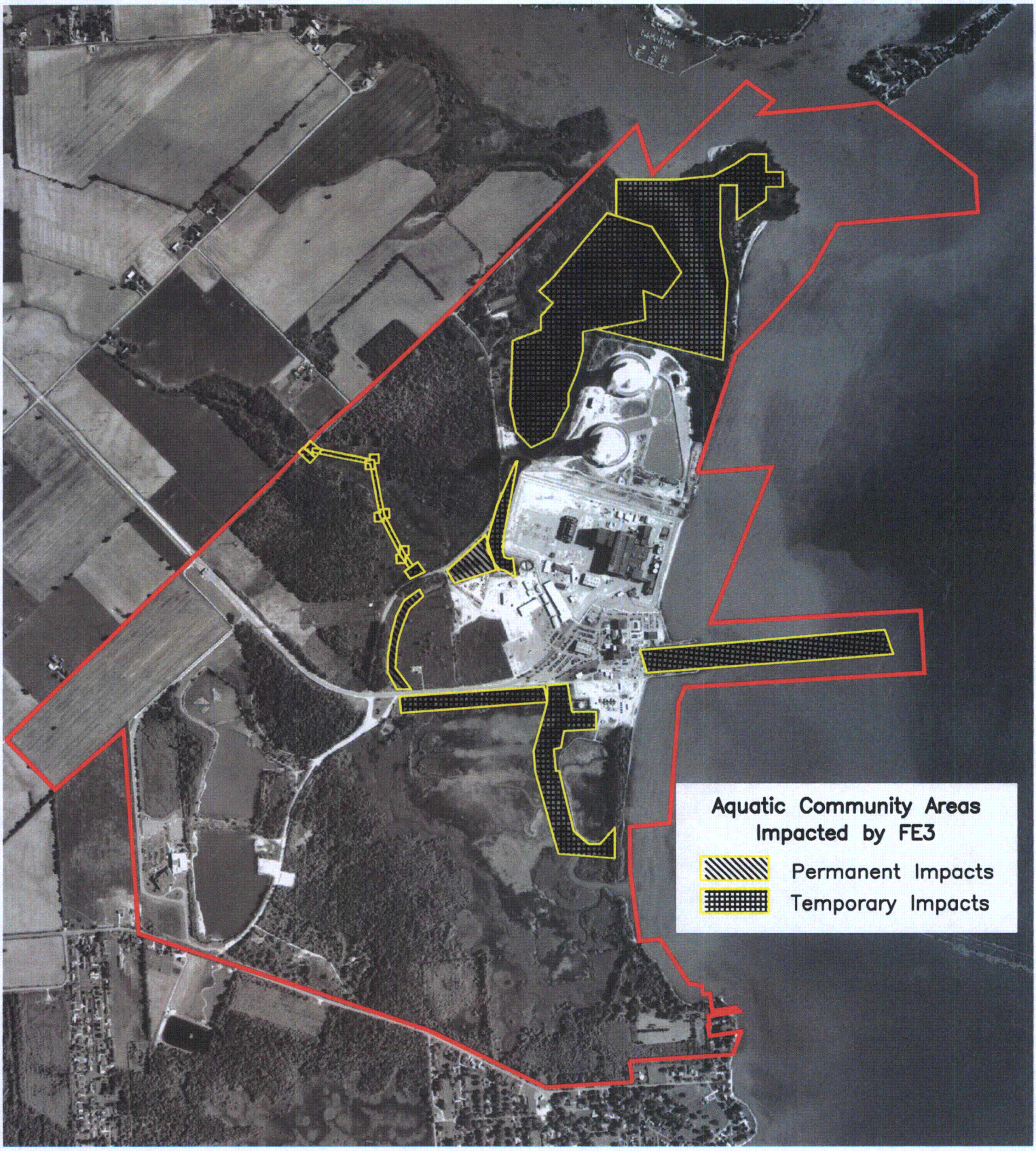


Insert 20

Figure 4.3-4 Permanent and Temporary Impacts to Undeveloped Areas of the Fermi Property (red line) Overlaid on Existing Aquatic Communities

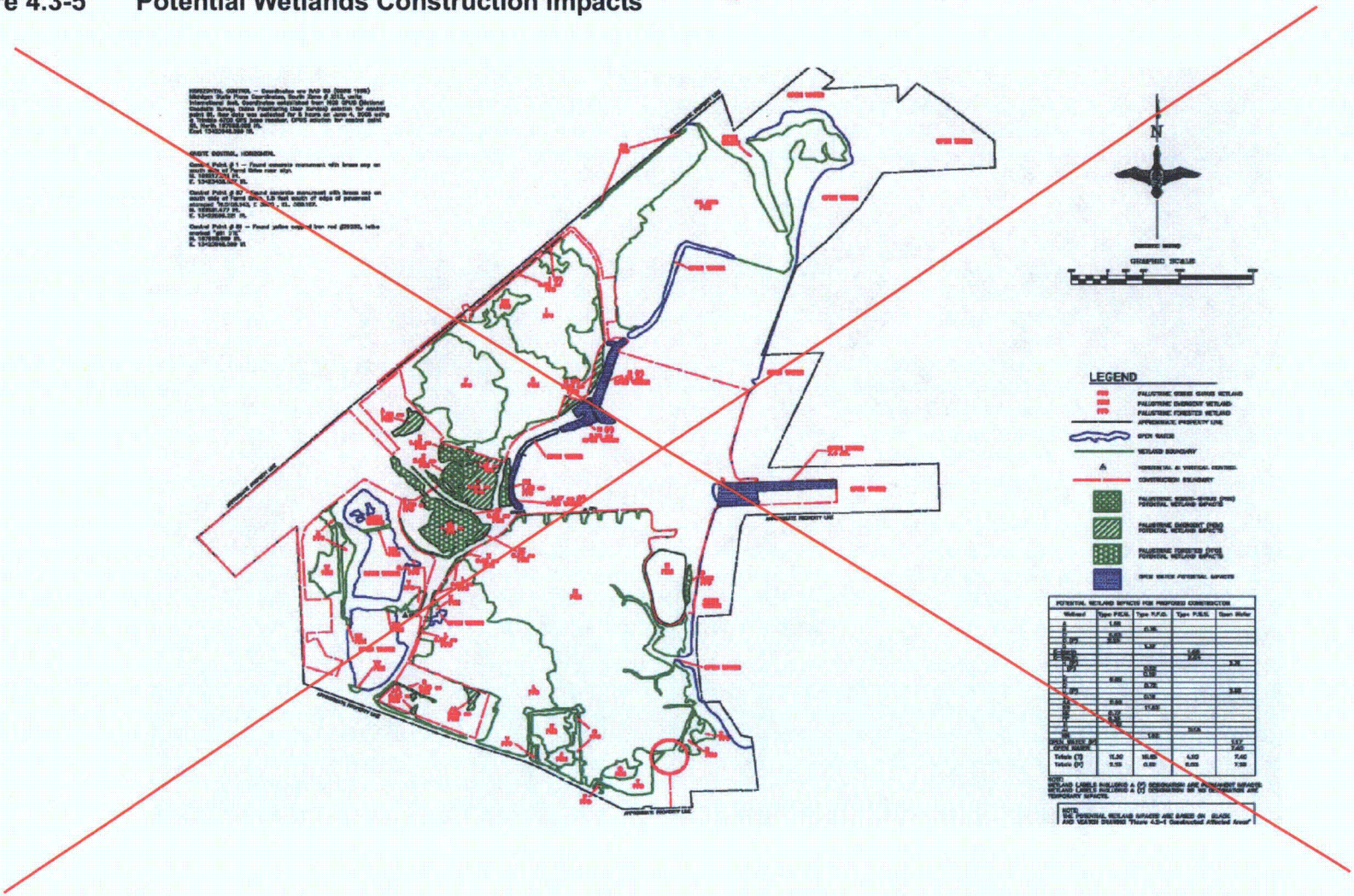
* Note that due to the nature of wetlands as a transition from aquatic to terrestrial communities, some impacted areas outlined on this figure overlap with those in Figure 4.3-2.

Insert 20


Aquatic Community Areas
Impacted by FE3
Permanent Impacts
Temporary Impacts

Insert 21

Figure 4.3-5 Potential Wetlands Construction Impacts

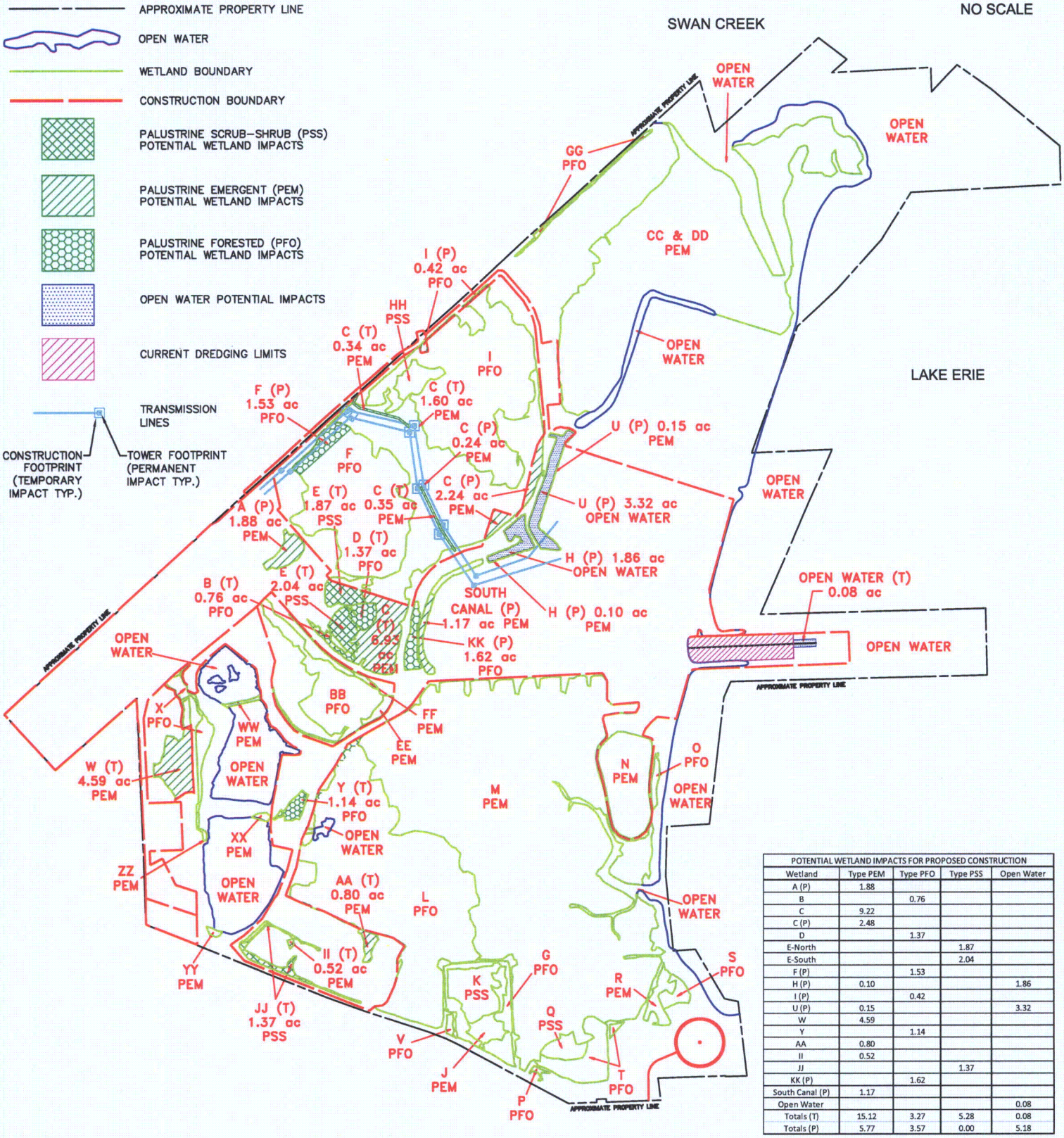


Insert 21

LEGEND

- PSS — PALUSTRINE SCRUB SHRUB WETLAND
- PEM — PALUSTRINE EMERGENT WETLAND
- PFO — PALUSTRINE FORESTED WETLAND
- APPROXIMATE PROPERTY LINE
- OPEN WATER
- WETLAND BOUNDARY
- CONSTRUCTION BOUNDARY
- PALUSTRINE SCRUB-SHRUB (PSS) POTENTIAL WETLAND IMPACTS
- PALUSTRINE EMERGENT (PEM) POTENTIAL WETLAND IMPACTS
- PALUSTRINE FORESTED (PFO) POTENTIAL WETLAND IMPACTS
- OPEN WATER POTENTIAL IMPACTS
- CURRENT DREDGING LIMITS
- TRANSMISSION LINES
- CONSTRUCTION FOOTPRINT (TEMPORARY IMPACT TYP.)
- TOWER FOOTPRINT (PERMANENT IMPACT TYP.)

NO SCALE



POTENTIAL WETLAND IMPACTS FOR PROPOSED CONSTRUCTION				
Wetland	Type PEM	Type PFO	Type PSS	Open Water
A (P)	1.88			
B		0.76		
C	9.22			
C (P)	2.48			
D		1.37		
E-North			1.87	
E-South			2.04	
F (P)		1.53		
H (P)	0.10			1.86
I (P)		0.42		
U (P)	0.15			3.32
W	4.59			
Y		1.14		
AA	0.80			
II	0.52			
JJ			1.37	
KK (P)		1.62		
South Canal (P)	1.17			
Open Water				0.08
Totals (T)	15.12	3.27	5.28	0.08
Totals (P)	5.77	3.57	0.00	5.18

Table 4.6-1 Summary of Measures and Controls to Limit Adverse Impacts During Construction (Sheet 2 of 9)

Environmental Resource Categories	Impact Category and Level of Impact														Impact Description or Action	Specific Measures and Controls
	Noise	Erosion/Sediment	Air Quality/Dust	Traffic	Effluents and wastes	Surface water Impacts	Groundwater Impacts	Land Use protection/restoration	Water-use protection/restoration	Terrestrial Ecosystem Impacts	Aquatic Ecosystem Impacts	Socioeconomic Impacts	Radiation Exposure to	Other Site-Specific Impacts		
4.1.2 Transmission Corridors and Offsite Areas.		S						S							1) Potential adverse impact due to soil compaction and erosion. 2) Potential impacts to agricultural land and vegetation. About 1069 acres of land could potentially be affected along the entire 29.4-mile route; about 393 acres along the new 10.8-mile portion of the corridor would be most affected because ROW expansion to an assumed 300-foot width and construction of transmission towers and steel poles along this portion would be required.	The 345 kV transmission system and associated corridors are exclusively owned and operated by the ITC*Transmission*. The applicant has no control over the construction or operation of the transmission system. The construction impacts are based on publicly available information and reasonable expectations on the configurations and practices that ITC*Transmission* is likely to use based on standard industry practice. Such efforts would likely include transmission design considerations and Best Management Practices that would minimize the effects on land use

offsite