The Detroit Edison Company One Energy Plaza, Detroit, MI 48226-1279



August 25, 2011 2011-MEP-F3COLA-0063

Ms. Kate Lederle Michigan Department of Environmental Quality Water Resources Division - Permit Consolidation Unit Constitution Hall 525 West Allegan Street P.O. Box 30473 Lansing, MI 48909-7973

References: 1) Letter from Randall D. Westmoreland (Detroit Edison) to Michigan Department of Environmental Quality, "Joint Permit Application for Detroit Edison, Fermi 3 Nuclear Power Plant," 2011-MEP-F3COLA-0041, dated June 17, 2011

- Letter from Kate Lederle (MDEQ) to DTE Energy, "APPLICATION CORRECTION REQUEST - 30 day response required," File Number 10-58-0011-P, dated July 19, 2011
- Letter from Kate Lederle (MDEQ) to DTE Energy, "APPLICATION CORRECTION REQUEST- Clarification," File Number 10-58-0011-P, dated July 27, 2011
- 4) Letter from Peter W. Smith (Detroit Edison) to Kate Lederle (MDEQ), "Joint Permit Application for Detroit Edison, Fermi 3 Nuclear Power Plant (File Number 10-58-0011-P)," 2011-MEP-F3COLA-0060, dated August 12, 2011
- Subject: Joint Permit Application for Detroit Edison, Fermi 3 Nuclear Power Plant (File Number 10-58-0011-P)

Dear Ms. Lederle:

In Reference 1, Detroit Edison submitted a joint permit application (JPA) and supporting documentation to the Michigan Department of Environmental Quality (MDEQ) for the proposed construction of a new nuclear power plant and ancillary facilities (Fermi 3) on the site of the existing Enrico Fermi Atomic Power Plant (Fermi 2). Based upon a review of the JPA, the MDEQ determined that additional information was required to continue processing the application. The information requested by MDEQ was provided to Detroit Edison in References 2 and 3. The MDEQ requested that Detroit Edison submit this information by August 18, 2011. In Reference 4, Detroit Edison committed to providing the requested information by September 2, 2011.

2011-MEP-F3COLA-0063 Page 2

Attachments 1 through 8 of this letter provide the Detroit Edison responses to the information requested in Reference 2 and clarified in Reference 3. Attachment 9 of this letter contains a revision of the Fermi 3 JPA and it is intended to replace the application submitted in Reference 1 in its entirety.

If you have any questions, or need additional information, please contact me at (313) 235-3341.

Sincerely,

Peter W. Smith, Director Nuclear Development – Licensing and Engineering Detroit Edison Company

Attachments: 1) Response to MDEQ Item 1

- 2) Response to MDEQ Item 2
- 3) Response to MDEQ Item 3
- 4) Response to MDEQ Item 4
- 5) Response to MDEQ Item 5
- 6) Response to MDEQ Item 6
- 7) Response to MDEQ Item 7
- 8) Response to MDEQ Item 8
- 9) Fermi 3 Joint Permit Application (Revision 1, August 2011)
- cc: Ms. Katherine David, MDEQ Jackson Ms. Colette M. Luff, USACE

Attachment 1

## 2011-MEP-F3COLA-0063

#### <u>Item 1</u>

Attachments 2-1 and 2-2 contain similar and conflicting information. Combine the attachments to produce a single document regarding application section 2. This is the same case for attachment sections 3 and 4.

- a. Clarify total wetland impacts per section 2-1 summary. The summary and Table 2-1 both discuss total wetland impacts of greater than 30.7 acres. Review and revise the table to show total wetland impacts and ensure the summary in section 2-1 reflects the same information. These totals should also match those in Table 12-1.
- b. Wetlands H and U are regulated wetlands per the DEQ Wetland Identification Report 08-58-0003-WA dated November 7, 2008. Include open water H and U impacts in total wetland impacts Summary 2-1, Tables 2-1 and 12-1, and Attachment 12-7.
- c. Construction Methods: Indicate the type and layers of material being excavated sand, clay, mud, rock or sand over clay, etc. Indicate the location and handling of the remaining spoils resulting from the two pipe installations in Lake Erie e.g. sidecast and graded, mounded, disposed in upland, etc.
- d. Ensure the alternatives analysis is complete.
- e. Review text to refer to the correct tables and figures.
- f. The RAI Response should be a supplemental document as will be the wetland delineation and other documents.

### **Response**

<u>Item 1.a.</u>: Clarify total wetland impacts per section 2-1 summary. The summary and Table 2-1 both discuss total wetland impacts of greater than 30.7 acres. Review and revise the table to show total wetland impacts and ensure the summary in section 2-1 reflects the same information. These totals should also match those in Table 12-1.

Section 2 of the revised Fermi 3 Joint Permit Application (JPA) addresses all wetland impacts for the proposed Fermi 3 project. Table 2-1 has been revised to include an overall impact acreage total, the impacts from the open water areas H and U discussed in the response to Item 1.b. below, and the temporary impacts associated with the transmission corridor.

Attachment 12-1 of the revised Fermi 3 JPA identifies the acreages of wetland areas in which cut or fill will occur. The title in Attachment 12-1 has been revised to clarify that it addresses only cut and fill impacts and not all wetland impacts.

Please note that some wetland impact areas, such as the transmission corridor, do not involve cut and fill activities and do not appear in Attachment 12-1. The acreages presented in Table 2-1 and Attachment 12-1 will be different for that reason. The proposed Fermi 3 project includes a total of 2.71 acres of impacts in Wetland F. Of that total, 2.53 acres are associated with the transmission corridor described in Attachment 12-9 where the height of the vegetation in the corridor will be controlled to prevent interference with the overhead transmission lines. This

acreage is not included in Attachment 12-1 because there is no associated cut and fill activity. The remaining 0.18 acre of the 2.71 acres of wetland impacts in Wetland F is associated with the new access road described in Attachment 12-8 and that acreage is included in Attachment 12-1.

The impact acreages described in Table 2-1 also includes 2.29 acres in Wetland C associated with the construction of the transmission towers (8 towers at 0.20 acres each = 1.60 acres plus 0.69 acres for access from Doxy Road and Toll Road). These construction activities are of limited duration and the wetland area will be restored following the construction of the towers. Therefore compensation is not proposed for the 2.29 acres associated with these temporary impacts.

The permanent impact associated with the transmission towers (8 towers at 0.03 acre each = 0.24 acre) and conversion of forested wetland area within the transmission corridor (2.53 acres in Wetland F described above) are included in the impacts for which compensation is proposed.

### <u>Item 1.b.:</u> Wetlands H and U are regulated wetlands per the DEQ Wetland Identification Report 08-58-0003-WA dated November 7, 2008. Include open water Hand U impacts in total wetland impacts Summary 2-1, Tables 2-1 and 12-1, and Attachment 12-7.

The open water areas H and U are treated as other emergent wetlands for purposes of the overall wetland impacts (as shown in Figure 2-3 and Table 2-1), wetland cut and fill impacts (as shown in Attachments 12-1 and 12-7), and in the Fermi 3 Conceptual Aquatic Resource Mitigation Strategy (August 2011) included in the Supplemental Information section of the application.

#### <u>Item 1.c.</u>: Construction Methods: Indicate the type and layers of material being excavated sand, clay, mud, rock or sand over clay, etc. Indicate the location and handling of the remaining spoils resulting from the two pipe installations in Lake Erie, e.g., sidecast and graded, mounded, disposed in upland, etc.

Data from borings in the lake bed and previous Detroit Edison dredging work in the groins area were reviewed to characterize the materials that will be encountered during the construction of Fermi 3. The construction methods discussion in the "Lake Erie Construction Area" portion of Section 2 has been revised to indicate that a combination of silt and clay will be sidecast during excavation for the Fish Return and Discharge Pipe installations.

As was discussed with the MDEQ, Section 2 references the existing dredging area figure contained in the USACE Supplemental RAI Response (included in the Supplemental Information of the application). This reference has been deleted. Authorization for that dredging activity is provided in existing permits.

### Item 1.d.: Ensure the alternatives analysis is complete.

Section 4 has been revised to include applicable portions of the USACE Supplemental RAI Response (January 2011) to make the alternatives analysis discussion stand alone. Tables summarizing the candidate site practicability review and wetlands/waters of the US impacts for the alternative sites are included in Section 4. This section has also been updated to be

consistent with the other information contained in the revised Fermi 3 JPA (e.g., reclassification of Wetland Areas H and U).

Item 1.e.: Review text to refer to the correct tables and figures.

Table and figure references within the text of the revised Fermi 3 JPA have been reviewed and confirmed to be correct.

<u>Item 1.f.:</u> The RAI Response should be a supplemental document as will be the wetland delineation and other documents.

The USACE Supplemental RAI Response (January 2011) has been provided in the Supplemental Information section of the revised Fermi 3 JPA.

Attachment 2

## 2011-MEP-F3COLA-0063

## <u>Item 2</u>

Attachment 6-1: Correct the agency providing the permit on pages 4, 5, 6 from ESSD and Water Bureau to MDEQ- Water Resources Division.

#### <u>Response</u>

The table of authorizations required for the proposed Fermi 3 project in Attachment 6-1 has been revised as requested.

Attachment 3

## 2011-MEP-F3COLA-0063

#### Item 3

Organize the document in the following order - application, narrative, tables, location map, plans and cross-sections. There appear to be multiple sheets of the same plan. Photos and other reports should be supplemental documents.

- a. Organization Please see the three sample documents emailed on Friday, July 22, 2011 to Randy Westmoreland, Lisa Matis and Tammy Rabideau.
- b. Provide a single-sided application document for copying purposes. Identify the supplemental documents.
- c. Provide four copies of electronic versions of the supplemental documents.

#### Response

The revised Fermi 3 JPA has been reorganized as requested by the MDEQ in their July 22, 2011 e-mail. A summary of the organization of the revised applications is provided below:

#### **MDEQ** Form

• References to attachments, figures and sections of the application have been updated.

Section 1

• Contains Table 1-1.

#### Section 2

- Contains narrative and Table 2-1.
- Figures contained in original application relocated to Figures section of revised application.

#### Section 3

• Information consolidated into single section.

#### Section 4

• Contains narrative and Tables 4-1, 4-2 and 4-3.

#### Section 6

• Contains Table 6-1.

#### Section 8

• Contains Table 8-1 and Figure 8-1.

#### Section 10

- Attachments 10-1 through 10-4 relocated to the Tables section (in numerical order).
- Narrative information in the attachments has been updated.

Section 12

- Attachments 12-1 through 12-9 relocated to the Tables section (in numerical order).
- Narrative information in the attachments has been updated.

Section 14

- Attachments 14-1 and 14-2 relocated to the Tables section (in numerical order).
- Narrative information in the attachments has been updated.

Figures

- Fermi site location map: Attachment 5-1.
- Figures 2-1 through 2-4. New Figure 2-5 and Figures 2-5A through 2-5H added.
- Construction Area 1: Figures 12-2A through 12-2C.
- Construction Area 2: Figures 12-3A and 12-3B.
- Construction Area 3: Figures 12-4A through 12-4C.
- Construction Area 4: Figures 12-5A and 12-5B, Figures 10-3A and 10-3B.
- Construction Area 5: Figures 12-6A and 12-6 B, Figures 14-1A and 14-1B.
- Warehouse, PAP/VIB, Garage: Figures 10-1A through 10-1D, Figure 12-7A. New Figure 12-7B added.
- Access Road: Figures 10-4A and 10-4B, Figures 12-8A through 12-8C (figures reformatted), Figures 14-2A through 14-2G.
- Onsite Transmission: Figures 12-9A and 12-9B.
- Intake/Discharge Area: Figures 10-2A through 10-2F. New Figure 10-2G added.

Photographs

- Section 10 Photographs: 10a through 10c (in numerical order).
- Section 12 Photographs: 12a through 12y (in numerical order).
- Section 14 Photographs: 14a through 14d (in numerical order).

Supplemental Documents

- Detroit Edison Fermi Site, Monroe County Wetland Investigation Report (April 2011)
- MDEQ Wetland Identification Report (November 2008)
- MDEQ Wetland Identification Report (March 2009)
- USACE Jurisdictional Determination (November 2010)
- Fermi 3 Conceptual Aquatic Resource Mitigation Strategy (August 2011)
- Detroit Edison Letter to MDEQ, 2010-MEP-F3COLA-0071 (December 2010)
- USACE Supplemental RAI Response (January 2011)

One single-sided hard copy of the revised Fermi 3 JPA and the supplemental documents are provided.

Four hard copies of the oversize site plan drawings are provided.

Four disks containing electronic files (.pdf format) of the supplemental documents are provided.

Attachment 4

## 2011-MEP-F3COLA-0063

### <u>ltem 4</u>

Verify the MDEQ OHWM elevation of 572.4 IGLD 85.

We have reviewed the information provided on July 22 and 25, 2011. The 572.4 elevation may stand on the current figures if labeled "Approximate" as the method for determining the elevation did not include field observations.

For future reference, "Landward Limit of Part 325 Permitting Authority" is available by searching online at <u>www.mLgov/wrd</u>.

### <u>Response</u>

The MDEQ Ordinary High Water Mark (OHWM) will remain 572.4 feet IGLD 85. The MDEQ OHWM elevation is noted as "approximate" where it appears in the revised Fermi 3 JPA.

Attachment 5

## 2011-MEP-F3COLA-0063

#### Item 5

On the small site plans show legends, Environmental Area boundaries and ordinary high water mark.

- a. On Figures 2-1 and 2-4 show the Environmental Areas and the ordinary high water mark.
- b. Provide a legend to identify wetland impacts such as fill within a wetland, e.g. Figure 10-1A.
- c. MDEQ OHWM dredge and excavation volumes are not necessary on figures portraying wetland impacts. This information need appear only on figures illustrating Lake Erie impacts.
- d. On Figure 10-1A clarify the cluster of culverts in the northeast corner including the arch culvert(s); plans show one arch culvert, attachment 2-1 summary indicates two arch culverts are proposed. Show the proposed hydrological connection between the wetland area and the canal.
- e. Provide a cross-section of the Figure 10-1A arch culvert(s).
- f. Provide the cross-sections for Figure 12-7 A.
- g. Are the 580 cubic yards of fill proposed for the box culvert beneath the operations access road included in the wetland C fill volume on the attachment 12-8 table and site-wide table? If so, where will the remaining 784 cubic yards of fill be placed in wetland C?
- h. On Figure 10-2A sheet piling for the barge slip appears to be proposed beyond the shoreline in a location perpendicular to the location of the discharge pipe. Is this sheet piling existing or proposed? Clarify and provide the corresponding information and cross-section(s) for work below the ordinary high water mark.

#### Response

<u>Item 5.a.:</u> On Figures 2-1 and 2-4 show the Environmental Areas and the ordinary high water mark.

The Environmental Areas and OHWM have been included on Figures 2-1 and 2-4.

<u>Item 5.b.:</u> Provide a legend to identify wetland impacts such as fill within a wetland, e.g., Figure 10-1A.

A legend to identify wetland impacts has been included on the appropriate figures.

#### <u>Item 5.c.:</u> MDEQ OHWM dredge and excavation volumes are not necessary on figures portraying wetland impacts. This information need appear only on figures illustrating Lake Erie impacts.

To make room for the legend, the OHWM information for the MDEQ on the Section 12 plan views has been removed. The OWHM information for the MDEQ on the Section 12 cross section views has not been removed. The MDEQ OHWM dredge and excavation information has been removed from the Section 12 tables (Attachments 12-1 through 12-9).

<u>Item 5.d.</u>: On Figure 10-1A clarify the cluster of culverts in the northeast corner including the arch culvert(s); plans show one arch culvert, attachment 2-1 summary indicates two arch culverts are proposed. Show the proposed hydrological connection between the wetland area and the canal.

For the area depicted on Figure 10-1A, one arch culvert will be used and references to multiple arches have been removed. Culvert connections to wetlands have been more clearly noted on the appropriate figures.

Item 5.e.: Provide a cross-section of the Figure 10-1A arch culvert(s).

A cross-section figure for the arch culvert is included in Figure 12-7B of the revised Fermi 3 JPA.

#### Item 5.f.: Provide the cross-sections for Figure 12-7 A.

Figures 10-1C and 10-1D provide cross-sections of the Warehouse, PAP/VIB, and Parking Garage. The cross-sections are referenced on Figure 12-7A. No change to the Fermi 3 JPA was required.

<u>Item 5.g.</u>: Are the 580 cubic yards of fill proposed for the box culvert beneath the operations access road included in the wetland C fill volume on the attachment 12-8 table and site-wide table? If so, where will the remaining 784 cubic yards of fill be placed in wetland C?

The 580 cubic yards refers to fill associated with the proposed box culvert and 784 cubic yards refers to fill on the access road (as described in Attachment 12-8 and Figure 12-8A). This was discussed with MDEQ on July 29, 2011. No change to the Fermi 3 JPA was required.

<u>Item 5.h.</u>: On Figure 10-2A sheet piling for the barge slip appears to be proposed beyond the shoreline in a location perpendicular to the location of the discharge pipe. Is this sheet piling existing or proposed? Clarify and provide the corresponding information and cross-section(s) for work below the ordinary high water mark.

The barge slip is the proposed barge unloading area and is not a physical structure. Sheet piling is only proposed along the Lake Erie shoreline and along the face of the existing groin. As discussed with the MDEQ on July 29, 2011, no further cross sections are needed by the MDEQ. Figure 10-2A has been revised to more clearly show the location of the sheet piling.

Attachment 6

## 2011-MEP-F3COLA-0063

#### <u>Item 6</u>

On the large plans show the Environmental Area boundaries and ordinary high water mark of Lake Erie. Include the OHWM on the mitigation plan.

a. Provide a large scale black-and-white line drawing of the existing and proposed conditions; include property lines, Environmental Areas, ordinary high water mark and indicate construction area locations as shown on Figure 2-4.

#### Response

The large site plan included in Revision 0 of the Fermi 3 JPA has been modified to include the Environmental Areas and the OHWM. The revised figure has been designated as Figure 2-5 and has been included in the revised Fermi 3 JPA. The construction area locations noted on Figure 2-4 have been included on the overall site plan, the aerial photograph background has been removed, and the property boundary is shown on the figure.

The topography and OHWM information for the proposed Fermi 3 offsite mitigation area was provided in the wetland delineation report submitted to the MDEQ and USACE on July 28, 2011. The MDEQ OHWM of approximately 572.4 ft was used. The OHWM was identified in the wetland delineation for the Fermi 3 offsite mitigation area (MDEQ Wetland Identification File Number 11-58-0001-WA) and will be reflected in future revisions of this mitigation plan.

Attachment 7

## 2011-MEP-F3COLA-0063

### <u>ltem 7</u>

Provide a legible black and white 8 1/2 by 11 site plan of the project. Use match lines as needed.

a. Figures 2-1 and 2-4 will suffice if the Environmental Areas and ordinary high water mark are shown.

### <u>Response</u>

Figures 2-1 and 2-4 have been modified to include the Environmental Areas and OHWM for land adjacent to Lake Erie.

Attachment 8

## 2011-MEP-F3COLA-0063

## <u>ltem 8</u>

Provide 4 sets of large plans, black and white line drawings.

a. Provide 4 copies of the plans described in item 6 above.

## <u>Response</u>

Four hard copies of the oversize site plan drawing (Figure 2-5) are provided.

Attachment 9

## 2011-MEP-F3COLA-0063

Fermi 3 Joint Permit Application (Revision 1, August 2011)

.



	Previous USACE Permit or File Number	er	-		Land and Water Ma	anagement Division, N	IDEQ File Numbe	* AG			
NCY USE	USACE File Number		ite Receivec		Pre-application Nur	nber or Marina Opera	ting Permit Numb	er ENCY L			
AGEI	District Office		Da		Fee received \$						
Rea	d Instructions pages i - iii. All of	the following boxe	s below must be ch	ecked and informatio	n provided for the	application to be	processed:	I			
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	items in Sections 10 through 21 th	nat apply to the pro	pject are completed	Applicatio	on fee is attached						
$\boxtimes$	Dimensions, volumes and calcula	tions are provided		🛛 All reques	sted supplementar	y attachments (+)	are included				
$\boxtimes$	Reproducible location map, site p	lan(s), cross section	ons and photograph	s are provided, one s	et must be black a	and white on 8 ½ b	y 11 inch pape	¥.			
	List any additional attachments, ta	ables, etc.: <i>Refei</i>	r to Table of Co	ontents following	this JPA form						
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City/Vi	lage	County(ies)		Property Tax Identi	fication Number(s)						
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Written	Summary of All Proposed Activities.	See Attachm	ent 2-1					,			
Constru	ction Sequence and Methods. See	e Attachment à	2-1								
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Owner	Applicant			Agent/Contractor							
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	westmore	elandr@dteenel	rgy.com		lisa.m	atis@tetratec	h.com				
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US Army Corps of	Engineers (USACE)	Micl	higan Departm	ent of Environmental Quali	ty (MDEQ) DEC.
Daytime Phone Number with Area C	Code Cell Phone Number	City		State 2	Zip Code
<ul> <li>No ⊠ Yes Is there a MDEQ c</li> <li>If yes, attach a copy. See Att</li> </ul>	conservation easement or other e tachment 3-1	asement, deed restriction	n, lease, or other e	ncumbrance upon the property in th	e project area?
4 PROPOSED PROJECT PURPO	OSE, INTENDED USE, AND ALT	<b>FERNATIVES CONSIDE</b>	RED (Attach additi	onal sheets if necessary)	
Purpose/Intended Use: The purpo	ose must include any new develo	pment or expansion of a	n existed land use.	See Attachment 4-1	
Alternatives: Include a description technologies; alternative project layor See Attachment 4-1	of alternatives considered to avo but and design; and alternative lo	id or minimize resource i cations. For utility cross	impacts. Include fa sings, include both	actors such as, but not limited to, alt alternative routes and alternative co	ernative construction onstruction methods.
5 LOCATING YOUR PROJECT S	SITE		d fuere the meaner .		
Attach a black and white, legible c		the site location and road		najor intersection, and includes a h	
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Name of roads at closest main inters	section Dixie Highway	and rerm	ii Drive		
Directions from main intersection <i>Fi</i>	rom Dixie Highway turn	at Enrico Fermi El	nergy Center s	sign and follow Fermi Drive	to the Security
Style of house or other building on si electric generating plant	ite 🔲 ranch 🔲 2-story 🔲 ca	pe cod 🔲 bi-level 🔲 d	cottage/cabin 🔲 p	ole barn 📋 none 🔲 other (desc	ribe) <i>nuclear</i>
Color Color of	f adjacent property house and/or	buildings Ho	use number	Street name	
Fire lane number Lot num	nber Address is visible	on 🗌 house 🔲 g	arage 🗌 mailt	oox 📃 sign 📃 other (desc	ribe)
How can your site be identified if the	ere is no visible address?				,
Provide directions to the project site,	, with distances from the best and	d nearest visible landmar	k and waterbody.	See Attachment 5-1 in Fig	gures Section
Does the project cross the boundarie	es of two or more political jurisdic urisdictions:	tions? (City/Township, T	ownship/Township	, County/County, etc.)	
6 List all other federal, interstate,	state, or local agency authorization	ons required for the prop	osed activity, inclu	ding all approvals or denials receive	ed.
Agency Typ See Attachment 6–1	e approval Identification	number Date app	blied Date appro	ved / denied if denied, reaso	n for denlai
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If a permit is issued, date activity will	I commence (M/D/Y) no soon	er than 2012	1	Proposed completion date (M/D/Y) 2020	approximately
Has any construction activity comme Has a structure activity the portion (s) under Has a structure activity the portion (s) activity the comme Has a structure activity the portion (s) activity th	enced or been completed in a reg rway or completed on drawings o	ulated area? 🛛 No 🗋 pr	Yes	Were the regulated activities conductor of the regulated activities co	cted under a MDEQ
attach project specifications and give	e completion date(s) (M/D/Y)	lingtion involving the sur		f Yes, list the MDEQ permit numbe	r
Are you aware of any unresolved vio	plations of environmental law of in	ligation involving the pro		res (ir res, explain)	
8 ADJACENT/RIPARIAN AND IMPA	CTED OWNERS (Attach additiona	I sheets if necessary)			
Complete information for all adjace	ent and impacted property owner	s and the lake association	on or established la	ke board, including the contact per	son's name.
If you own the adjacent lot, provide     Preparty Owner's Name	e the requested information for the	ne first adjacent parcel th	at is not owned by	YOU.	Zin Onde
See Attachment 8-1	Malling	Address	······································	City State	
Name of Established Lake Board	I or Lake Association				
and the Contact Person's name, pho	one number, and mailing address				
9 APPLICANT'S CERTIFICATION	N REA	D CAREFULLY BEFOR	E SIGNING	antion contained in this continution.	
accurate; and, to the best of my know false information and that any permit undertake the activities proposed in t enter upon said property in order to i federal permits and that the granting	wledge, that it is in compliance wi t issued pursuant to this application this application. By signing this a inspect the proposed activity site of other permits by local, county.	ith the State Coastal Zor on may be revoked if info application, I agree to allo and the completed proje , state, or federal agenci	Mark with the more of the market of the more provided of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the power of the market of the market of the market of the market of the power of the market of the market of the market of the market of the power of the market of the market of the market of the market of the power of the market of the market of the market of the market of the power of the market of the power of the market of t	ogram. I understand that there are plication is untrue. I certify that I ha of the MDEQ, USACE, and/or their at I must obtain all other necessary e me from the requirements of obtai	penalties for submitting ve the authority to agents or contractors to local, county, state, or ning the permit
requested nerein before commencing	g the activity. I understand that the	ne payment of the applic	ation ree does not	guarantee the issuance of a permit.	
Agent/Contractor	rinteo Name	<b>c</b>	Signature	r	Date (M/D/Y)
Corporation/Public Agency –					1 1
Title	PETER W	SMITH	MUO	h	08/25/2011

US Army Corps of Engineers (USACE)	Michigan Department of Environmental Quality (MDEQ)
<ul> <li>PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AI</li> <li>Check boxes A through M that may be applicable to your project and provide all</li> <li>If your project may affect wetlands, also complete Section 12. If your project ma</li> <li>To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft)</li> <li>Some projects on the Great Lakes require an application for conveyance prior to</li> <li>Provide a cross-section and overall site plan showing existing lakes, streams, we structures, land change activities and soil erosion and sedimentation control meas</li> <li>Provide tables for multiple impact areas or multiple activities and provide fill and e <i>Tables and Figures sections</i>.</li> </ul>	I INLAND LAKE OR STREAM OR A GREAT LAKE he requested information. y impact regulated floodplains, also complete Section 13. times the average width (ft) times the average depth (ft) and divide by 27. Joint Permit Application completeness. lands, and other water features; existing structures; and the location of all proposed sures. Review Appendix B and EZ Guides for completing site-specific drawings. Accavation/dredge calculations. See Attachments 10-1 through 10-4 in
On a Great Lake use IGLD 85 X surveyed C converted from observed still wat water elevation (ft) date of observation (MD/Y) See Attachments	or elevation. On inland waters, <u>NGVD 29</u> NAVD 88 other Observed
related to water level elevations	
A. PROJECTS REQUIRING FILL (See All Sample Drawings)	
<ul> <li>Attach both overall site plan and cross-section views to scale showing maximum</li> <li>See Attachments 10-1 through 10-4 in Tables and Figures</li> </ul>	and average fill dimensions.
(Check all that apply) I floodplain fill wetland fill I ripra	p Seewall, bulkhead, or revetment D bridge or culvert
boat launch off-shore swim area beach sanding boa	well cnb dock other
Fill dimensions (ft)	Total fill volume (cu yd) Maximum water
Type of clean fill pea stone sand gravel wood chips	Will filter fabric be used under proposed fill?
other	No Yes (If Yes, type)
Source of clean fill on-site. + If on-site, show location on site plan.	ercial other. + If other, attach description of location.
Fill will extend feet into the water from the shoreline and upland feet	out of the water. Fill volume below OHWM (cu vd)
<ul> <li>B. PROJECTS REQUIRING DREDGING OR EXCAVATION (For dredging projects</li> <li>Attach both overall site plan and cross-section views to scale showing maximum</li> <li>Refer to www.michigan.gov/jointpermit for disposal requirements and authorization</li> <li>See Attachment 10-2 in Tables and Figures sections for in</li> </ul>	see Sample Drawing 7, for excavation see other applicable Sample Drawings) and average dredge or excavation dimensions and dredge disposal location. on. formation related to projects requiring dredging or excavation
(Check all that apply) I floodplain excavation wetland dredge	r draining Seawall, bulkhead, or revetment
navigation boat well boat launch	☑ other <i>Pipeline and intake structure installation</i>
I otal dredge/excavation Dimensions	Dredge/excavation volume below Method and equipment for dredging
Has proposed dredge material been tested for contaminants?	Dredged or excavated spoils will be placed  on-site off-site.  Provide detailed disposal area site plan and location map.  Provide letter of authorization from owner, if disposing of spoils off site
Has this same area been previously dredged?  No X Yes If Yes, date and pe	mit number: 10/20/08 88-001-040-8/04-58-9
If Yes, are you proposing to enlarge the previously dredged area? 🗌 No 🖂 Yes	
Is long-term maintenance dredging planned? 🛛 No 🗌 Yes If Yes, when and ho	v much?
C. PROJECTS REQUIRING RIPRAP (See Sample Drawings 2, 3, 8, 12, 14, 17, 2 See Attachments 10-2 through 10-4 in Tables and Figures sector	2, and 23. Others may apply) cons for information related to projects requiring riprap
Riprap waterward of the shoreline OR ordinary high water mark Dimens	ions (ft) length width depth Volume(cu yd)
Riprap landward of the Shoreline OR condinary high water mark	ions (ft) length width depth Volume(cu yd)
	Will filter fabric be used under proposed riprap?  No Yes
Type of riprap ifield stone angular rock other	(If Yes, type)
Check all that apply)	plete Sections 10A, B, and/or C above, as applicable.
norao – lenoth (ft) Seawall/bulkhead – lenoth (ft)	revetment – length (ft)
E. DOCK - PIER - MOORING PILINGS - ROOFS (See Sample Drawing 10)	
Dock Type     open pile     filled     crib       Seasonal support structure?     No     Yes	Permanent Roof? No Yes Mounted on Maximum Dimensions: length width height
Proposed structure dimensions (ft) length width	Dimensions of nearest adjacent structures (ft) length width
F. BOAT WELL (See EZ Guides)	
Type of sidewall stabilization wood steel concrete vinyl rip	ap other
Boat well dimensions (ft)	Number of boats
Volume of backfill behind sidewall stabilization (cu yd)	Distances of boat well from adjacent property lines (ft)

<b>Ŀ</b> ≁ <b>H</b>	US Arm	y Corps	of Engineers	(USACE)
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Michigan Department of Environmental Quality (MDEQ)

10	Continued - PROJECTS IMP	PACTING	WETLANDS OR FL	OODPLAINS OR L	OCATE	D ON AN INLA	ND LAKE OR	STREAM (	OR A GREAT	LAKE	
닏	G. BOAT LAUNCH (See EZ G	àuide) (c	heck all that apply)		public private commercial replacement						
	Proposed overall boat launch of depth	dimension	s (ft) length	width	Type of material Concrete wood stone other						
	Existing overall boat launch di	mensions	(ft)		Boat launch dimensions (ft) below ordinary high water mark						
	length width		depth		length		width	dep	oth		
	Distances of launch				Numbe	er of adjacent	Skid pier	(b) 1	u?		
-	from both property lines (ft)	4			Skid p	iers	dimensions	(ft) leng	in wi	lath	
<u> </u>		ue)			<b>_</b>			1		_	
	(Check all that apply) Seas	sonal				if j	located on	seawall		bol	tomlands
ш	I. BUARDWALKS AND DECK		Dimensions (ft)	L FLOODPLAINS		ample Drawing	s 5 and 6. Pro	vide table i	Dimensions (	(ft)	
	Boardwalk on pilings		length wid	th		Deck 🗌 on i	oilinas 🗖 o	n fill	length	widi	h
Ø	J. INTAKE PIPES (See Sal	mple Draw	ving 16) OUTLE	T PIPES (See Samp	le Drawi	ing 22) <i>See A</i>	ttachment	10-2 in	Tables a	nd Fid	oures sections
for	r information related to	intake	structure and	outlet pipes		0,					
	Type 🗌 headwall 🛛	end section	on 🗌 pipe	• •	1	f outlet pipe, di	scharge is to	wetland	l 🗌 inlai	nd lake	
	other					🔜 stream, drai	n, or river	C Great L	ake 🔲 othe	er	
	Dimensions of headwall						Number	of pipes		Pipe	liameters and invert
	OR end section (ft) length		width	depth						eleva	tions
μ	K. MOORING AND NAVIG Provide an overall site plan	Showing th	JUYS (See EZ Guio ne distances hetwee	e for Sample Drawin	ig) res from	the shore to ea	ach huov and	depth of wa	iter at each h	uov in f	eet
	<ul> <li>Provide cross-section drawing</li> </ul>	ng(s) show	ving anchoring syste	m(s) and dimension	S.		ton buoy, and			uoyini	
							Purp	ose of buoy	n 🔲 mooring	g 🗌 1	navigation
	Number of buoys		Boat Lengths	Type of and	chor syst	em	swim	iming			
	Dimensions of buoys (ft)	ewin	a radius	chain length		Do y	ou own the protocol	operty along	g the shorelin	e? 📋	
h	L. FENCES IN WETLANDS	S. STREA	MS. OR FLOODPL	AINS (No Sample Dr	awing a	vailable)	Lach Authoniza		nom me prop	erty Uw	mer(s), ir no above.
	Provide an overall site plan	n showing	the proposed fencir	ng through wetlands,	streams	s, or floodplains	i.				
	Provide drawing of fence p	profile sho	wing the design, din	ension, post spacing	g, board	spacing, and d	istance from g	round to bo	ttom of fence	).	
	(check all that apply)			Total length (ft) of	fence th	rough		Fence	height (ft)	Fence	e type and material
_	wetlands streams	l floodplai	ins	wetlands	streams	S 11000	iplains	Handa ar fl			
μ	W. OTHER - e.g., structure re	moval of c	construction, preakw	ater, aerator, lish sh	ener, an	la structural lou	nuations in we	ands or no	oopiains		
11	EXPANSION OF AN EXIS	TING OR	CONSTRUCTION (	OF A NEW LAKE O	R POND	(See Sample I	Drawings 4 and	d 15)			
	Which best describes your pro	posed wat	erbody use (check a	all that apply)		<u>, ,</u>					
	🔲 wildlife 🔲 stormwater re	etention ba	asin 🗌 recreati	on	🗌 wa	istewater basin		other			
	Water source for lake/pond		<b>—</b>						4		
	groundwater in natural sp	orings H	Inland Lake of the	Stream Stormw	ater run		p 🛄 sew	age 🛄 o	iner		
	Location of the lake/basin/pond	u 👔	L noouplain				u			-	
	Maximum dimensions (ft)	donth		Spoils will be placed	d 🛄 oi	nsite 🛄 offsit	e outside of w	etland and f	loodplain	J othe	r 
┝──	Maximum Area:	depth		<ul> <li>Provide a Detail</li> <li>Provide a Letter</li> </ul>	of Autho	orization from o	fian with locati	on map, ao I site owner	aress and di	sposai	dimensions
Ì	acres soft			<ul> <li>Provide elevatio</li> </ul>	ns and o	cross sections f	or outlets and/	or emergen	icy. Complet	te Sect	ion 10J,
	Will project involve construction	n of a dam	dike outlet control	structure or spillwa	v2 🗖 N		les complete	Section 17			
12	ACTIVITIES THAT MAY I	MPACT W	ETLANDS (See Sa	ample Drawings 8 &	9, and c	omplete section	ns 10 A and 10	) B for dred	ge or excavat	tion as	applicable)
	• For information on the MDE	Q's Wetlar	nd Identification Prog	gram (WIP) visit <u>wwv</u>	v.michig	an.gov/deqwetl	ands or call 5 <sup>.</sup>	17-373-117	0.		,
	Complete the wetland dredg	e and wet	land fill dimension ir	formation below for	each im	pacted wetland	area. + Atta	ch tables fo	r multiple imp	act are	as or activities
	<ul> <li>Label the impacted wetland</li> <li>If dredge/execution metoric</li> </ul>	areas on a	a site plan, drawn to ianaad of on site	scale or with dimens	sions. 📕	Attach at lease and include ac	st one cross-se	ection for ea	ich wetland d	redge a	and/or fill area.
	(check all that apply) X fill (	Section 10	A) X dredge or e	xcavation (Section 1	OB)	boardwalk or	deck (Section	10I)	dewatering	fer	s. nces (Section 10L)
	bridges and culverts (Secti	ion 14)	draining s	surface water 🔲 st	tormwate	er discharge	restoratio	n 🛛 🖂 oth	ner <i>bog m</i>	at lay	down and
	vegetation clearing	,					_				
	wetland dredge/excavation					dredge/exca	vation area				dredge volume
	dimensions Refer to	maximu	m length (ft)	maximum width (ft)			_ sq ft	averag	e depth (ft)		(cu yd)
	Attachments 12-2	5ee A	TTACAMENT	See Attachme	IT for	20.44		5ee /	a <i>ttacnmen</i> im <b>T</b> ables	T	130,34/
	through 12-9 in	12-1	In I adies for	IC-I IN I able	S TOP			12-1	IN I ADIES	-46	
	Tables and Figures	maxim	um length by	maximum widt	n Dy			TOP a	verage de	ρτη	
	Sections for		y area ana	Attachmente	una 122			by ac	1++00	4 a	
	individual wetland	throw	oh 12-0 in	through 12_0	in in			12_2	through	12_	
	areage/excavation	Table	s and Figures	Tables and Fi	oures			9 in	Tables and		
	umensions.	sectio	n for	section for	,			Figur	es section		
<u> </u>						1					

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	maximu	m lengths	maximum widths by	maximum widths by		for a	verage	
	by indiv	vidual	individual wetland.			depth	hs by	
	wetland	1.				indivi	dual	
						wetlands.		
wetland fill dimensions	maximum	length (ft)	maximum width (ft)	fill area		averag	e depth (ft)	fill volume (cu yd)
Refer to	See At	tachment	See Attachment	Acres	<b>sq</b> π	See	Attachment	272,359
Attachments 12-2	12-1 in	Tables for	12-1 in Tables for	22 02		12-1	in Tables	
through 12-9 in	maximu	m length by	maximum width by	55.05		for a	verage depth	
Tables and Figures	activity	area and	activity area and			by ac	tivity area	
Sections for	Attachi	ments 12-2	Attachments 12-2			and A	Attachments	
individual wetland fill	through	12-9 in	through 12-9 in			12-2	through 12-	
dimensions.	Tables	and Figures	Tables and Figures			9 in '	Tables and	
	section	for	section for			Figur	es section	
	maximu	m length by	maximum widths by	ê		for a	verage	
	individu	al wetland.	individual wetland.			depth	hs by	
						indivi	dual wetland.	
Total wetland dredge/excavation	on area	Total wetland d	redge/excavation	Total wetlar	nd fill area		Total wetland	
🔀 acres 🔲 sq ft 26.44		volume (cu yd)	156,347	🔀 acres [	] sq ft <i>33.03</i>		fill volume (cu y	d) <i>272,359</i>
The proposed project will be see	erviced by: how system	on plans	If septic system, has a to the County Health	an applicatior Department?	for a permit been	made	If Yes, has a permi	t been issued? Provide a copy.
Has a professional wetland del	ineation bee	en conducted for t	his parcel? 🗌 No 🖾 Yes					
Provide a copy of the deline	ation. Duc	ks Unlimited	Wetland Investigation	n Report	July 2008;	Applicar	nt purchased proper	ty
updated April 2011	Supply	/ data sheets.				🛛 🖾 befo	re OR 🔲 after C	october 1, 1980.
Is there a recorded MDEQ eas	ement on th	e property? 🛛	No 🔲 Yes 🛛 If Yes, prov	ide the easer	nent number)			
Has the MDEQ conducted a we	etland asses	ssment for this pa	rcel? 🔲 No 🔀 Yes 🏓 li	Yes, provide	a copy of assessi	ment or W	IP number: MDEC	Q Wetland
Assessment Wetland I	dentifica	tion File Num	<i>ber: 08-58-0003-</i> W	A dated	November 7,	2008 al	nd March 30, I	2009. USACE
Jurisdiction Determina	tion Lett	er dated Nov	rember 9, 2010.					
Describe the wetland impacts,	the propose	d use or develop	ment, and any alternatives o	onsidered: 🗸	All wetland im	pacts pr	roposed uses, a	developments
are provided in Attach	ments 12	?-2 through 3	2-9 in Tables and F	igures sec	tions. Consid	lered al	ternatives are	outlined in
Attachment 4-1.		-		-				
Does the project impact more t	han 1/3 acro	e of wetland? 🔲	No 🖾 Yes					
If Yes, submit a Mitigation P	lan that incl	udes the type and	d amount of mitigation propo	osed. <i>Ferm</i>	i 3 Conceptua	l Aquati	ic Mitigation S	trategy
For more information go to www	w.michigan	.gov/deqwetlands						
Describe how impacts to water	s of the Unit	ted States will be	avoided and minimized: De	etroit Edis	son applied as	much r	epositioning of	project
components as possible	within p	roject practio	cability limits to avoi	id and min	i <mark>mize impacts</mark>	to wet	lands and othe	r natural
resources at the Ferm	i Site. A	process to a	void, minimize or col	npensate	impacts to the	e water:	s of the United	d States
including wetlands was	complete	d for the Fe	rmi 3 project. This	process il	ncluded the co	onsidera	tion of alterna	tive onsite
locations for major str	uctures d	and changes i	in site configuration :	to minimiz	e impacts to i	waters d	of the United	States. See
Attachment 4-1 of thi	Attachment 4-1 of this permit application for onsite layout alternatives considered and relevant impacts to aquatic							
resources associated with those alternatives for the Fermi 3 project.								
Describe how impact to waters	of the Unite	ed States will be c	ompensated. OR Explain v	why compens	atory mitigation sh	ould not b	e required for the p	roposed impacts.
Proposed impacts includ	te 35.55	acres of mix	<mark>ked wetland types w</mark> it	thin the c	oastal zone of	f Weste	ern Lake Erie a	nd the northern
portion of the Ottawa-Stony Watershed, USGS Cataloging Unit Hydrologic Unit Code (HUC:04100001). To compensate for								
wetland impacts, Detroit Edison proposes to restore approximately 19.5 acres of wetlands onsite post construction and								
restore 87 acres of we	etlands o	ffsite in the	coastal zone of Wes	tern Lake	Erie and the	norther	m portion of th	he Ottawa-
Stony Watershed. The attached Fermi 3 Conceptual Aquatic Resource Mitigation Strategy describes the proposed mitigation							osed mitigation	
development.								
Is any grading or mechanized I	and clearing	proposed?	lo 🖂 Yes					
Show locations on submittee	d site plan.	All grading a	nd mechanized land	Hac	any of the propose	ad aradina	or mechanized law	d clearing been
clearing will occur with	in limits	of constructi	on boundary as	com	pleted? 🕅 No Г	TYes ⊨	Show labeled local	tions on site plan
indicated within Attach	ments 1	2-2 through	12-9 in the Figures	00/11				
section.								

US Army Corps of Engineers	(USACE)		Mic	higan Depa	artment of E	nvironmer	ntal Qualit	y (MDEQ	) DEQ
<ul> <li>FLOODPLAIN ACTIVITIES (See Sample Dr.</li> <li>Complete Sections 10 A and 10 B and othe</li> <li>A hydraulic analysis or hydrologic analysis i</li> <li>Attach additional sheets or tables with the red</li> </ul>	awing 5. Others r Sections, as ap may be required uested information	may apply.) plicable. to fully assess	For more info s floodplain in	rmation go to y npacts. 🔶 Att	www.michigan.g ach hydraulic ca	aculations.	plainmanage	ment	
				douvines are					
(check an mat appry) m excavation				und Data of al					
Site is teet above ordinary high wate	er mark (OHVVM)	OR ODSe	rved water lev	Compens	servation (IVI/L		1		
floodplain elevation (cu yd)				100-year	floodplain eleva	ation (cu yd)			
<ul> <li>BRIDGES AND CULVERTS (Including Foot</li> <li>Provide detailed site-specific drawings of exist Floodplain Cross-Section (Sample Drawing 14</li> <li>Provide the requested information that applies</li> <li>If you choose to have a Licensed Professional including the 100-year flood discharge, then you report supporting this certification may also be</li> <li>Attach additional sheets and table with the requested to the request section</li> </ul>	and Cart Bridges ing and proposed C), Stream Profil to your project. Engineer "certify ou must use the " required. Is Cer uested informatio	c) (See Sample) d Plan and Ele e (Sample Dr If there is not " that your pr 'Required Ce tification Lang on for multiple	le Drawings 5 evation View, awing 14D) a an existing s oject will not o rtification Lan- guage attache crossings. Ir	, 14A, 14B, 14 (Sample Dra nd Floodplain tructure, leave cause a "harm guage." You r ad? ⊠ No nclude hydraul	IC, 14D, and E2 wing 14A), Elev Fill (Sample Dra the "Existing" of ful interference may request a c Yes ic calculations.	2 Guides) ation View (S awing 5) at a column blank. <sup>1</sup> for a range o opy by phone See Attac	ample Drawi scale adequa of flood disch e, email, or m chments 1	ng 14B), St ate for detai arges up to ail. A hydra <b>4-1 and</b>	ream and led review. and uulic 14-2 in
		Existing	Proposed					Existing	Proposed
Culvert type (box, circular, arch) and material				Bridge span (	length perpendi	cular to strea	im)		
(corrugated metal, timber, concrete, etc.)				OR culvert	width dia	meter (ft)			<u></u>
concrete I-beam, etc.)				OR culvert lei	ngth (ft)				
Entrance design				Bridge rise (fr	rom bottom of b	eam to strear	nbed) OR		
Total structure waterway opening				Approach slo	pe fill from exist	ing grade to			
above streambed (sq ft)				culvert or brid	lge		,l	1	
elevation of culvert crown	Upstream			Higher elevat	ion of 🛄 culve	rt invert OR	Upstream	_	
bottom of bridge beam (ft)	Downstream			streambe	d within culvert	(ft)	Downstrear	n	
Elevation of road grade at structure (ft)				Distance from	h low point of ro	ad a (ft)			
Elevation of low point in road (ft)					in phage choose	9(17		1	L
Cross-sectional area of primary channel (sq ft)			Average stre	am width at O	HWM		Upstrea	ım	
(See Sample Drawing 14C)	5		outside the in	fluence of the	structure (ft)		Downst	ream	
Reference datum used (show on plans with desc	ription) 🔲 NGV	/D 29 🔲 N/	AVD 88 🔲 I	GLD 85 (Grea	it Lakes coastal	areas) 🔲	other		
High water elevation – describe reference point a	nd highest know	n water level	above or belo	w reference p	oint and date of	observation.			
<ul> <li>STREAM, RIVER, OR DRAIN CONSTRUC</li> <li>Complete Section 10A for fill, Section 10B for of</li> <li>If side casting or other proposed activities will i</li> <li>Provide an overall site plan showing existing lal change activities.</li> <li>Provide cross-section (elevation) drawings nec</li> <li>For activities on legally established county drain</li> </ul>	TION ACTIVITIE dredge or excava impact wetlands kes, streams, we essary to clearly ns, provide origin	S (No sample tion, and Sec or floodplains tlands, and of show existing al design and	e drawing avai tion10C for ri , complete Se ther water fea g and proposed proposed dii	lable) prap activities, ctions 12 and tures; existing d conditions. mensions and	13, respectivel structures; and Be sure to indic elevations.	y. I the location pate drawing a	of all proposi scales.	ed structure	s and land
(check all that apply)	improvem	ient 🔲 r	relocation	enclosure	new drain	u wetlan	ds 🔲 oth	er	
Dimensions (ft) of existing stream/drain channel t	o be worked on.	length	w	idth	depth				
Dimensions (ft) of new, relocated, or enclosed str	eam/drain chann	iel.			Volu	ime of dredge	e/		
length width de	epth I vear (ft)			Proposi	exca ) sericle shores (	avation (cu yo	IS) zontal)		
How will slopes and bottom be stabilized?								ú.	
Will old/enclosed stream channel be backfilled to	top of bank grad	e? 🗌 No 🕻	Yes	Length of to be abar	channel Idoned (ft)		Volum	e of fill (cu )	/ds)
If an enclosed structure is proposed, check type Dimensions of the structure: diameter	concrete length		ated metal blume of fill		plastic	other			
Will spoils be disposed of on site?	s 🔸 Show locai	tion of spoils	on site plan if	spoils dispose	ed of on an upla	ind area.)			

US Army	y Corps of Engineers	(USACE)	Michigan Department of Environme
Water elevation	Reference datum used	NGVD 29 🔲 NAVD 88	🔲 IGLD 85 (Great Lakes coastal areas) 🔲 other

Water elevation Referent Show elevation on plans with	nce datum used 🔲 description.	NGVD 29 🔲 NAVD 88	🔲 IGLD 85 (Grea	Lakes coastal areas)	other			
16 DRAWDOWN OF AN IMPO	UNDMENT	12		·····				
Type of drawdown		ne-time event 🔽 annual ev	vent 🗍 permaner	nt (dam removal) 🦳 o	ther			
Reason for drawdown								
Has there been a previous draw	down? 🛄 No 🛄 Yes	(If Yes, provide date (M/D/	n / /	5	Previous MDEQ permit number, if known			
Does waterbody have establishe	d legal lake level?		A		Dam ID Number, if known			
Extent of vertical			oundment		Number of adjacent or			
drawdown (ft)	drawdown (ft) design head (ft) impacted property owners							
Date drawdown would start		Date	e drawdown		Rate of drawdown			
(M/D/Y) / /		wou	ld stop (M/D/Y)	1 1	( ft/day)			
Date refilling would start		Date	e refill		Rate of refill			
(M/D/Y) / /		wou	ld end (M/D/Y)	1 1	(ft/day)			
Type of outlet discharge structure	e to be used	Imp	oundment area at		Sediment depth behind im	poundment		
			nal water level (aci	res)	discharge structure (ft)			
DAM, EMBANKMENT, DIKI	E, SPILLWAY, OR CO	amsafety	VILLES (See Samp	ble Drawing 15)				
<ul> <li>If wetlands will be impacted, a</li> </ul>	Iso complete Section 1	12.						
Attach site-specific conceptual	plans for construction	of a new dam, reconstructio	n of a failed dam, o	or enlargement of an ex	isting dam for resource impac	t review.		
<ul> <li>Detailed engineering plans are</li> <li>Attach detailed engineering plans</li> </ul>	e required once the act ans for a dam repair, d	tivity has been determined to am alteration, dam abandon	be permitable from ment, or dam remo	n an environmental sta val.	ndpoint.			
Which one best describes your p	roject? 🗌 new da	m construction	nstruction of a faile	d dam 🔄 🗌 en	largement of an existing dam			
dam repair dam alterat	tion 🛄 dam abando	nment 📋 dam remov	/al	other				
Dam ID Number	iyp	e of outlet discharge structur	e Will propo	No Ves (If Ves all	drawdown of the waterbody to	complete the		
lif known Biarap					structure allow complete			
Volume (cu.vd)	Volu	ime (cu vd)	(cu vd)	draina	de of waterbody?	Yes		
Benchmark	Datum used		(cu yu)	Describe benchmark	and show on plans			
elevation (ft)		NGVD 29 other		Describe Denominary a	and show on plans			
Have you engaged the services	of a Licensed Professio	onal Engineer? 🗌 No 🔲 Y	es If Yes, provide	name, registration nurr	ber, and mailing address.			
Name		Registration Number	Mailing Address	-	-			
Mill a water diversion during con	struction be required?		riba how the stree	m flow will be controller	through the dam construction	orea during		
the proposed project activities:	struction be required?		mbe now the strea	In now will be controlled	r through the dam construction	rarea during		
the proposed project activities.								
		EW DAM BEOONOTBUOT						
COMPLETE THE F	ULLUWING FUR A N	EW DAM, RECONSTRUCT	trol seepage through	DAM, OK ENLARGEN	dem			
Describe the type of dam and no	w you will design the d		tion seepage through	yn and underneath the	uam.			
24								
Embankment ton	Streamhed ala	vation at downstream	Structural beight	difference between om	hankment ton elevation			
elevation (ft)	embankment tr	valion al uownstream	and streamhed el	evation at downstream	embankment toe) (ft)			
Empankment length (ft)	Embankment t	op width (ft) Embankmer	t bottom width (ft)	Embankment slopes				
Embananon longin (ity				(vertical / borizontal)	Downstream			
Proposed pormal	Imp	oundment flood elevation (ft)	Maximum	vertical drawdown cana	bility (ft) (Attach operational r	procedure of the		
pool elevation (ff)	in p		proposed	structure, if available)	wing (in tradit operational p			
Have soil borings been taken at o	dam location?	Will a cold wate	er underspill be pro	vided?	To you have flowage rights to a	all proposed		
No ☐ Yes ➡ If Yes, attach	results.		If Yes, invert ele	vation (ft)	ooded property at the design f	lood elevation?		
18 UTILITY CROSSINGS (See	Sample Drawings 12	and 13, and EZ Guide)						
<ul> <li>If side casting is required, corr</li> <li>Attach additional sheets or tab</li> </ul>	plete Sections 10A an les with the requested	d 10B. If spoils will be place information as needed for m	ed in wetlands or w ultiple crossings.	etlands may be impacte	ed, complete Section 12.			
What method will be used to con	struct the crossings?			Crossing of	land Lake or Stream	floodplain		
🔲 flume 🔲 plow 🔲 open	trench 🔲 jack and b	ore 🔲 directional drilling		international wat	ers 🔲 wetlands (also comple	ete Section 12)		
Туре	Number of wetland crossings	Number of inland lake or stream crossings	Pipe diameter (in)	Pipe length per crossing (ft)	Distance below streambed or wetland (in)	Trench width (ft)		
sanitary sewer								
storm sewer								
watermain								

US Army Corps of Engineers (USACE) Ĩ Τ

	able												
🗌 oi	il/gas pipeline												
19 M • For	ARINA CONSTRUCTIO	N AND OPERAT	ING PE	RMIT IN arinas	FORMAT	ION (See	Sample [	Drawing 2	1)	ete of Mich	icen to pl		huros es the
	trinas located on the Great tomlands If a conveyan	at lakes, including	g Lake : an annli	st. Ulair, cation m	may be re ust he sub	equired to	secure le	ases or c	conveyances from the st hit Application can be de	ate of wich	iigan to pia	ace struct	ures on the
⇒Enc ⇒Atta	close a copy on any curre ach a copy of the propert	y legal description	ement v or a pr	with ano operty b	ther marin oundary s	a facility. urvey repo	ort to you	r applicati	ion.		ompioto.		
Marin	a owner							Marina r	name				**************************************
Mailir	ng address							Location street address					
City	N		State	9	Zip Code			City		State	Zip Code	9	
Marin	a owner's daytime teleph	one number with	area co	de	-	-		Marina's	daytime telephone nun	ber with a	rea code	-	-
Check the reasons for submitting this application Owner's name change/transfer Construction of a new marina Issuance of a new Marina Operating Permit Expansion/modification of an existing marina					Current Marina Operating Permit Number Expiration Date (M/D/Y)				on Date				
				Ð	listing	Prop	osed	1		Exis	sting	F	Proposed
Numb	per of boat slips/wells (do	not include broad	lside)					Are sani available	tary pump-out facilities	No 🗌	Yes	🗆 No	Yes
Linea	I feet of broadside docka	ge						Number	of launch ramps/lanes				
Numb	per of mooring buoys							Maximu broadsid	m number of boats at le				
<ul> <li>All</li> <li>Sca</li> <li>Add</li> <li>Co</li> <li>1)</li> <li>2)</li> </ul>	property boundaries and aled overhead and cross- ditional information, inclu instruction in critical dune permit or letter from cour permit or letter from Cour letter from applicant stati	proposed structu section plans that ding the building of areas requires in ty enforcing agen nty Health Depart	re come t include construc- clusion t stating ment fo	ers, sept all prop tion play of the fo project work o	ic system, perty boun ns, may be ollowing wind complies n a septic	water we daries, an required ritten assu with Part system, a	II, and dri d the loca to comple rances: 91 (Soil I nd	veway loo ation and ete the ap Erosion a	cations must be staked dimensions of all struct oplication review. nd Sedimentation Contr of the local Soil Conserv	before the ures and te ol), ation Distri	MDEQ site errain alter	e inspecti ations mu	on. Ist be included.
Parce	al dimensions (ft)	ig any proposed		Prop	erty is a			Year	current property		Date proje	ct staked	I (M/D/Y)
width	depth			🗆 р	latted lot	🔲 unp	latted pa	rcel bour	daries created		1	1	()
Туре	of construction activities	🗌 home 🔲 ga	rage [	drive	way 🔲 :	septic	addition	🗌 ren	novation 🔲 other				
The p	roposed project will be so ublic sewer private so eptic system, show septio	erviced by If eptic system C system on If	septic County H No Yes, ha	system, lealth D Yes as a per	has applic epartment mit been is	ation been for a perr	n made to nit? ] No 🔲	o the Yes	If Yes, critical dune pro County Health Departr submitted with applica ➡ Attach Written Ass	pjects requi ment appro tion. urance(s).	ire Numt val units	per of indi in propos	vidual living- ed building
	ng construction is on	] pilings 🔲 bas pace	sement			Propose	d new cor rete slab	nstruction	will be on pilings	🗌 ba	sement		
Existi	ng construction material	above foundation	wall [	stud f	rame	Propose	d new co	nstruction	material above foundation	tion wall	stud fra	me	
	g 🗌 block 🔲 oth	er	-				🗌 bl	ock	other				
	ng siding material 🔲 wo	od [_] vinyl	blo	ck			d new sid	ing mate	rial 🛄 wood 📃 vi	nyl 🗌	block		
L Ulici L Ulici Area of the existing foundation, evoluting attached garage (cg ft)													
Area	of the existing garage for	indation (sq ft)	ou guio	<u>go (oq i</u>	9	Area of t	he propos	sed gara	de foundation (sq ft)	o galago (	5410		
If rend	ovating or restoring existi	ng	C	Current s	tructure re	placemer	nt value	Jou guia	Tax assessed value of	existing str	ucture	Assessm	ent Year
struct	ure, renovation or restora	tion cost	\$			•			excluding land value	•			
\$									\$			L	
21 A ● Ma ⇒ Atta	ACTIVITIES IN DESIGNA iny designated environme ach a detailed site plan for the off that apply and play	TED ENVIRONM ental areas are co or any alteration in accement of struct	ENTAL mpletel a desig	AREAS y or part inated e	(No Sam ially wetla nvironmer	ple Drawin nds. Be s ntal area.	ngs Avail ure to co	able) mplete Se	ection 12 if your propose	ed activities	s will also	occur in w	vetlands.
		teration of vegetal	tion	<u> </u>		ther	Sunci 3011	atoratio	· L	ancialion	or naturdi	Janaye	

# Acronym List

Preferred Site Plan	24" x 36" Colored Site Map Provided for review purposes
Preferred Site Plan	24" x 36" Black and White Site Map Provided for review purposes
Attachment 1-1	<ul> <li>Section 1: Project Location Information</li> <li>Table 1-1. Detroit Edison Owned Fermi Site Property</li> </ul>
Attachment 2-1	<ul> <li>Section 2: Proposed Project and Associated Activities, and the Construction Sequence and Methods</li> <li>Summary of Proposed Project and Associated Activities, and the Construction Sequence and Methods</li> <li>Table 2-1. Summary of Impacts</li> </ul>
Attachment 3-1	<ul> <li>Section 3: Applicant, Agent/Contractor, and Property Owner Information</li> <li>Summary of MDEQ conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property in the project area; Detroit River International Wildlife Refuge</li> <li>DRWIR Cooperative Agreement</li> <li>Map of areas to be included in the proposed Cooperative Agreement between USFWS and DTE Energy at the Fermi Energy Center; Attachment to DRIWR Cooperative Agreement</li> </ul>
Attachment 4-1	<ul> <li>Section 4: Proposed Project Purpose, Intended Use, and Alternatives Considered</li> <li>Summary of the proposed project purpose, intended use and alternatives considered</li> <li>Table 4-1. Candidate Site Practicability Review</li> <li>Table 4-2. Comparison of Wetland/Water Impacts from Alternative Sites</li> <li>Table 4-3. Comparison of Impacts for Alternative Site Layouts</li> </ul>
Attachment 6-1	<ul> <li>Section 6: All Other Agency Authorizations Required for the Proposed Activity</li> <li>Table 6-1. Federal, State and Local Environmental Authorizations</li> </ul>
Attachment 8-1	<ul> <li>Adjacent/Riparian and Impacted Owners</li> <li>Table 8-1. Fermi Site Adjacent Property Owners</li> <li>Figure 8-1. Property Parcel Map</li> </ul>

# Tables

Attachment 10-1 Warehouse, PAP/VIB and Parking Garage Attachment 10-2 Lake Erie Construction Area Attachment 10-3 Construction Area 5 Attachment 10-4 New Operations Access Road

Attachment 12-1 Site Wide Total of Wetland Impact Volumes

Attachment 12-2 Construction Area 1

Attachment 12-3 Construction Area 2

Attachment 12-4 Construction Area 3

Attachment 12-5 Construction Area 4

Attachment 12-6 Construction Area 5

Attachment 12-7 Warehouse, PAP/VIB, and Parking Garage

Attachment 12-8 New Operations Access Road

Attachment 12-9 Onsite Transmission

Attachment 14-1 Construction Area 5

Attachment 14-2 New Operations Access Road

# Figures

#### Site Wide

Attachment 5-1 Project Location Map Figure 2-1 Existing Site Conditions Figure 2-2 Wetland Delineation Map Figure 2-3 Wetland Impact Map Figure 2-4 Legend of Construction Area Locations Figure 2-5 Site Plan Figure 2-5A Site Plan Figure 2-5B Site Plan Figure 2-5C Site Plan Figure 2-5D Site Plan Figure 2-5E Site Plan Figure 2-5F Site Plan Figure 2-5F Site Plan Figure 2-5G Site Plan Figure 2-5H Site Plan

#### **Construction Area 1**

Figure 12-2A Construction Area 1 Plan View A Figure 12-2B Construction Area 1 Plan View B Figure 12-2C Construction Area 1 Section Details

#### **Construction Area 2**

Figure 12-3A Construction Area 2 Plan View Figure 12-3B Construction Area 2 Section Details

#### **Construction Area 3**

Figure 12-4A Construction Area 3 Plan View A Figure 12-4B Construction Area 3 Plan View B Figure 12-4C Construction Area 3 Section Details

#### **Construction Area 4**

Figure 12-5A Construction Area 4 Plan View Figure 12-5B Construction Area 4 Section Details

#### **Construction Area 5**

Figure 10-3A Construction Area 5 Plan View Figure 10-3B Construction Area 5 Profile of Proposed South Canal Culverts Figure 12-6A Construction Area 5 Plan View Figure 12-6B Construction Area 5 Section Details Figure 14-1A Construction Area 5 Plan View Figure 14-1B Construction Area 5 Profile of Proposed South Canal Culverts

#### Warehouse, PAP/VIB and Parking Garage

Figure 10-1A Warehouse, PAP/VIB Parking Garage Plan View of Culverts at Doxy Road Figure 10-1B Warehouse, PAP/VIB Parking Garage Profile of Proposed Culverts at Doxy Road Figure 10-1C Warehouse, PAP/VIB Parking Garage Section 'A' Details Figure 10-1D Warehouse, PAP/VIB Parking Garage Section 'B' Details Figure 12-7A Warehouse, PAP/VIB and Parking Garage Plan View Figure 12-7B Warehouse, PAP/VIB and Parking Garage Section "C" Details

#### **New Operations Access Road**

Figure 10-4A New Operations Access Road Plan View
Figure 10-4B New Operations Access Road 22' x 7' Box Culvert Plan View
Figure 12-8A New Operations Access Road Plan View A
Figure 12-8B New Operations Access Road Plan View B
Figure 12-8C New Operations Access Road Section Details
Figure 14-2A New Operations Access Road Plan View
Figure 14-2B New Operations Access Road Typical Section for Curb and Gutter Typical Section and Detail Profile Sediment Trap
Figure 14-2C New Operations Access Road Security Gate Section 'A' Details
Figure 14-2D New Operations Access Road Profile of Proposed Culverts A – D
Figure 14-2E New Operations Access Road 22' x 7' Box Culvert Plan View
Figure 14-2F New Operations Access Road Elevation 'B' and Section 'D' Details
Figure 14-2G New Operations Access Road Plan View Section 'C' Details

#### **Onsite Transmission**

Figure 12-9A Onsite Transmission Plan View

Figure 12-9B Onsite Transmission Section Details

#### Lake Erie Construction Area

Figure 10-2A Lake Erie Construction Area Plan and Profile of Proposed Fermi 3 Discharge Pipe Figure 10-2B Lake Erie Construction Area Discharge Pipe Dredging Section 'A' Details Figure 10-2C Lake Erie Construction Area Pipe Dredging Section 'B' Details Figure 10-2D Lake Erie Construction Area Intake and Proposed Sheet Piling Section Details Figure 10-2E Lake Erie Construction Area Proposed Intake Structure Section 'D' Details Figure 10-2F Lake Erie Construction Area Proposed Cofferdam Figure 10-2G Lake Erie Construction Area Proposed Fermi 3 Discharge Pipe Riser Detail

## **Photographs**

Lake Erie Construction Area Photographs: 10a-10c Construction Area 1 Photographs: 12a-12c Construction Area 2 Photograph: 12d Construction Area 3 Photographs: 12e-12k Construction Area 4 Photographs: 12l-12m Construction Area 5 Photographs: 12n-12p Warehouse, PAP/VIB, and Parking Garage Photographs: 12q-12u New Operations Access Road Photographs: 12v-12w; 14a-14d Onsite Transmission Photographs: 12x-12y

# **Supplemental Information**

Ducks Unlimited Wetland Investigation Report dated July 2008, updated April 2011
MDEQ Wetland Assessment Wetland Identification File Number: 8-58-0003-WA November 7, 2008 and March 30, 2009
USACE Jurisdictional Determination November 9, 2010
Fermi 3 Conceptual Aquatic Resource Mitigation Strategy August 2011
Detroit Edison Correspondence with MDNRE Mitigation Ratio Letter 2010-MEP-F3COLA-0071 Letter of Understanding, Documenting Conclusions of the Fermi Site Meeting October 2010

US Army Corps of Engineers Supplemental RAI Response, January 2011
ACRONYM	DESCRIPTION
AC	Acre
BMPs	Best Management Practices
CEW	Coastal Emergent Wetland
CFR	Code of Federal Regulations
CMP	Coastal Management Program
COLA	Combined License Application
CY	Cubic Yard
CWA	Clean Water Act
CZM	Coastal Zone Management
DRIWR	Detroit River International Wildlife Refuge
DU	Ducks Unlimited
EAB	Exclusion Area Boundary
EL	Elevation
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ESBWR	Economic Simplified Boiling Water Reactor
ESRI	Environmental Systems Research Institute
FAA	Federal Aviation Administration
FAC	Facultative Plants
FAC+	Facultative Plants that have a greater probability of occurring in wetlands than FAC plants
FACW	Facultative Wetland
FCS	Forest: Coastal Shoreline
FLH	Forest: Lowland Hardwood
FWL	Forest: Woodlot
GIS	Geographic Information System
GOF	Grassland: Idle/Old Field/Planted
GRC	Grassland: Row Crop
GRW	Grassland: Right-of-Way
HMA	Hot Mix Asphalt
HUC	Hydrologic Unit Code
IE	Invert Elevation
JD	Jurisdictional Determination
JPA	Joint Permit Application
kV	Kilovolt
LEDPA	Least Environmentally Damaging Practicable Alternative
LF	Linear Feet
LPR	Lakes, Ponds, Rivers
LWMD	Land and Water Management Division
MCL	Maximum Contaminant Level
MCRC	Monroe County Road Commission
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDNRE	Michigan Department of Natural Resources and the Environment
MDOT	Michigan Department of Transportation

#### ACRONYM DESCRIPTION MiRAM Michigan Rapid Assessment Method for Wetlands MWe **Megawatts Electric** NA Not Applicable NAVD 88 North American Vertical Datum of 1988 NGVD 29 National Geodetic Vertical Datum of 1929 NHD National Hydrography Dataset NOAA National Oceanic and Atmospheric Administration NPDES National Pollutant Discharge Elimination System NRC Nuclear Regulatory Commission NREPA Natural Resources and Environmental Protection Act NTC Nuclear Training Center NWI National Wetlands Inventory OBL **Obligate Wetland Plants** OHWM Ordinary High Water Mark OSW Ottawa-Stony Watershed PAP/VIB Primary Access Portal / Vehicle Inspection Building PEM Palustrine Emergent Marsh PIPP Pollution Incident Prevention Plan PFO Forested Wetland PSS Scrub/Shrub Wetland RAI Request for Additional Information RCP **Reinforced Concrete Pipe** ROW Right-of-Way RPW **Relatively Permanent Waters** SAN Sanitary SHB Shrubland SHPO State Historic Preservation Office SWPPP Stormwater Pollution Prevention Plan TKT Thicket TNW Traditional Navigable Water TYP Typical US **United States** USACE United States Army Corps of Engineers USAEC United States Atomic Energy Commission USFWS United States Fish and Wildlife Service USGS United States Geological Survey WIP Wetland Identification Program





# UEND DEND

PPO PEM PEGE	PALUSTRINE SCRUB SHRUB WET PALUSTRINE EMERGENT WETLAI PALUSTRINE FORESTED WETLAI APPROXIMATE PROPERTY LINE OPEN WATER WETLAND BOUNDARY HORIZONTAL & VERTICAL CONTF FERMI CONSTRUCTION BOUNDA USACE OHWM APPROX. MDEQ OHWM
	WETLAND BOUNDARY HORIZONTAL & VERTICAL CONTR
	FERMI CONSTRUCTION BOUNDA
	USACE OHWM
	APPROX. MDEQ OHWM
	PALUSTRINE SCRUB-SHRUB (PS: POTENTIAL WETLAND IMPACTS
	PALUSTRINE EMERGENT (PEM) POTENTIAL WETLAND IMPACTS
	PALUSTRINE FORESTED (PFO) POTENTIAL WETLAND IMPACTS

		$\times$

DESIGNATED ENVIRONMENTAL AREA

OPEN WATER POTENTIAL IMPACTS

PAP/VIB	40
	30
PARKING GARAGE AND FERMI 2 SHOPS	38
FERMI 2/FERMI 3 COMMON WAREHOUSE	37
FERMI 2/FERMI 3 MAINTENANCE SHOPS	35
RAD MATERIAL WAREHOUSE	34
BARGE SLIP	33
FERMI 2/FERMI 3 HAZARDOUS WASTE WAREHOUSE	32
PARKING GARAGE	31
FERMI 3 SIMULATOR	30
FERMI 2/FERMI 3 ADMIN BUILDING	29
FERMI 3 SWITCHYARD	28
CIRC WATER OUTFALL	27
STATION WATER INTAKE	26
PUMPHOUSE	24
NPHS COOLING TOWER	23
WASH DOWN BAYS	22
HOT MACHINE SHOP AND STORAGE	21
SERVICE BUILDING/OPERATION SUPPORT CENTER	20
CONDENSATE STORAGE TANK	19
WATER STORAGE TANKS	18
FIRE WATER TANK AND PUMPS	17
SERVICE WATER COOLING TOWER	16
WATER TREATMENT/SERVICE WATER BLDG	14
DIESEL FUEL OIL STORAGE TANK	13
FUEL BUILDING	12
RADWASTE BUILDING	11
ADB	10
SPARE TRANSFORMER	60
RESERVE AUXILIARY TRANSFORMER	80
UNIT AUXILIARY TRANSFORMER	07
MAIN TRANSFORMERS	90
ELECTRICAL BLDG/TECH SUPPORT CENTER	05
CONTROL ROOM	04
TURBINE BUILDING	03
AUXILIARY BOILER	02
REACTOR BUILDING	01
FACILITY LEGEND	



DESIGNATED ENVIRONMENTAL AREA



LEGENI	
PEM	PALUSTRINE EMERGENT WETLAND
	APPROXIMATE PROPERTY LINE
$\left\{ \right\}$	OPEN WATER
	WETLAND BOUNDARY
	HORIZONTAL & VERTICAL CONTROL
	FERMI CONSTRUCTION BOUNDARY
	USACE OHWM
     	APPROX. MDEQ OHWM
	PALUSTRINE SCRUB-SHRUB (PSS) POTENTIAL WETLAND IMPACTS
	PALUSTRINE EMERGENT (PEM) POTENTIAL WETLAND IMPACTS
	PALUSTRINE FORESTED (PFO) POTENTIAL WETLAND IMPACTS
	OPEN WATER POTENTIAL IMPACTS

ISFSI	39
PARKING GARAGE AND FERMI 2 SHOPS	38
FERMI 2/FERMI 3 COMMON WAREHOUSE	37
FERMI 2/FERMI 3 MAINTENANCE SHOPS	35
RAD MATERIAL WAREHOUSE	34
BARGE SLIP	33
FERMI 2/FERMI 3 HAZARDOUS WASTE WAREHOUSE	32
PARKING GARAGE	31
FERMI 3 SIMULATOR	30
FERMI 2/FERMI 3 ADMIN BUILDING	29
FERMI 3 SWITCHYARD	28
CIRC WATER OUTFALL	27
STATION WATER INTAKE	26
PUMPHOUSE	24
NPHS COOLING TOWER	23
WASH DOWN BAYS	22
HOT MACHINE SHOP AND STORAGE	21
SERVICE BUILDING/OPERATION SUPPORT CENTER	20
CONDENSATE STORAGE TANK	19
WATER STORAGE TANKS	18
FIRE WATER TANK AND PUMPS	17
SERVICE WATER COOLING TOWER	16
WATER TREATMENT/SERVICE WATER BLDG	14
DIESEL FUEL OIL STORAGE TANK	13
FUEL BUILDING	12
RADWASTE BUILDING	11
ADB	10
SPARE TRANSFORMER	60
RESERVE AUXILIARY TRANSFORMER	80
UNIT AUXILIARY TRANSFORMER	07
MAIN TRANSFORMERS	06
ELECTRICAL BLDG/TECH SUPPORT CENTER	05
CONTROL ROOM	04
TURBINE BUILDING	03
AUXILIARY BOILER	02
REACTOR BUILDING	01
FACILITY LEGEND	

# SECTION 1: PROJECT LOCATION INFORMATION

# Table 1-1. Detroit Edison Owned Fermi Site Property

	PARCEL ID	ADDRESS	SECONDARY ADDRESS
1	07 021 501 00	2000 SECOND AVE	NO FRONTAGE – DET/TOL RR
2	07 528 001 00	2000 SECOND AVE	TOLL
3	07 020 506 00	2000 SECOND AVE	TOLL
4	07 528 013 00	2000 SECOND AVE	TOLL
5	07 020 505 30	2000 SECOND AVE	POINTE AUX PEAUX
6	07 016 501 00	2000 SECOND AVE	NO FRONTAGE
7	07 528 009 00	2000 SECOND AVE	6400 N DIXIE
8	07 028 119 00	2000 SECOND AVE	LONG
9	07 028 071 00	2000 SECOND AVE	NO FRONTAGE – LONG DRIVE
10	07 028 508 00	2000 SECOND AVE	POINTE AUX PEAUX
11	07 907 001 00	2000 SECOND AVE	LONG
12	07 028 504 00	2000 SECOND AVE	POINTE AUX PEAUX
13	07 028 503 00	2000 SECOND AVE	POINTE AUX PEAUX
14	07 028 514 00	2000 SECOND AVE	POINTE AUX PEAUX
15	07 028 507 00	2000 SECOND AVE	POINTE AUX PEAUX
16	07 028 506 00	2000 SECOND AVE	POINTE AUX PEAUX
17	07 029 502 00	2000 SECOND AVE	POINTE AUX PEAUX
18	07 029 507 00	2000 SECOND AVE	POINTE AUX PEAUX
19	07 029 504 00	2000 SECOND AVE	POINTE AUX PEAUX
20	07 029 505 00	2000 SECOND AVE	POINTE AUX PEAUX
21	07 029 503 00	2000 SECOND AVE	POINTE AUX PEAUX

# SECTION 2: DESCRIBE PROPOSED PROJECT AND ASSOCIATED ACTIVITIES, AND THE CONSTRUCTION SEQUENCE AND METHODS

#### 1) <u>Summary of All Proposed Activities:</u>

The proposed project consists of construction of a new nuclear power unit and ancillary facilities at the site of the existing Enrico Fermi Atomic Power Plant (Fermi) site. The proposed unit is to be designated as Fermi 3. The existing site conditions at the Fermi site are depicted on **Figure 2-1**. A wetland delineation map is shown on **Figure 2-2**. The proposed wetland impacts are shown on **Figure 2-3**. The proposed construction areas are shown on **Figure 2-4**. The overall site plan is shown on **Figure 2-5**. The proposed Fermi 3 project will require the following regulated activities.

#### Construction Area 1:

Clear and grade 27 acres temporarily impacting 1.32 acres of emergent marsh wetlands and 1.37 acres of scrub-shrub wetlands to manage spoils generated during Fermi 3 construction.

#### Construction Area 2:

Clear and grade 18 acres for use as construction laydown and support structures and buildings temporarily impacting 1.14 acres of forested wetlands.

#### Construction Area 3:

Clear and grade 20.5 acres for construction of the Fermi 3 switchyard and temporary use for construction laydown and support structures and buildings temporarily impacting 2.13 acres of forested wetlands, 6.93 acres of emergent marsh wetlands, and 3.91 acres of scrub-shrub wetlands.

#### Construction Area 4:

Clear and grade 11.5 acres for use as construction laydown temporarily impacting 4.59 acres of emergent marsh wetlands.

#### Construction Area 5:

Clear and grade 31.1 acres adjacent to the proposed cooling tower permanently impacting 1.62 acres of forested wetlands. Construct two 24-foot by 6-foot arch concrete culverts running 880 linear feet to enclose a portion of the South Canal permanently impacting 1.17 acres of emergent marsh wetlands.

#### Warehouse, PAP/VIB, and Parking Garage:

Clear and grade 7 acres for construction of the Fermi 2/Fermi 3 warehouse, Primary Access Portal/Vehicle Inspection Building (PAP/VIB), and parking garage. Install 545 linear feet of sheet piling in wetland on the west side of the construction footprint, excavate wetland soils, backfill, and compact to support construction of the parking garage and access road permanently impacting 2.24 acres of emergent marsh wetlands. Dewater and fill two canals permanently impacting 5.42 acres of emergent marsh wetlands.

Construct four, 24-inch diameter reinforced concrete pipe (RCP) culverts to carry flow from outfalls previously directed to one of the canals. Match slope and invert elevations to existing culverts. Construct one 24-foot by 6-foot arch concrete culvert at the north end of the canal to maintain the hydrologic connection between wetland areas to the west and the northernmost canal leading to Lake Erie.

#### Operations Access Road:

Clear and grade for construction of a new access road for use by Fermi 2 operations personnel. Road construction will require one crossing consisting of a 22-foot by 7-foot box culvert replacing an existing bridge. Four 12-inch culverts will be placed along the road. Construction of the security gate area and a portion of the road will extend into adjacent wetlands permanently impacting 0.62 acre of forested wetlands and 0.33 acre of emergent marsh wetlands.

#### Onsite Transmission:

Construct ten transmission towers, eight of which are located in wetland areas and temporarily impact 1.60 acres of emergent marsh wetlands and permanently impact 0.24 acre of emergent marsh wetlands within the tower footprint. Provide access into wetland areas using bog mats temporarily impacting 0.69 acre of emergent marsh wetlands. Clear trees from beneath elevated transmission line route along Toll Road, permanently impacting 2.53 acres of forested wetlands by conversion of wetland type.

#### Lake Erie Construction Area:

#### Barge Unloading Facility:

Construct a barge slip adjacent to the southernmost groin to facilitate receipt of equipment and materials for Fermi 3 construction. Ongoing operations and maintenance dredging to a lake bottom elevation of 560.0 feet results in a channel that is 9.2 feet deep (1985 IGLD low water datum of 569.2 feet). No additional dredging will be required to support barge deliveries.

Barges will be offloaded using a ramp to the shoreline. Construction will include placement of 320 linear feet of sheet piling along the groin to facilitate ingress and egress of the barge. Piling will also be placed perpendicular to the southern groin to transition into the intake structure (see description below) and create the vertical face needed to dock and unload the barge. The piling will be placed landward of the ordinary high water mark. Suspended sediments resulting from this work are anticipated to be contained by a floating turbidity curtain.

#### Discharge Pipe:

Install a 48-inch diameter discharge pipe extending approximately 1,340 feet into Lake Erie to avoid recirculation of discharged water through the cooling system. The pipe from the cooling tower basin to the shoreline will be buried and will enter Lake Erie below the water surface. The pipe discharges through a diffuser. The conceptual design of the multiport diffuser consists of three individual ports spaced evenly over 32.8 feet. Each port will be 16.5 inches in diameter and located 19.7 inches above the lakebed.

The discharge pipe will be installed using hydraulic or mechanical dredging methods. The installation will temporarily impact approximately 0.08 acre along 240 linear feet of the lake bottom (the pipe extends 240 feet beyond the limits of ongoing dredging operations). Total dredge volume will be approximately 3,300 cubic yards. The material that will be dredged and side cast is a combination of silts and clay. Approximately 970 cubic yards of existing material dredged for the pipe installation will be reused as trench fill. The pipe will be installed with 2 feet of riprap cover for protection. Turbidity curtains are anticipated during the work to contain suspended sediments.

#### Intake Structure and Cofferdam:

Install 280 linear feet of temporary cofferdam approximately 30 feet from shoreline to facilitate dewatering for excavation and construction of the intake structure. Approximately 1,100 cubic yards of fill will be temporarily placed for the cofferdam. Excavate to remove materials from the shoreline for the intake structure's foundation. Install 220 linear feet of sheet piling for shore protection along the Lake Erie shoreline extending in both directions from the intake structure. The piling will be installed at or landward of the ordinary high water mark (the need to be perpendicular to the piling along the groin necessitates it be installed somewhat to the upland side of the shoreline). Suspended sediments resulting from this work are anticipated to be contained by a floating turbidity curtain if the sheet piling is installed when the cofferdam is not in place.

#### Fish Return:

Install a fish return system as a part of the intake design. The proposed fish return system would terminate in the arm of the lake adjacent to the southernmost rock groin. To construct the proposed fish return outfall, a 24-inch diameter pipe will be installed in a mechanically excavated trench

extending into the lake from the south groin. The pipe will be installed 1 foot below the lake bottom and will emerge from the bottom approximately 120 feet south of the groin. To install the pipe, approximately 93 cubic yards of material will be dredged and side cast. The material that will be dredged and side cast is a combination of silts and clay. Thirty-nine of the 93 cubic yards of dredged material will be returned to the trench after the pipe is placed. The pipe trench will be protected with riprap (approximately 40 cubic yards). Turbidity curtains are anticipated during the work to contain suspended sediments.

#### Summary:

The total proposed Fermi 3 project would permanently impact 4.77 acres of forested wetlands and 9.40 acres of emergent wetlands. Temporary impacts would occur to 3.27 acres of forested wetlands, 15.12 acres of emergent wetlands, 5.28 acres of scrub-shrub wetlands, and 0.08 acres of open water. The temporary impacts include 2.29 acres of emergent marsh wetland that would be restored immediately after the installation of onsite transmission towers and lines. These short-term transmission impacts would not require compensatory mitigation. Mitigation for all other impacts (a total of 35.55 acres, see **Table 2-1**) is proposed to be provided through the combination of onsite enhancement and restoration of wetlands at an offsite location adjacent to the Monroe Power Plant.

#### 2) <u>Construction Sequence and Methods:</u>

#### Overall Construction Sequence:

The proposed Fermi 3 project construction sequence will be as follows:

- Construction of a new operation access road. Fill from Construction Area 1 (vicinity of Fox Road) and stockpile near the proposed cooling tower site (see **Figure 2-1**) may be used for road construction or to meet other fill demands. Additional fill will be obtained from commercial sources, if needed.
- Construction of new switchyard and rerouting of onsite transmission.
- Construction of culverts and filling the canals (U and H).
- Relocation of Fermi 2 related structures such as warehouses and parking from proposed Fermi 3 location (in upland area). Construction of common Fermi 2/Fermi 3 Warehouse, parking garage, and PAP/VIB.
- Construction of barge unloading facility.
- Construction of a new Administration Building (in upland area).
- Construction of culvert and filling a portion of the South Canal.
- Clearing and grading of temporary construction areas.
- Construction of warehouses and subcontractor buildings.
- Construction of intake structure.
- Installation of discharge pipe

The overall construction approach and sequencing will be used for the preparation of temporary construction laydown areas, building and support structure construction, parking areas and infrastructure installation. This will include land clearing (tree and vegetation removal), grubbing where necessary, site grading, backfilling, and compaction. Where applicable, American lotus (*Nelumbo lutea*) will be transplanted from affected areas prior to construction. Vegetation and trees will be disposed of onsite in Construction Area 1.

#### Temporary Construction Areas:

Most of the regulated activities are temporary impacts. Wetlands temporarily affected by Fermi 3 construction activities will be restored to preconstruction conditions. When construction activities begin, vegetation within the temporarily affected wetlands will be removed, and the top 6 to 12 inches

of topsoil will be stripped, and may be stockpiled and covered or seeded. Upon completion of construction, any impervious surfaces or fill installed for construction within these areas will be removed. The previously stockpiled topsoil may be used to return temporarily impacted areas to preconstruction contours and elevations with aeration as necessary. Additional topsoil may be required. These areas will be seeded and/or planted with native trees, shrubs, and herbaceous plants similar to those present before construction. An enhanced planting mix may be used in wetlands where the preconstruction vegetation was dominated by undesirable species.

#### Construction Methods:

Excavated material from the Fermi 3 power block and circulating water pipe runs will be processed and used as backfill and structural fill. Excess excavated material will be used in onsite construction laydown, parking areas and for filling in canals. Spoils stockpiles on the Fermi site will also be used as fill. Materials suitable for backfill and compaction may be obtained from an offsite source until onsite excavation is underway.

Construction below the ordinary high water mark of Lake Erie will include temporary placement of a cofferdam and mechanical or hydraulic dredging. Dredged material will be side cast and/or reused as fill after the pipe is installed. The discharge pipe trench will be fortified with riprap to prevent scouring.

The access road will use the existing public right-of-way, cross a wetland and then transition along a slight angle to the east onto Fermi property. The road design includes two 12-foot lanes, 2 feet of curb and gutter on each side, and 1:4 side slopes extending approximately 14 feet on the northwest side and 16 feet on the southeast side. The design includes sediment traps that will reduce erosion and stormwater runoff to the adjacent wetlands. The typical cross section width is approximately 58 feet. The cross section increases by 10 feet to the southeast side in sediment trap areas where the cross section of the roadway will be approximately 68 feet. Road construction will include culvert installation, grading, ditching, and concrete or hot mix asphalt paving.

A security gate will be constructed north of Langton Road, The typical section with the security gate includes two 12-foot lanes and 2-foot buffers on each side of an 8-foot wide building. The west side will have a 2-foot curb and gutter and a 1:4 side slope extending approximately 6 feet. The east side will have a 20-foot wide parking area and a 1:2 side slope. The cross section of the security gate will be a total width of approximately 68 feet.

Ponds and canals will be dewatered using standard dewatering practices. The isolated pond (H) will be dewatered to the canal (U). Once dewatered, the pond will serve as a dredge spoils basin. Sediments will be allowed to settle out in the basin. The water will be conveyed through an outfall structure to the adjacent wetland area (C). Soil erosion and sedimentation control measures will be in place prior to the discharge to prevent siltation. After dewatering, the depression will be backfilled and compacted.

Bog mats will be laid in wetland area (C) to facilitate access by construction equipment (trucks, cranes) for construction of transmission towers. Excavation and pile driving / drilling will be used for transmission tower foundations. Bog mats will be removed upon completion of the tower construction and installation of the lines. To further reduce impacts to vegetation and soil, balloon tires will be used on equipment and the construction activities can be completed during the winter. Restoration is expected to occur within the following growing season.

# Table 2-1. Summary of Impacts (Sheet 1 of 2)

Impact Type	Wetland ID	Proposed Impacts (acres)	Permanent (P) or Temporary (T)
Emergent marsh wetland			
Great Lakes marsh (rare and imperiled)	С	2.80	Р
	С	6.93	Т
	C <sup>a</sup>	2.29	Т
	South Canal	1.17	Р
	Total	13.19	
Palustrine emergent (coastal)	AA	0.80	Т
Palustrine emergent (other)	W	4.59	Т
	II	0.52	Т
	Н	1.96	Р
	U	3.46	Р
	Total	10.53	
Total emergent marsh		24.52	
Forested wetland			
Southern hardwood swamp (rare/imperiled)	I	0.44	Р
	F	2.71	Р
	Total	3.15	
Palustrine forested (coastal and other)	В	0.76	Т
	D	1.37	Т
	Y	1.14	Т
	KK	1.62	Р
	Total	4.89	
Total forested wetland		8.04	
Scrub-shrub wetland			
Southern shrub carr (coastal)	E-North	1.87	Т
	E-South	2.04	Т
	Total	3.91	
Palustrine scrub shrub (other)	JJ	1.37	Т
Total scrub shrub wetland		5.28	
Total Wetland Impacts	37.83		
Total Wetland Impacts for mitigation <sup>a</sup>		35.55	

# Table 2-1. Summary of Impacts (Sheet 2 of 2)

Impact Type	Wetland ID	Proposed Impacts (acres)	Permanent (P) or Temporary (T)
Open water <sup>b</sup>	Lake Erie	0.08	Т

<sup>a</sup>Temporary impacts to Wetland C (laydown area around the transmission towers and access) are included in the impacts to Great Lakes marsh. Because of the limited duration of the impact, mitigation is not proposed for this acreage.

<sup>b</sup>Mitigation is not proposed for open water impacts.

#### SECTION 3: APPLICANT, AGENT/CONTRACTOR, AND PROPERTY OWNER INFORMATION

1) <u>Is there a MDEQ conservation easement or other easement, deed restriction, lease, or other</u> encumbrance upon the property in the project area? If yes, attach a copy:

The Detroit River International Wildlife Refuge (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<sup>1</sup> for the refuge. 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. Detroit Edison has a 2003 Cooperative Agreement (see pages 2 through 6) 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 637 acres expected to be available for inclusion in the refuge after construction of Fermi 3. 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.

<sup>&</sup>lt;sup>1</sup> See <u>http://www.fws.gov/midwest/planning/detroitriver/</u>

# COOPERATIVE AGREEMENT BETWEEN DETROIT EDISON AND THE U.S. FISH AND WILDLIFE SERVICE

This Cooperative Agreement (Agreement), made this 25th day of September, 2003, by and between Detroit Edison Company, 2000 Second Ave., Detroit, MI 48226 and the United States Department of the Interior, Fish and Wildlife Service (Service), 1 Federal Drive, Ft. Snelling, MN, 55111.

#### I. AUTHORITY:

This Cooperative Agreement between Detroit Edison and the U.S. Fish and Wildlife Service (herein after referred to as the "Service") is hereby entered into under the authorities granted in Section 7 of the Fish and Wildlife Act of 1956, (16 U.S.C. 742f (a)(4)) and the Detroit River International Wildlife Refuge Establishment Act of 2001 (Pub. L. 107-91) (115 Stat. 897).

#### II. PURPOSE AND BACKGROUND:

WHEREAS, the Detroit River International Wildlife Refuge Establishment Act of December 21, 2001, authorizes the Secretary of the Interior or her authorized representative to enter into cooperative agreements with any other person or entity for management of lands located within the boundaries of the Detroit River International Wildlife Refuge for the purposes of protecting remaining high-quality fish and wildlife habitats, restoring and enhancing degraded wildlife habitats associated with the Detroit River, and promoting public awareness of the important resources of the Detroit River International Wildlife Refuge.

WHEREAS, the land and water described below is within the boundaries of the Detroit River International Wildlife Refuge, is owned by Detroit Edison and provides high-quality fish and wildlife habitat,

NOW THEREFORE, Detroit Edison authorizes the Service to use all those lands and waters described in Attachment 1, for the purposes and subject to the conditions herein set forth. The property described in Attachment 1, shall hereinafter be referred to as the "premises."

#### IT IS MUTUALLY AGREED AND UNDERSTOOD:

A. The premises will be operated as part of the Detroit River IWR and subject to National Wildlife Refuge System rules and regulations regarding public entry (50CFR §26.21). The premises will be managed as a "Closed Area." Therefore, entry upon the premises is authorized only for employees, agents, or contractors of or for Detroit Edison and the Service with prior permission from Edison management and security. The Service may not prohibit employees of Detroit Edison from entering upon, or over, the said premises to do any and all things necessary in the conduct of Detroit Edison's operations and to maintain security of its facilities.

- B. The Service shall have the right to perform wildlife habitat management activities including manipulation of vegetation through mechanical and/or controlled burning methods, production of wildlife food crops and other activities deemed necessary for the protection and management of wildlife/fish populations and associated habitats.
- C. The Service shall have the right to erect and maintain boundary posting and identification/directional signs. The cost of erecting and maintaining said signs will be borne in whole by the Service.
- D. The Service is authorized, under limitations hereafter described, to construct, operate and maintain sub-impoundments, water control structures, and related facilities provided that any water control activity shall not adversely affect the plant or neighboring property. It is understood that no buildings are permitted.
- E. Said lands shall be managed by the Service as part of the National Wildlife Refuge System. Detroit Edison shall maintain responsibility for all security and law enforcement authority, however, the Service may be called upon to enforce Title 50 of the Code of Federal Regulations (CFR) when deemed necessary and appropriate by Detroit Edison and the Service.

In the event it becomes necessary during the course of the operation of Detroit Edison's generating plant due to an emergency situation, Detroit Edison shall have the right of complete control over all access to this property, including complete exclusion of all Service personnel, if necessary, for a limited time.

- F. The use and occupation of said premises by the Service shall be without cost or expense to Detroit Edison.
- G. The Service shall not remove from the premises any merchantable timber, minerals, or other products having commercial value.
- H. Fixtures, equipment, facilities or other property of the Service constructed or maintained on the said premises shall be and remains the property of the Service, and may be removed at any time prior to the termination of this agreement or within 180 days after the termination of this agreement.

#### III. PROJECT OFFICERS:

The principle contact for the Service concerning this agreement will be:

Refuge Manager Detroit River International Wildlife Refuge c/o Ottawa National Wildlife Refuge 1400 W. State Route 2 Oak Harbor, OH 43449 The principle contact for Detroit Edison concerning this agreement will be:

Vice President Nuclear Generation 6400 North Highway Newport, MI 48166.

#### IV. SPECIAL PROVISIONS:

- A. The Service does not assume any liability for any fines, claims, damages, losses, judgments, and expenses arising out of or resulting from the existence of hazardous materials on the property, or any act, omission, or activity by Detroit Edison in connection with the activities undertaken in the operation, maintenance and use of the herein described real property. The Service shall conduct a Level 1 Contaminant Survey of the property prior to accepting authority granted under this agreement. Each party agrees that it will be responsible for its own acts and the results therein to the extent authorized by law and shall not be responsible for the acts of the other party and the results thereof. The Service's liability shall be governed by the provisions of the Federal Tort Claim Act (28 U.S.C., Section 2671, et seq.).
- B. The cooperator(s) shall comply with all Federal statutes relating to non-discrimination. These include but are not limited to Title VI of the Civil Rights Act of 1964 which prohibits discrimination on the basis of race, color, handicap, or national origin.
- C. No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this Agreement, or to any benefit to arise there from, separate and apart from any benefit accruing to the general public.

#### V. MODIFICATIONS:

Amendments or changes to this agreement may be proposed by either party at any time, and will become effective upon ratification by both. This agreement shall become effective upon signature of both parties and shall remain in full force and effect until cancelled, revoked or terminated as provided herein.

#### VI. DISPUTES:

In the event of a dispute, the Regional Chief of Refuges and the Vice President of the Detroit Edison shall attempt to negotiate an amicable solution. If issue resolution lacks definite determination, the Regional Chief of Refuges and Vice President of Detroit Edison can either mutually agree to third party arbitration or individually elect to withdraw from the performance of this agreement.

#### VII. PERIOD OF PERFORMANCE:

This agreement shall become effective as of the date of the last signatory and continue in effect for a fifty year period. This agreement may be terminated in whole or in part under the following circumstances;

A. By written mutual agreement of the parties hereto.

B. At the option of either party upon 90 days written notice to the other.

IN WITNESS WHEREOF, the parties hereto have subscribed their names as of the date indicated.

WITNESSES:

WITNESSES:

Date\_\_\_\_\_

Date

#### DETROIT EDISON

Bedappen

UNITED STATES OF AMERICA Acting by and through the Secretary of the Interior

MMS We NU By:

Director U.S. Fish and Wildlife Service

Revision 1

### Attachment 1 to DRIWR Cooperative Agreement





Map showing areas to be included in the proposed Cooperative Agreement between the USFWS and DTE Energy at the Fermi Energy Center

21APR03 (bem)

#### SECTION 4: PROPOSED PROJECT PURPOSE, INTENDED USE, AND ALTERNATIVES CONSIDERED

1) <u>Purpose/Intended Use:</u>

Detroit Edison proposes to construct and operate a new nuclear power plant at the Fermi site. The proposed unit is to be designated as Fermi 3. The purpose of the Fermi 3 project is fourfold:

- Generate a net electrical output of approximately 1,535±50 megawatts (MWe) for sale that will reliably aid in satisfying the forecasted energy and capacity needs of Detroit Edison customers located in the Detroit Edison Service Area;
- 2. Provide new baseload electric generation capacity as early as 2021 to compensate for the expected retirement of existing, aging baseload generating units and diminishing availability of the midwest independent service operator region's baseload generation capacity;
- 3. Provide price stability by minimizing reliance on imported power into the Detroit Edison service territory; and
- 4. Utilize an electric generation technology that is less subject to price fluctuations resulting from either fuel or regulatory drivers, provides fuel diversity, and reduces reliance on fossil fuel and their attendant environmental impacts.

The above purpose is in-line with Detroit Edison's mission to provide reliable and affordable electrical power.

Construction of a new nuclear electric generating facility is needed to provide reliable, affordable power to address Michigan's expected future peak electric demand. Detroit Edison has evaluated the need for power and the related benefits to be generated by the proposed facility. The need for power was assessed by balancing the current and forecasted demand against the current and forecasted supply, while demonstrating that an adequate reserve margin is maintained. Detroit Edison's assessment considered information regarding factors such as marketing, location, and history that influence or constrain the nature, size, price, and class of the project.

The need for power assessment is derived from the "Michigan 21st Century Electric Energy Plan" (Plan).<sup>1</sup> The Plan was prepared and issued by the Michigan Public Service Commission pursuant to Executive Directive No. 2006-02. The Plan reached several significant conclusions, including the following:

- Michigan's peak electric demand is forecasted to grow at approximately 1.2 percent per year for the next 20 years;
- There is a need for additional electric generating resources in order to preserve electric reliability and provide affordable energy over the next 20 years. This modeling outcome is confirmed even in the presence of increased use of energy efficiency and renewable resources;
- The projected electric demand will not be satisfied through the expansion of transmission nor access to external markets; and
- There is need for regulated baseload capacity to prevent natural gas prices from driving up wholesale costs and market prices for an increasing number of hours each year.

The above conclusions were based upon key factors such as the current age of baseload units and newer electric generating units' reliance on natural gas. As indicated above, the Plan concluded that the state of Michigan has a current need for new baseload capacity and the need is projected to increase. Michigan's current baseload generating units are an average of more than 48 years old.

<sup>&</sup>lt;sup>1</sup> See <u>http://www.dleg.state.mi.us/mpsc/electric/capacity/energyplan/index.htm</u>.

The average age of Detroit Edison's coal-fired generation units is 44 years old. The last new baseload plant in the state of Michigan began commercial operation more than 18 years ago. The assessment assumes that older, less efficient units, totaling 3,755 MW of capacity, will be retired by 2025.

Further, new baseload electric production is needed due to the fact that recently constructed electric generation units in Michigan have been limited to natural gas-fired facilities. Natural gas-fired units currently represent approximately 29 percent of Michigan's generating capacity. Dependence upon natural gas-fired units has exposed Michigan to volatile electricity prices driven by fluctuating fuel market prices.

Detroit Edison evaluated alternative means of meeting the baseload generation need. That analysis concluded that coal-fired or natural-gas fired generation provide reasonable alternatives to Fermi 3 for meeting the identified need for new baseload generation. However, after considering the potential environmental impacts associated with these alternative energy sources, Detroit Edison determined they would not be environmentally preferable to the proposed Fermi 3 nuclear power plant.

#### 2) <u>Alternatives Considered:</u>

Detroit Edison sought to avoid and minimize impacts to waters of the United States, including wetlands, associated with the proposed Fermi 3 project by evaluating practicable alternatives that would fulfill the project's purpose and need. Detroit Edison's alternatives analysis included consideration of alternative locations for new nuclear electric production consistent with the purpose and need described above. After determining that the Fermi site was the practicable alternative project location that would result in the least potential impacts to aquatic resources, Detroit Edison considered site layout alternatives to minimize potential wetland impacts in terms of both quantity and quality. Both components of the alternatives analysis are summarized below. Detroit Edison's alternatives evaluation illustrates that the proposed use of the Fermi site is the least environmentally damaging practicable alternative (LEDPA) that fulfills the project's purpose and need. Detroit Edison has also proposed mitigation for the unavoidable impacts to waters of the United States.

#### a) Alternative Sites

Detroit Edison reviewed the eight candidate sites identified through the site selection process described in Section 9.3 of the Fermi 3 Combined License Application Environmental Report within the context of the CWA Section 404(b)(1) guidelines to identify a LEDPA site. The candidate sites were evaluated for practicability to construct and operate a nuclear generating facility. The sites that were found to be practicable were then evaluated for potential impacts on waters of the United States and adjacent wetlands to identify an environmentally preferable location.

The candidate sites included five greenfield sites, two existing fossil-fired sites, and one existing commercial nuclear site. The practicability assessment considered various technical, economic, safety, and environmental criteria that reflect the overall purpose of the project. The results of that evaluation are summarized in **Table 4-1**. Six sites (five greenfield sites and one existing fossil-fired site) that exhibited undesirable characteristics were judged to be impracticable as sites for locating a new nuclear plant and were excluded from further review. The two remaining candidate sites, the Greenwood Energy Center site and the Fermi site, were then evaluated for impacts on waters of the U.S. and adjacent wetlands.

Detroit Edison evaluated the potential wetland and stream impacts associated with construction of the nuclear generating facility and any required infrastructure such as transmission corridors and make-up water supply or blowdown discharge pipelines to support the closed-cycle cooling

system. The potential impacts associated with nuclear development at the Fermi and Greenwood sites are summarized in the **Table 4-2**. Based on the overall potential impacts to waters of the U.S., the Fermi site would be the LEDPA.

#### b) Site Layout Alternatives

Detroit Edison proposes to construct and operate a new nuclear power plant at the Fermi site. The proposed unit is to be designated as Fermi 3. The Fermi site (the area within the Fermi property boundary) consists of approximately 1260 acres in eastern Monroe County, Michigan. The existing Fermi 2 unit is in the northeast part of the site. Fermi 3 and associated facilities will be located in an area south of the existing Fermi 2 protected area. 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. This section discusses the onsite layout alternatives considered and the relevant impacts to aquatic resources associated with those alternatives for the Fermi 3 project.

The Fermi 3 site layout includes the power block, cooling tower, switchyard, parking, construction laydown areas, transmission lines, access road, cooling water intake structure, discharge pipe, and barge docking facility. Detroit Edison applied as much repositioning of project components as possible within project practicability limits to avoid and minimize impacts to wetlands and other natural resources at the Fermi site. Four project layout alternative scenarios were evaluated. These alternative layouts are identified as Revision 0, Revision 1, Revision 2, and the Preferred Alternative.

The site layout was evaluated for potential environmental impacts to the Fermi site. This analysis focused on environmental categories that are protected under special-purpose environmental laws and that contain specific provisions for the avoidance and minimization of impacts. These categories include wetlands, archaeological resources, and protected species. Complete avoidance of some impacts to environmental categories, such as wetlands, associated with Fermi 3 may not be feasible due to the large area of land disturbance required. Efforts were made to avoid impacts to wetlands through consideration of several different project alternatives.

A process to avoid, minimize, or compensate impacts to waters of the United States, including wetlands, was completed for the Fermi 3 project. This process included the consideration of alternative onsite locations for major structures and changes in site configuration to minimize damages to waters of the United States.

#### Key Constraints

Several key constraints guided the process of determining locations for Fermi 3 Nuclear Power Plant and construction-related activities relative to the available property on the Fermi site and the location and operational needs of the Fermi 2 Nuclear Power Plant. As this discussion will illustrate, unavoidable impacts to wetlands resulted when the key constraints could not be satisfied without incurring those temporary or permanent impacts.

The key constraints are as follows:

- 1) The site layout must minimize impacts to the environment and to the Detroit River International Wildlife Refuge.
- 2) Fermi 3 construction cannot interfere with the operations of the existing Fermi 2 Nuclear Power Plant.
- 3) Fermi 3 construction cannot interfere with Fermi 2 security requirements or programs.
- 4) Fermi 2 operations must not interfere with Fermi 3 construction.
- 5) Fermi 2 operations must not interfere with federally mandated Fermi 3 security requirements, which are distinct from operating plant security requirements.

- 6) The location of the Fermi 3 power block must allow for both Fermi 2 and Fermi 3 plants to be combined into a single protected area security boundary after construction is completed that meets federally mandated security requirements. This will facilitate operational synergies such as sharing of personnel and common support facilities, the Primary Access Portal (PAP) to the protected area, warehouses, and maintenance shops.
- 7) The construction site must provide for a contiguous, unimpeded flow of personnel, equipment and materials.
- 8) The Fermi 3 construction site must have adequate, onsite space for the following: laydown and staging of materials; fabrication and assembly of modular components, and; construction support facilities. Nuclear power plant construction management consultants have advised Detroit Edison that a minimum of 100 acres of land should be available onsite, contiguous to or near the construction area, for these activities.
- 9) Placement of structures must satisfy nuclear safety requirements.

Constraint 1 has been a primary consideration throughout the site layout development process, however, as the project has moved forward, additional environmental studies and information have been developed which have been the principal driver for revisions to the proposed site layout to further minimize environmental impacts.

While the constraints have remained the same throughout the development of the site layout, as Detroit Edison's knowledge of site environmental conditions evolved, revised versions of the site layout were created in keeping with Constraint 1. Each of the four versions of the site layout satisfied the key constraints based upon the state of knowledge at the time the site revision was developed.

The method chosen to address Constraints 2 through 5 was to separate Fermi 2 operational activities from the Fermi 3 construction site the maximum extent. This separation resulted in Constraints 10 and 11, as follows:

- 10) All Fermi 2 operational activities will be on the north side of the Fermi site and all Fermi 3 construction activities will be on the south side of the site. The boundary separating Fermi 2 operations from Fermi 3 construction activities is roughly an east-west line extending across the site from the southern boundary of the Fermi 2 protected area. This constraint significantly reduces the amount of land available for building and construction because land north of the line will not be available for Fermi 3 construction.
- 11) Fermi 2 operations and the Fermi 3 construction site must have completely separate access roads, entrances and exits. Fermi 2 and Fermi 3 roads and activities must not cross each other. This is to avoid traffic impacting either site. This also relates to Constraint 7.

Constraints 2, 3, 4, 5, and 6 allow very little flexibility on where power block structures such as the reactor building can be located. The only location suitable is south of the existing Fermi 2 protected area on the opposite side of the imaginary east-west dividing line.

Constraints 7 and 8 require arranging the Fermi 3 site to ensure that there will be adequate space near the primary construction area to allow a free flow of personnel, materials and equipment. Fermi 3 requires a large construction workforce with up to 2900 construction workers at peak and 900 onsite workers when operational. Adequate staging and laydown area (temporary storage of construction materials) is needed to support the modular construction of nuclear power plants. Reactors such as the ESBWR proposed for Fermi 3, use standardized modules and certified designs to expedite the construction schedule. Nuclear power plant construction management consultants have advised Detroit Edison that a minimum of 100 acres of land should be available near the construction site for staging, laydown, and assembly of equipment and pre-assembled modules. A comparison of the amount of proposed land available for other United States nuclear license applicants indicates that the Fermi 3 site, in the preferred site layout, is among the smallest sites in terms of acres used.

Constraint 9 requires a final review and approval of any proposed site layout arrangement by security subject matter experts with appropriate clearances to ensure that the layout is in compliance with all security plan requirements.

Efforts to minimize impacts in the alternatives development process included:

- Avoiding and minimizing impacts to all wetlands with priority given to avoiding impacts to the most valuable/functional wetlands;
- Where wetland impacts were unavoidable, the preference was for temporary wetland impacts over permanent wetland impacts, with the understanding that wetland mitigation implemented prior to, or concurrent with, the impact will still be required. A temporary impact means that the wetland will be restored to existing or better condition once the temporary land use for construction activities is completed, and;
- Placing the Fermi 3 power block in the largest contiguous upland area.

Efforts were made to avoid, to the extent practicable, adverse impacts associated with filling or modification of wetlands and new construction in wetlands wherever there is a practicable alternative. Impacts were only considered when there was no practicable alternative, and the proposed configuration for Fermi 3 includes all practicable measures to reduce impacts to wetlands and jurisdictional waters. Detroit Edison evaluated each of the onsite alternative layouts based on the approximate acreage, type, and value of wetlands that would be impacted. Alternatives that would minimize impacts to wetlands were preferred over alternatives that would result in greater impacts.

Wetland impacts of the Revision 0, Revision 1, and Revision 2 site layouts presented in the Fermi 3 Environmental Report, were evaluated using the updated Fermi site wetland delineation provided in this application (see Figure 2-2). Impacts to the open water areas H and U are treated as emergent wetland impacts. Therefore, the acres of impact presented here differ slightly from those presented in the Environmental Report.

#### Revision 0 Site Layout

Revision 0 is the site layout presented in the original Fermi 3 combined license application (COLA) submittal in September 2008. The Revision 0 layout was finalized in February 2008 using preliminary site wetlands information and was laid out along traditional concepts for large, long-term, construction sites.

#### Unchanged Site Layout Elements

The location of the Fermi 3 power block, which includes the reactor building, turbine building, control building, fuel building, radwaste building, diesel generators and other plant support systems, is fixed according to the requirements set out in Constraints 6 and 10. This location did not change in subsequent site-layout revisions.

Lake Erie will be used as the source for makeup water to the plant. The Fermi 3 makeup water intake will be adjacent to the intake for Fermi 2, i.e., located between the two existing groins that protrude into Lake Erie in the location of existing Fermi 1 structures. A barge slip for delivery of prefabricated modules, large components and building materials will be located between the two groins and adjacent to the south groin. These structures will be located in areas that have already been disturbed, in conformance with Constraint 1 and 10. The location of these structures did not change in subsequent revisions.

The Fermi 3 blowdown water outfall to Lake Erie will be offshore via an underwater discharge line in conformance to Constraints 1, 2 and 10. The configuration and discharge location of this line did not change in subsequent revisions. Four discharge locations were considered including two shoreline discharges (concrete, partially submerged, discharge structure along the shoreline) and

an inland location. The inland location into the south lagoon was eliminated due to environmental considerations according to Constraint 1. The warm blowdown water could potentially disturb the local aquatic ecosystem and wetlands in the south lagoon. The two shoreline discharge locations considered on the south side of the site, per Constraint 2, were also eliminated due to environmental considerations per Constraint 1 and potential Fermi 2 operational impacts per Constraint 2. One consideration with both shoreline locations was the possibility of variable, near-shore currents sending the warm blowdown water back into the Fermi 2 and Fermi 3 makeup water intakes, which could impact plant heat loads and water chemistry. The other consideration with both shoreline locations was that warm blowdown water discharged during a seiche event, with winds from the east, could flow back into the south lagoon, potentially disturbing the local aquatic ecosystem and wetlands. Shoreline discharge locations would pose greater impacts than the proposed offshore discharge, which is considered environmentally preferable.

#### Site Layout Elements that Changed in Subsequent Site Layout Revisions

The normal power heat sink for Fermi 3 is a single concrete natural draft cooling tower. The cooling tower location changed from Revision 0 to Revision 1. Several criteria were utilized in identifying the initial cooling tower location, as follows:

- The cooling tower must be at least 800 feet away from safety-related structures in conformance with Constraint 9 (the cooling tower must be located, at minimum, a distance equal to its height from any safety-related structures such as the reactor building. This is to eliminate the potential for damage to these structures, if the tower collapsed), and;
- The cooling tower must be at least 1000 feet away from the switchyard to minimize icing and salt drift impacts also in conformance with Constraint 9.

Other considerations included the following: minimizing the length of the circulating water piping; minimizing the distance to Lake Erie, minimizing wetland impacts according to Constraint 1; minimizing Fermi 2 system impacts, and; minimizing temporary impacts to Fermi 2 and Fermi 3 site access during construction according to Constraints 2, 10 and 11. Four locations were considered. The location chosen was south of Fermi 3 in an area that was considered to be forested upland. The location selected conformed with the above-mentioned constraints and had the smallest impact to wetlands, the shortest circulating water pipe length, and had the smallest Fermi 2 system impacts.

In conformance with Constraints 10 and 11, several Fermi 2 operational facilities (warehouses, administration and engineering offices, maintenance shops) were relocated from the Fermi 3 construction site to the Fermi 2 side of the site. These facilities were to be relocated in an area that was considered to be forested upland. The location of these facilities changed from Revision 0 to Revision 1 to minimize wetland impacts, in conformance with Constraint 1, based on additional wetlands delineation information.

In conformance with Constraint 11, the Fermi 2 site to the north, and the Fermi 3 construction site to the south, must have completely separate access roads, entrances and exits. This is to prevent traffic from either site affecting the operation of Fermi 2 or Fermi 3. The Fermi 2 access road followed the west property line along Toll Road, then turned west through an area that was considered to be forested upland. The access road was altered from Revision 0 to Revision 1 to minimize wetland impacts, in conformance with Constraint 1, based on additional wetlands delineation information. The Fermi 2 access road was slightly altered in Revision 2 to further reduce wetland impacts.

The Fermi 3 temporary construction parking lot was proposed to be located on the north side of Fermi Drive, beneath the existing transmission corridors in accordance with the Fermi 2 and Fermi 3 separation requirements per Constraint 10. A large area is needed for construction parking to accommodate 2900 workers at the peak of construction. This area is also directly connected to the construction site and meets the requirements of Constraint 7. The utility of this

area for other construction activities was limited due to the existing high-voltage overhead lines. The location of construction parking and the utilization of this field changed from Revision 1 to Revision 2.

#### Revision 1 Site Layout

Based on completion of the Ducks Unlimited wetland study in July 2008, Detroit Edison recognized that the cooling tower location and the location of the Fermi 2 facilities moved from the Fermi 3 construction site, had greater wetland impacts than originally assessed and that these placements would have to be modified. Therefore, at the U.S. Nuclear Regulatory Commission (NRC) environmental audit in February 2009, Detroit Edison informed the NRC, Michigan Department of Environmental Quality (MDEQ), and the U.S. Army Corps of Engineers (USACE), that the Revision 0 site layout would be revised to further minimize wetland impacts.

Through planning and consultation with natural resource professionals, stakeholders and subject matter experts (nuclear security, materials management, construction planning, operations, maintenance, environmental and licensing), Detroit Edison developed a Revision 1 site layout that reduced wetland impacts to only those areas where a practicable alternative could not be identified that would still fulfill the overall project purpose. All available land onsite with no wetland impacts and low wetland impacts, that also conformed to the key constraints, was identified on a figure, for use in reconfiguring the Fermi 3 site layout. The stakeholder team then worked to eliminate or minimize wetland impacts by redesigning the site layout utilizing those identified low-impact and no-impact areas, with a focus on relocating Fermi 3 structures and activities with the greatest wetland impacts (e.g., cooling tower location, Fermi 2/Fermi 3 PAP, parking, office buildings, warehousing, and shops). The Revision 1 site layout was submitted to the NRC in December of 2009.

One of the key changes made to the Revision 1 site layout was moving the cooling tower from the forested wetland, south of Fermi Drive, to land just west of the Fermi 3 power block. This location has several advantages such as shorter circulating water lines, no temporary disturbance to construction site roadways, and no wetland impacts (per the 2008 wetlands delineation). One consideration of this location was that it was close to safety-related structures such as the reactor building. According to Constraint 9, the cooling tower was positioned a distance greater than its height from safety-related structures to prevent damage to these structures, if the tower were to collapse. The South Canal is impacted by the new cooling tower location and by the need to maintain a free flow of personnel, equipment and materials to the construction site, according to Constraint 7. The intersection of Fermi Drive, Quarry Lake Road and Doxy Road is considered a pinch point to the free flow of personnel, equipment and materials. Bridging of the South Canal allows for an unconstrained connection between the field to the west and the construction site. Due to the considerations explained above regarding Constraints 7 and 9, the impact to the South Canal is unavoidable.

A disadvantage to locating the cooling tower adjacent to the Fermi 3 power block is the loss of a large expanse of land adjacent to the primary construction site needed for laydown, staging, fabrication and assembly of modular components, according to Constraint 8. This loss can be partially, but not completely, compensated by managing the construction sequence. To address this constraint, the area known as the "pork chop" located south of Fermi Drive and west of Quarry Lakes Road, was utilized in the Revision 1 site layout, in conformance with Constraints 7, 8, and 10. The "pork chop" provides approximately 30 acres of prime construction land that includes 11.80 acres of forested wetland near the construction site. Natural resource inventories suggested the forested wetland in this area was of lower value ecologically than the other large forested systems onsite. The wetland is connected hydrologically with culverts but fragmented from other wetland areas and Lake Erie due to multiple roadways completely surrounding the site. It also had a larger component of dead/dying ash trees and invasive species and was subject to ongoing disturbance.

The "pork chop" is an important feature of the Revision 1 site layout due to its proximity to the construction site; location adjacent to Fermi Drive and rail access; and, the absence of overhead

transmission lines that can present a safety hazard and barrier to movement and assembly of equipment, materials and modules. Construction warehouses, staging, assembly areas, and maintenance shops were planned for this location. Utilization of this area greatly facilitates the free flow of personnel, equipment and materials, further relieving the pinch-point concern at the Fermi Drive and Quarry Lakes Road intersection. Traffic through this area includes workers and materials coming from Dixie Highway, laydown and staging areas, the rail spur, and the barge slip.

The other key change to the Revision 1 site layout was removing the Fermi 2 operational structures (permanent parking lot, warehouses, an administration building and maintenance shops) from the forested wetland west of the Fermi 2 protected area. These structures were relocated in the Revision 1 site layout as follows:

- An administrative support campus outside the owner controlled area, associated with the Nuclear Operations Center/Nuclear Training Center (NTC), was created to move the Fermi 2/Fermi 3 Administration Building and the Fermi 3 Training Simulator out of forested Wetland I, in conformance with Constraint 1. Conformance to Constraints 4, 10 and 11 was evaluated for this location due to Fermi 2 operational support facilities being moved to the southern, Fermi 3 side of the site. Several considerations mitigate these constraint conformance issues, as follows: a bridge or tunnel will be utilized to cross Fermi Drive without affecting the construction site; personnel utilizing the training facility and administrative offices are generally at that location the entire day and would not need to cross to the Fermi 2 side of the site; and; increased use of technology such as video conferencing will minimize cross over. In addition, this arrangement reduces the need for additional operational parking at the PAP due to reduced personnel inside the protected area, which reduces the parking-structure foot print, thus minimizing environmental impacts in this area in conformance with Constraint 1.
- The flat operational parking was moved out of forested Wetland I and replaced by two multiple-level parking structures to minimize land use and wetland impacts, and to improve the overall site parking situation in conformance with Constraint 1. One parking structure is proposed near the NTC for permanent training and administration parking to support the new administrative campus. The other structure is located near the new PAP on the west side of the protected area boundary for protected area parking. A small wetland impact associated with a portion of this parking structure remains. This impact could not be avoided due to the proximity of existing and proposed structures in this area, along with nuclear security distance requirements in conformance to Constraint 9. The two parking garages will be sized to accommodate Fermi 2 and Fermi 3 operational parking.
- The combined Fermi 2/Fermi 3 warehouse was moved out of forested Wetland I in conformance with Constraint 1 and moved east to straddle the protected area boundary near the vehicle inspection building (VIB) and PAP. This location minimizes impacts, however some wetland impacts were unavoidable due to necessary sizing of the Fermi 2/Fermi 3 warehouse and the need for an access road along the west side of the structure. This arrangement will improve operational efficiency of the Fermi 2 and Fermi 3 sites. Other areas north and west of the protected area were considered, however, key stakeholder feedback, primarily from materials management and nuclear security, insisted on this location for secure protected area operations in conformance with Constraints 2, 3, 6 and 9. Two other smaller warehouses (32 and 34) were also moved out of forested Wetland I, to a location along the access road with no associated wetland impact.
- The Fermi 2 operational access road was moved to minimize environmental impacts in conformance with Constraint 1. The access road no longer cuts through forested Wetland I. The access road now follows the existing Toll Road, then transitions to existing site roads, which route around Wetland I to access the site. Wetland impacts were minimized, however some impacts were unavoidable, in conformance with Constraints 6, 10 and 11. The unavoidable impacts were associated with a new Fermi 2 operational security gate,

necessary road improvements and rerouting of the existing road along the west side of the new Fermi 2/Fermi 3 warehouse.

Other modifications reflected in the Revision 1 site layout include the following:

- The Fermi 2/Fermi 3 meteorological tower was relocated because the new Fermi 3 cooling tower location will interfere with the current meteorological tower location. The new meteorological tower is relocated in an area near the southeast corner of the site. This location was selected because there were no known wetland impacts in conformance with Constraint 1 and because it met NRC regulatory guidance for meteorological tower placement.
- Construction staging and laydown was added on the south site border in a low-wetland impact area, on the east side of Quarry Lakes Road and around Fox Road, in conformance with Constraints 8 and 10. Unavoidable, temporary impacts are incurred to several small, fragmented, low-value emergent and scrub shrub wetlands (Wetlands AA, JJ, II). Nuclear construction subject matter experts engaged by Detroit Edison indicated that more land was needed for construction activities (staging, laydown, temporary spoils storage, and component assembly) than was originally allocated in the Revision 0 site layout.
- The Fermi 3 switchyard was moved to the agricultural field at the far west side of the property, adjacent to the south side of Fermi Drive. In Revision 0, the Fermi 3 switchyard was adjacent to the Fermi 2 switchyard in the protected area. Further analysis of the Fermi 3 interconnection determined the available space adjacent to the Fermi 2 switchyard was not sufficient for the new Fermi 3 switchyard. In addition, in accordance with Constraint 2, the original location was an impediment to movement and a potential impact to Fermi 2 operations. The new location also places the switchyard outside the owner-controlled area to facilitate access by ITC *Transmission* (owner and operator of the switchyard).

#### Revision 2 Site Layout

After the Revision 1 site layout was finalized, terrestrial and aquatic studies continued on the site. The results indicated a greater diversity in the vegetative communities within the "pork chop," than was originally understood. Subsequently, in a meeting to discuss Fermi 3 wetland permitting in July 2010, the MDEQ and USACE indicated that the wetland impacts associated with the "pork chop," contained in the Revision 1 site layout, were problematic. In response to this feedback and in conformance with Constraint 1, Revision 2 of the site layout was developed to address the wetland impact to the "pork chop" area.

Construction activities were moved out of the "pork chop" (Wetlands BB, EE, and FF) and the contiguous forested upland associated with that parcel, in accordance with Constraint 1. Site elements were rearranged to eliminate the "pork chop" impact, in conformance with Constraints 1, 7, 8 and 10. Most of the construction activities planned for the "pork chop," were moved to the north side of Fermi Drive. Some of the construction activities were also moved into areas designated for construction laydown located around the Quarry Lakes. Construction parking originally planned for the field north of Fermi Drive, was moved into the farmer's field located along the western property line. The use of the field on the north side of Fermi drive was limited in the previous site layout because of existing overhead transmission lines, so in Revision 2, the 345 kV lines are rerouted.

The resulting changes are summarized as follows:

 The 345 kV transmission lines that serve Fermi 2 and the proposed Fermi 3 were rerouted to open up the field on the north side of Fermi Drive for all necessary construction activities to satisfy Constraints 7, 8 and 10. The transmission is rerouted due west through emergent Wetland C, then south along Toll Road, to the Fermi 3 switchyard, which was moved into the field at the corner of Toll Road and Fermi Drive. This change eliminates impacts to a large parcel of rare and imperiled wetland (the "pork chop") and incurs unavoidable impacts to approximately 2 acres of forested wetland (the impacts will change the edge of Wetland F below the transmission lines from a forested wetland to a emergent wetland) and small, unavoidable, permanent and temporary impacts to an emergent Wetland C.

- Land surrounding the Quarry Lakes, designated as laydown, was added for various construction activities in conformance with Constraints 7, 8 and 10, to replace loss of laydown and staging areas from the "pork chop" area and from moving construction parking into the farmer's field. Some temporary, unavoidable impacts are incurred to small, fragmented, low-value forested and emergent wetlands in these areas (Wetlands W and Y).
- The Fermi 3 switchyard was moved from the south side to the north side of Fermi Drive to facilitate the transmission corridor rerouting in conformance with Constraints 1, 7 and 8. Construction parking, previously located in the field north of Fermi Drive, is moved into the farmer's field.
- The Fermi 2 access road was realigned to further minimize impacts to forested Wetland I in conformance with Constraint 1. The new alignment will follow Toll Road further north, just past Langton Road, prior to transferring onto the Fermi site access road.
- The meteorological tower was moved southeast of the Revision 1 location to eliminate any potential wetland impacts. When the Revision 1 location was identified, the understanding was that cutting trees in a wetland did not require a wetland permit. At the July 2010 meeting with the MDEQ and USACE, the staff clarified that cutting trees from forested wetland areas in association with the meteorological tower would require a permit for the conversion of wetland type. In conformance with Constraint 1, the Revision 2 site layout identified a location that was consistent with the recommendations of the meteorological tower siting study and did not require tree cutting in wetland areas.
- In Revision 2, construction boundaries were refined to eliminate unintended impacts in the Revision 1 site layout associated with construction along Quarry Lake Road and the Dredged Spoils Disposal Basin.
- Operations and maintenance dredging authorized under existing Fermi 2 permits was eliminated as an impact attributed to Fermi 3 construction (reduction of 7.32 acres of open water impacts). The incremental change in the extent of dredging within Lake Erie required to support Fermi 3 construction was included.

#### Preferred Site Layout

Refinements to the Revision 2 site layout were made during the development of the joint permit application. Detroit Edison modified the alignment of the new operations access road to avoid potential wetland impacts in the area west of the existing Toll Road. This change resulted in a small increase in the forested and emergent wetland impacts on the Fermi property side of the access road. The shift in the access road alignment altered the path of the onsite transmission, resulting in an increase of 1 acre (from 1.53 acres to 2.53 acres) in the forested wetland that would be cleared within the transmission corridor. The proposed roadway, security gate, and box culvert design were modified to minimize the encroachment into the wetland areas as much as practicable. Overall the wetland impacts associated with the road increased by 0.53 acre. The wetlands west of the existing Toll Road have not been formally delineated. Based on federal wetland mapping and field observations, Detroit Edison believes equal or greater wetland impacts would have resulted from the previous access road alignment.

#### Summary of Project Alternatives and LEDPA Analysis

**Table 4-3** compares potential impacts to wetlands on the Fermi site of the four alternative site layouts discussed above. Wetland impacts were further characterized by Michigan Natural Communities to illustrate impacts to higher valued wetlands.

Detroit Edison minimized potential project impacts to waters of the United States, including wetlands. The site layout for the Fermi 3 project was based on an iterative approach to determine a layout that would most practicably avoid and minimize impacts to USACE jurisdictional waters and wetlands. Areas of the Fermi site that represented no, or minimal, impacts to wetland functions and values were identified. Stakeholders were engaged to identify constraints on the site layout, including integration of Fermi 3 with the ongoing operations of Fermi 2. Those constraints were used to identify locations for the proposed Fermi 3 and associated construction. Efforts were made to avoid, to the extent possible, impacts associated with the destruction or modification of wetlands and streams and new construction in wetlands and streams wherever there was a practicable alternative.

The Fermi 3 power block was located in the largest contiguous upland area consistent with Constraints 1, 2, 3, 4, 5, 6, 7, 9 and 10. The cooling tower was also located in this upland area at a distance from the power block that satisfies nuclear safety considerations, per Constraint 9. The minimum separation distance precludes siting the cooling tower entirely within the available upland adjacent to the Fermi 3 power block area.

A combined Fermi 2/Fermi 3 warehouse, parking, VIB, and PAP located on the west side of the protected area boundary, offers significant efficiency advantages over the operational life of the plants. A multi-level parking structure connected to the PAP addresses the need for parking for an additional 900 staff when Fermi 3 is operational while minimizing impact to the adjacent wetlands. The location of these facilities supports the integration of the Fermi 2 and Fermi 3 protected areas when construction is completed and satisfies other nuclear security considerations per Constraints 2, 3, 6, 9 and 10.

Construction of the Fermi 3 intake structure, discharge pipe, and barge slip within the existing Fermi 2 intake embayment reduces the cumulative area of lake bottom that will be disturbed per Constraint 1. The discharge pipe and fish return pipe are the only Fermi 3 components that will require dredging beyond the operations and maintenance dredging currently authorized for Fermi 2 under MDEQ and USACE permits.

Adequate laydown area is needed to support the modular construction that is a key component of modern nuclear power plants, as described in Constraint 8. Reactors such as the ESBWR proposed for Fermi 3 use standardized modules to expedite the construction schedule. With the relocation of the 345kV transmission, the field to the west, and immediately adjacent to the power block, along the north side of Fermi Drive, possesses the attributes necessary for key construction activities consistent with Constraints 7 and 8. Use of this area includes some unavoidable impacts to wetland areas that will be restored following completion of construction of Fermi 3.

The design iterations reduced the potential wetland impacts from over 150 acres to approximately 40 acres. Overall impacts to wetlands were reduced in the Preferred Alternative. Open water impacts were also reduced in the Preferred Alternative. The Preferred Alternative also reduces the total impact to those Michigan Natural Communities that are considered rare and imperiled. These include Great Lakes marsh and southern swamp (southern hardwood swamp). All the permanent and temporary wetland impacts in the preferred alternative presents significantly less impact to the high functioning, high value wetland communities at the Fermi site. Based on the results of the alternative site layout analysis, the Preferred Alternative was selected as the proposed site layout that best addresses avoidance and minimization of wetland impacts.

# Table 4-1. Candidate Site Practicability Review (Sheet 1 of 2)

	Site A – Petersburg	Site C – South Britton	Site F – Greenwood	Site M – Fermi	Site N – Belle River	Site W1 – Port Austin	Site W2 – Caseville	Site W3 – Bay Port
Land Acquisition	Impracticable	Acceptable	Acceptable	Acceptable	Acceptable	Impracticable	Impracticable	Impracticable
	32 private owners, few houses.	14 private owners, 15-25 houses/ facilities. May need to acquire additional land for EAB	Detroit Edison. Would need to acquire additional land for EAB	Detroit Edison. Fermi 3 EAB entirely within existing Fermi property and security zone	81% Detroit Edison / 19 % Michigan Public Power Authority	85 private owners. Many houses/ facilities	90 private owners. Many houses/ facilities	120 private owners. Many houses/ facilities. May need to acquire additional land for EAB
Transmission Lines	Acceptable	Acceptable	Marginal	Acceptable	Marginal	Impracticable	Impracticable	Impracticable
	345-kV lines with available capacity 1.2 miles north of site	345-kV line with available capacity 1 mile north of site	345-kV line onsite but congested	345-kV line with available capacity onsite	345-kV line onsite but congested	Nearest 345-kV line is approximately 48 miles from the site	Nearest 345-kV line is approximately 41 miles from the site	Nearest 345-kV line is approximately 35 miles from the site
Water Supply	Impracticable	Impracticable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
	15.4 miles inland from Lake Erie	24.4 miles inland from Lake Erie	11 miles inland from Lake Huron	On the shore of Lake Erie	2 miles west of St. Clair River	1.4 miles inland from Lake Huron	2.8 miles inland from Lake Huron	1.4 mile inland from Saginaw Bay

	Site A – Petersburg	Site C – South Britton	Site F – Greenwood	Site M – Fermi	Site N – Belle River	Site W1 – Port Austin	Site W2 – Caseville	Site W3 – Bay Port
Hazardous Land Uses	Impracticable	Impracticable	Marginal	Acceptable	Impracticable	Acceptable	Acceptable	Acceptable
	Petroleum product pipeline 2 miles south. Two natural gas pipelines traversing the site from southwest to northeast within ½ mile of plant	Two natural gas pipelines traversing the site from southwest to northeast. Would require relocation of a 30-inch line to avoid conflicts with the plant	Oil-fired peaking unit and three gas turbines onsite	Two limestone quarries 3 miles northeast.	Multiple large natural gas transmission lines, gas storage field and compressor station within 2 miles. Bulk petroleum facility 3 miles north of the site	No hazardous land use sites within 5 miles.	No hazardous land use sites within 5 miles.	Limestone quarry and anhydrous ammonia facility within 3 miles of the site.
Railroad Access	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Marginal	Acceptable
	Indiana & Ohio Railroad 1.5 miles west of the site.	Norfolk Southern Railway 1.9 miles east of the site.	PVTX Railway spur on site.	Canada National Railway spur on site.	CSX Transportation spur on site.	Huron & Eastern Railway 1.4 miles southeast of the site.	Huron & Eastern Railway 6.7 miles south of the site.	Huron & Eastern Railway 5.4 miles south of the site.
Overall Conclusion	Impracticable	Impracticable	Acceptable	Acceptable	Impracticable	Impracticable	Impracticable	Impracticable

# Table 4-1. Candidate Site Practicability Review (Sheet 2 of 2)

Onsite Wetlands/Waters	Propos Fe	sed Site rmi	Alternative Site Greenwood		
Delineated Property Acreage	11	06	17	29	
Wetlands Acreage	5	13	38	86	
Open Water Acreage	4	0	N	IA	
Streams Linear Feet (LF)		0	30,	303	
Wetlands Affected Acreage	4	0	3	9	
Streams Affected LF		0	4	01	
Open Water (Lake Erie) Affected Acreage	0.	08	Ν	IA	
Open Water (inland) Affected Acreage	N	NA NA		IA	
Offsite Wetlands/Waters	Wetlands Streams (LF) (acreage)		Wetlands (acreage)	Streams (LF)	
Makeup Water Intake (acreage) <sup>a</sup>	-	-	NA	NA	
Water Pipeline ROW	-	-	3.1	4378	
Transmission Line ROW	121	7304	257	29,648	
Blowdown Pipeline ROW	-			273	
Total Wetlands/Waters Affected					
Wetlands Affected Acreage	161 300		00		
Streams Affected LF	7304 34,701		701		
Open Water (Lake Erie) Affected Acreage	0.08 NA		IA		
Open Water (inland) Affected Acreage	N	IA	N	IA	

# Table 4-2. Comparison of Wetland/Water Impacts from Alternative Sites

<sup>a</sup> Impacts within Lake Huron for the construction of an intake structure for the Greenwood site alternative were not evaluated.

Туре	Revision 0	Revision 1	Revision 2	Preferred Alternative					
Wetland Impacts (acres) by Type									
PEM wetland <sup>a</sup>	54.84	26.40							
PFO wetland	96.66	18.97	6.84	8.03					
PSS wetland	7.00	4.10	5.28	5.28					
Total wetlands	158.49	41.86	38.19	39.71					
Open water	8.87	7.40	0.08	0.08					
Wetland Impacts (acres) by Michigan Natural Community <sup>b</sup>									
Rare and imperiled: Great Lakes marsh	47.53	10.38	12.86	13.19					
Rare and imperiled: southern hardwood swamp	92.19	14.08	1.95	3.15					
Southern shrub carr	7.00	3.92	3.91	3.91					
PEM wetland – coastal	0	0.80	0.80	0.80					
PEM wetland <sup>a</sup>	7.31	7.61	12.42	12.42					
PFO wetland	4.47	4.89	4.89	4.89					
PSS wetland	0	0.18	1.37	1.37					
Open water	8.87	7.40	0.08	0.08					

#### Table 4-3. Comparison of Impacts for Alternative Site Layouts

<sup>a</sup> Includes 1.88 acres of nonjurisdictional PEM wetland impacts.

<sup>b</sup> Chapter 324, Section 303.01(t) of the Michigan Natural Resources and Environmental Protection Act lists Michigan Natural Communities that are considered rare and imperiled. These include Great Lakes marsh and southern swamp (southern hardwood swamp). Any wetland considered "other" that is connected hydrologically to Lake Erie or is within 1000 feet of the ordinary high water mark (elevation 571.6 feet IGLD 1955) is considered coastal.

SECTION 6: AUTHORIZATIONS REQUIRED FOR THE PROPOSED ACTIVITY

List all other federal, interstate, state or local agency authorizations required for the proposed activity, including all approvals or denials received.

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	lf denied, reason for denial	Activity Covered
FEDERAL AUTHORIZATIONS							
U.S. Army Corps of Engineers (USACE)	Section 10 of the Rivers and Harbors Act of 1899	Section 10 Permit					Structures and/or work that may affect navigability of any navigable waters of the US. Structural alterations may include barge slip construction and the installation or modification to existing intake and outfall structures.
USACE	33 U.S.C. 1344, Federal Section 404 Permit Water Pollution Control Act	Section 404 Permit					Discharge of dredge or fill material within waters of the US, including wetlands.
Department of Transportation	49 CFR 107, Subpart G	Hazardous Materials Certificate of Registration, 49 CFR 107, Subpart G	Reg. No: 061009 551 033RT <sup>1</sup>				Shipment of radioactive and hazardous materials
Federal Aviation Administration (FAA)	14 CFR 77.13, Federal Aviation Act	Notice of Proposed Construction or Alteration, 14 CFR 77.13					Notice required before erecting structures with a height greater than 200' or impacting navigable airspace (construction cranes, cooling towers, transmission lines).
National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service	Threatened and Endangered Species Act, 16 U.S.C. 1536	Endangered Species Act Biological Consultation (marine species)					Consultation regarding the potential impact to threatened or endangered marine species.

Table 6-1. Federal, State and Local Environmental Authorizations

Revision 1

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	If denied, reason for denial	Activity Covered
Nuclear Regulatory Commission (NRC)	10 CFR 52, Subpart C	Combined License 10 CFR 52, Subpart C		September 2008			Construction activities associated with a nuclear power facility.
NRC	10 CFR 30	Byproduct license (10 CFR 30)					Approval to possess special nuclear material.
NRC	10 CFR 70	Special Nuclear Materials License (10 CFR 70)					Approval to possess fuel and source material.
NRC	10 CFR 40	Domestic Licensing of Source Material (10 CFR 40)					Approval to possess source material.
NRC	Coastal Zone Management Act, 16 U.S.C. 1451 et seq.	Coastal Zone Management Act, Certification of Consistency					Obtaining a Federal license or permit.
NRC/Environmental Protection Agency	Resource Conservation and Recovery Act, Atomic Energy Act, 40 CFR 266	Low Level Mixed Waste Conditional Exemption, 40 CFR Part 266					Allows the storage and treatment of low-level mixed waste.
U.S. Coast Guard	14 U.S.C. 81, 83, 85, 633; 33 CFR 66	Authorization to Impact Navigation/Private Aids to Navigation					The interference of existing navigation aids or the placement and use of private aids to navigation in navigable waters of the U.S.

Table 6-1. Federal, State and Local Environmental Authorizations

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	If denied, reason for denial	Activity Covered
U.S. Fish and Wildlife Service (USFWS)	Threatened and Endangered Species Act, 16 U.S.C. 1539	Endangered Species Act Biological Consultation (non- marine species)					Consultation regarding the potential impacts to federally threatened and endangered species.
USFWS	Migratory Bird Treaty Act, 16 U.S.C. 703	Migratory Bird Treaty Act Consultation					Consultation regarding the potential impacts to protected migratory birds.
USFWS	Bald and Golden Eagle Protection Act, 16 U.S.C. 668	Bald and Golden Eagle Protection Act Consultation					Consultation regarding the potential impacts to bald and golden eagles.
STATE AUTHORIZATIONS	;						
Michigan Department of Community Health	MCL 333.13522	X-ray Equipment Registration					Possession of a radiation machine.
Michigan Department of Environmental Quality (MDEQ) - Waste and Hazardous Materials Division	MCL R299.9303 et seq.	Hazardous Waste Management, Site Identification Number	MID 087 056 685 <sup>1</sup>				A generator shall not treat or store, dispose of, or transport or offer for transport, hazardous waste without having received a site identification number from the regional administrator.
MDEQ - Waste and Hazardous Materials Division	MCL 29.5c	Review, Approval, and Certification of Tank Systems					Regulation of installation of new Aboveground Storage Tank (AST) systems with individual tanks having a storage capacity of more than 1,100 gallons of flammable liquid or combustible liquid.
MDEQ - Waste and Hazardous Materials Division	MCL R299.9822	Low-Level Mixed Waste Conditional Exemption					Low level mixed waste storage and treatment conditional exemption eligibility and standards.

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Table 6-1. Federal, State and Local Environmental Authorizations

Revision 1

August 2011

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	lf denied, reason for denial	Activity Covered
MDEQ - Waste and Hazardous Materials Division	MCL 333.13505	Radioactive Material Registration					Possession of radioactive materials.
MDEQ - Air Quality Division	The Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended, Part 55 (Air Pollution Control) MCL B336 1201	Permit to Install					Construction of any air emission source.
MDEQ - Air Quality Division	Public Act 451 of 1994, as amended, Part 55(Air Pollution Control)	Air Permit					Operation of a source of air pollutants.
	MCL R336.1210 - R336.1218						
	40 CFR 70						
MDEQ - Water Resources Division	Coastal Zone Management Act16 U.S.C. 1451 et seq.	Preliminary Coastal Zone Management Act Concurrence Consultation	Included in Joint Permit Application	June 2011			Obtaining a Federal license or permit.
MDEQ - Water Resources	MCL 324.30306 et seq.	Wetland Protection	Included in Joint	June 2011			Any projects on or in wetlands
Division	33 U.S.C. 1344, Federal Water Pollution Control Act, Section 404	Permit	Permit Application				regulated by the State of Michigan.

#### Table 6-1. Federal, State and Local Environmental Authorizations

Revision 1
#### Agency Authority Type approval Identification Date Date If denied, Activity Covered number applied approved reason for /denied denial MDEQ - Water Resources MCL 324.32501 et seq. Great Lakes Included in Joint June 2011 Dredging, filling, modifying, Division Bottomlands Permit Permit constructing, enlarging, or extending Application of structures in Great Lakes waters or below the OHWM of the Great Lakes; or connecting any natural or artificial waterway, canal, or ditch with any Great Lake including Lake St. Clair. MDEQ - Water Resources MCL 324.32723 Water Withdrawal Withdrawals from the Great Lakes Division Permit and connecting waterways of over 5,000,000 gallons per day. MDEQ - Water Resources MCL 324.32705 Water Withdrawal Development of the withdrawal Division Registration capacity on the property of an additional 100,000gallons of water per day from the waters of the state. MDEQ - Water Resources MCL 324.4101 et seg. Wastewater Construction or modification of Division Facilities sewers pumping stations, force Construction mains, and treatment plants. Permit/Part 41 Construction Permit MDEQ - Water Resources 33 U.S.C. 1251 et seg. National Pollutant May 13, Discharge of waste, waste effluent and Division Discharge 2011 certain categories of storm water MCL 324.3101 et seq. Elimination System runoff into the surface waters of MCL 324.3301 et seq. (NPDES) Permit Michigan during operation of the facility. MDEQ - Water Resources MCL R323.2190 NPDES Permits, A Permit by Rule may be obtained to Division Stormwater authorize storm water discharges Construction Permit from construction site greater than or equal to a 5 acres.

#### Table 6-1. Federal, State and Local Environmental Authorizations

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	If denied, reason for denial	Activity Covered
MDEQ - Water Resources Division	33 U.S.C. 1251 et seq. MCL 324.3101 et seq.	NPDES General Dredging Dewatering Water Permit	General Permit Number MIG690000				Discharges of dredging dewatering water resulting from the removal of uncontaminated sediment from a waterway.
MDEQ - Water Resources Division	33 U.S.C. 1251 et seq. MCL 324.3101 et seq.	NPDES General Hydrostatic Pressure Test Water	Permit Number MIG6790000				Discharges from the hydrostatic pressure testing of new and existing piping, tanks, vessels, and other associated equipment which have been physically cleaned and/or provided with effluent treatment.
MDEQ - Water Resources Division	33 U.S.C. 1341	Section 401 Water Quality Certification	Included in Joint Permit Application and NPDES application	June 2011 and May 13, 2011, respectively			The construction or operation of a facility which may result in any discharge into the navigable waters that will require a Federal license or permit.
Michigan Department of Transportation (MDOT)	MCL 257.716 et seq.	Transport Permit					Movement over state highways of vehicles or loads that exceed the size or weight limitations specified by law.
MDOT - Multi-Modal	MCL 259.481 et seq.	Tall Structures Act Permit					Construction of an object which has the potential to affect navigable airspace (height in excess of 200' or within 20,000' of an airport).
MDOT	MCL 247.171 et seq.	Construction Permits (Right of Way Permit)					Activities by businesses or private parties and utility companies wishing to use the highway right-of-way for operations other than normal vehicular or pedestrian travel are required to obtain a permit from MDOT.

#### Table 6-1. Federal, State and Local Environmental Authorizations

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	lf denied, reason for denial	Activity Covered
Michigan State Historic Preservation Office (SHPO)	National Historic Preservation Act , Section 106 Review, 36 CFR 800	Consultation		NRC initiated Section 106 consultation December 2, 2010			Consultation concerning the potential impacts to cultural resources.
Michigan Department of Natural Resources (MDNR)	MCL 324.36501 et seq.	Consultation					Consultation regarding the potential impacts to threatened and endangered species.
MDNR	MCL 324.36501 et seq.	Endangered Species Permit					Taking or harming of state listed endangered species.
LOCAL AUTHORIZATIONS	5						
City of Monroe Michigan	33 U.S.C. 1251 et seq. Michigan Water Resource Act Codified Ordinances of Monroe, Michigan, Streets, Utilities and Public Services Code, Chapter 1042, Division 2, Section 1042.15	Monroe Metropolitan Water Pollution Control Facility Industrial Pretreatment Permit	Permit No. 1020 <sup>1</sup>				Treatment of wastewater to comply with categorical pretreatment standards and local limits.
City of Monroe, Michigan/ Frenchtown Township	Codified Ordinances of Monroe, Michigan, Streets, Utilities and Public Services Code, Chapter 1042, Division 15, Section 1042.71	Sanitary Sewer Service Connection Permit					Required before a person uncovers, makes any connection with or opening into, uses, alters, or disturbs any public sewer or appurtenance to.

Table 6-1. Federal, State and Local Environmental Authorizations

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	If denied, reason for denial	Activity Covered
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200 Article 6, Section 6.04 and Article 27.00, Section 27.06	Site Plan and Development Approval					Review of planned construction activities. Requires submittal of application for Site Plan Approval which requires review of items such as engineering. The approval process may also result in the issuance of permits such as a grading permit issued under the authority of the Building Official.
Frenchtown Township		Engineering Review					Review of detailed engineering construction plans addressing water, sanitary, storm water drainage, grading and paving for the site.
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200	Occupancy Permit					Occupancy of the building.
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200 Article 4, Section 4.40 and Article 24, Section 24.05	Building Permit					Permit authorizing the construction, removal, moving, alteration, or use of a building or construction of any driveway or parking lot constructed of hard surface materials.
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200 Article 20	Special Approval of Activities within either the Floodway or Floodway Fringe					Approval of activities within the Floodway Area or Floodway Fringe Area of the Floodway or Floodplain District.

Table 6-1. Federal, State and Local Environmental Authorizations

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	lf denied, reason for denial	Activity Covered
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200 Article 4, Section 4.10	Temporary Building Used During Construction					Use of a portable structure as a temporary building during construction.
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200 Article 26, Section 26.04	Landscape Development Plan					Submittal of a Landscape Development that illustrates areas of existing trees or wood lots, which shall be removed, and those that will be retained.
Frenchtown Township	Frenchtown Charter Township Zoning Ordinance No. 200 Article 4, Section 4.21.2	Excavation Permit					Activities that propose to fill an area of 20,000 square feet or greater or any excavation and removal regardless of area involved except for mineral mining operations, farm ponds, and landscape ponds.
Monroe County, Michigan, Office of On-site Water Supply/Frenchtown Township	Codified Ordinances of Monroe, Michigan, Monroe County Environmental Health/Sanitary Code, Chapter III–Water Supplies	Well Permit					Construction of water supply wells, irrigation wells, heat exchange wells, industrial wells for water supply, test wells to obtain information regarding groundwater quantity or quality, recharge well, dewatering well, fresh water well at oil or gas well drilling site.
Monroe County, Michigan, Drain Commissioner	Local Ordinance	Engineering Review					Review of surface water flow during operation.
Monroe County Michigan, Drain Commissioner	NREPA Part 91, of Act 451 of the Michigan Public Acts of 1994 MCL 324.9101 et seq.	Soil Erosion and Sedimentation Control (SESC) Permit					Any earth change that disturbs one or more acres, or is within 500 feet of a lake or stream.

#### Table 6-1. Federal, State and Local Environmental Authorizations

Agency	Authority	Type approval	Identification number	Date applied	Date approved /denied	If denied, reason for denial	Activity Covered
Monroe County, Michigan, Drain Commissioner	Act No. 40 of 1956	Drain Culvert Permit					Permit to construct in a drain.
Monroe County, Michigan, Health Department/ Frenchtown Township	Monroe County Environmental Health/Sanitary Code, Chapter III, Section 302. Part 127 of Michigan Public Health Code, 1978 PA 368, as amended	Water Supply Permit					Any new construction or extensive change affecting the basic unit or the suction line on any water supply system within Monroe County, Michigan.

#### Table 6-1. Federal, State and Local Environmental Authorizations

Note:

All necessary permits will be applied for in a timely manner. New permits may not be obtained in certain instances due to potential authorization of construction and operational activities through the modification of existing permits possessed by the Fermi Station.

1. Permits authorizing current activities associated with operations on the Fermi site. When practical, existing permits will be modified to authorize activities associated with the construction or operation of a new nuclear facility on site.

			-				
ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
1	07 529 018 10	MICHIGAN NATURE AS	SOCIATION	326 E GRAND RIVER AVE	WILLIAMSTON	MI	48895
2	07 529 018 00	UNITED STATES FISH 8 BISHOP HENRY WHIPP	WILDLIFE SERVICE LE FEDERAL BLDG	1 FEDERAL DRIVE	FORT SNELLING	MN	55111- 4056
		NEWPORT BEACH MAR	INA				
3	07 529 015 20	PETTY THOMAS		TOLL RD	NEWPORT	MI	48166
4	07 529 015 00	FIX	BERNICE	6394 LEROUX	NEWPORT	MI	48166
5	07 529 016 00	INTERNATIONAL TRANS	SMISSION CO	27175 ENERGY WAY	NOVI	MI	48377
6	07 529 021 00	MASSERANT	RANDY	6001 TOLL	NEWPORT	MI	48166
7	07 020 502 00	CARMACK	KATHERINE & ROBIN	12600 FESSNER	CARLETON	MI	48117
8	07 020 502 10	TAORMINA	JACK SR & MARILYN	8473 RENEE	NEWPORT	MI	48166
9	07 020 502 20	DURCHMAN	DAVID	5089 POINTE AUX PEAUX RD	NEWPORT	MI	48166
10	07 020 502 30	PARKER	ORVAL	5121 POINTE AUX PEAUX RD	NEWPORT	MI	48166
11	07 020 505 21	BALTRIP	SUSAN & SCOTT	5168 POINTE AUX PEAUX RD	NEWPORT	MI	48166
12	07 020 505 22	BOLES	TIMOTHY J	5182 POINTE AUX PEAUX RD	NEWPORT	MI	48166
13	07 020 505 23	MCCARTY	GORDON M	5194 POINTE AUX PEAUX RD	NEWPORT	MI	48166
14	07 020 505 20	MCCARTY	GORDON M	5194 POINTE AUX PEAUX RD	NEWPORT	MI	48166
15	07 020 505 10	NOTHNAGEL	DARLIN EDWARD	4704 ST CLAIR ST	NEWPORT	MI	48166
16	07 892 001 00	MICHIGAN DEPT OF NA	TURAL RESOURCES	PO BOX 30448	LANSING	MI	48909
17	07 789 001 00	SQUIER	BETH E	5820 POINTE AUX PEAUX RD	NEWPORT	MI	48166
18	07 789 002 00	SQUIER	ROBERT & BETH	5820 POINTE AUX PEAUX RD	NEWPORT	MI	48166
19	07 789 003 00	SQUIER	ROBERT & BETH	5820 POINTE AUX PEAUX RD	NEWPORT	MI	48166
20	07 789 004 00	STERLING	DAVID L	5838 POINTE AUX PEAUX RD	NEWPORT	MI	48166
21	07 789 005 00	STERLING	DAVID L	5838 POINTE AUX PEAUX RD	NEWPORT	MI	48166
22	07 789 007 00	STERLING	DAVID L	5838 POINTE AUX PEAUX RD	NEWPORT	MI	48166
23	07 789 066 00	MCDEVITT	КАҮ	2682 NADEAU RD	MONROE	MI	48162

# Table 8-1. Fermi Site Adjacent Property Owners

Table 0	-I. I el III Sile A	ujacent Froperty Owne	13				
MAP ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
24	07 789 068 00	ACHINGER	JEFFREY & HEATHER	5866 POINTE AUX PEAUX RD	NEWPORT	MI	48166
25	07 789 070 00	BOERNER	LAUREN & KELLY	5884 POINTE AUX PEAUX RD	NEWPORT	MI	48166
		RORKE	CHASITY &				
26	07 789 124 00	HORNEY	DON III ROS	5908 POINTE AUX PEAUX RD	NEWPORT	MI	48166
27	07 789 125 00	GONZALEZ	MARIA & SHIRLEY	3276 CHIPPEWA	MONROE	MI	48162
		MANOR	GAYLE & THELMA				
28	07 789 126 00	BROOKS	KENNETH & H (C)	5920 POINTE AUX PEAUX RD	NEWPORT	MI	48166
29	07 789 127 00	PEER	RICHARD & CHARLOTTE	5789 NEWPORT SOUTH	NEWPORT	MI	48166
30	07 789 129 00	ALEXANDER	MICHAEL & JULIE	5944 POINTE AUX PEAUX RD	NEWPORT	MI	48166
31	07 789 174 00	QASSIS	NABIH & JULIET	37119 MUIRFIELD DR	LIVONIA	MI	48152
32	07 789 176 00	QASSIS	NABIH & JULIET	37119 MUIRFIELD DR	LIVONIA	MI	48152
33	07 789 215 00	QASSIS	NABIH & JULIET	37119 MUIRFIELD DR	LIVONIA	MI	48152
34	07 887 010 00	FLIPPIN	TODD D & DIANA J	4690 N LAKE RD	NEWPORT	MI	48166
35	07 887 009 00	FLIPPIN	TODD D & DIANA J	4690 N LAKE RD	NEWPORT	MI	48166
36	07 887 007 00	YOAS	LOWELL & ALICE	6060 POINTE AUX PEAUX RD	NEWPORT	MI	48166
37	07 887 005 00	LASKEY	LARRY D	10623 TELEGRAPH	CARLETON	MI	48117
38	07 887 003 00	LASKEY	LARRY D	10623 TELEGRAPH	CARLETON	MI	48117
39	07 887 002 00	MCLAUGHLIN	MICHAEL & BRIDGET	6108 POINTE AUX PEAUX RD	NEWPORT	MI	48166
40	07 827 012 00	DRUMMONDS	PATRICIA	6148 POINTE AUX PEAUX RD	NEWPORT	MI	48166
41	07 827 010 00	STYLES	ELEANOR	6191 HIGHLAND	NEWPORT	MI	48166
42	07 924 015 00	DAY	CHRISTINE R	6444 TRAFALGAR DR	CANTON	MI	48187
43	07 924 001 00	MADISH	JON W & KAREN E	6394 STERLING	NEWPORT	MI	48166
44	07 028 501 00	ELLISON	MICHAEL & LAURIE	4702 LONG	NEWPORT	МІ	48166
45	07 852 001 00	ORD	DAVID H & BONNIE L TRUST	4720 LONG ST	NEWPORT	MI	48166

# Table 8-1. Fermi Site Adjacent Property Owners

MAP ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
		KENNEDY BAKER	DEBRA K MARII YN A &				
46	07 852 002 00	QUALEY	JOHN J	4507 GODDARD	NEWPORT	МІ	48166
47	07 852 018 00	LONG EST SUMMER RE	SORT ASSOC	4802 LONG	NEWPORT	МІ	48166
48	07 852 008 00	DIEHL	JOHN H & DEBORAH L	4772 LONG	NEWPORT	МІ	48166
49	07 852 009 00	LIEDEL	THOMAS & ANNA	4802 LONG	NEWPORT	MI	48166
50	07 852 011 00	LANE	MICHAEL H	PO BOX 173	WYANDOTTE	МІ	48192
51	07 852 013 00	SERES	LONNY & LINDA	4834 LONG	NEWPORT	MI	48166
52	07 852 019 00	ONG EST SUMMER RESORT ASSOC		4802 LONG	NEWPORT	MI	48166
53	07 028 508 20	FRENCHTOWN CHARTE WATER TOWER	ER TOWNSHIP	2744 VIVIAN	MONROE	MI	48162
54	07 028 508 10	FRENCHTOWN CHARTER TOWNSHIP FIRE HALL #4		2744 VIVIAN	MONROE	МІ	48162
55	07 028 509 00	CITY OF MONROE WATER WORKS		120 E FIRST	MONROE	MI	48161
56	07 852 015 00	MONROE FRENCHTOW RAW WATER SUPPLY C	N O-PARTNERSHIP	120 E FIRST ST	MONROE	МІ	48161
57	07 852 101 00	ORD	DAVID H & BONNIE L TRUST	4720 LONG ST	NEWPORT	МІ	48166
58	07 852 102 00	KENNEDY BAKER QUALEY	DEBRA MARILYN A & JOHN J	4507 GODDARD	NEWPORT	мі	48166
59	07 852 108 00	DIEHL	JOHN & DEBORAH	4772 LONG	NEWPORT	МІ	48166
60	07 852 109 00	LIEDEL	THOMAS & ANNA	4802 LONG	NEWPORT	МІ	48166
61	07 852 111 00	LANE	MICHAEL H	P O BOX 173	WYANDOTTE	МІ	48192- 0173
62	07 852 113 00	SERES	LONNY & LINDA	4834 LONG	NEWPORT	MI	48166

Table 8-1. Fermi Site Adjacent Property Owners

 Table 8-1.
 Fermi Site Adjacent Property Owners

MAP ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
		MONROE COUNTY ROA	D COMMISSION				
		COUNTY HIGHWAY END	COUNTY HIGHWAY ENGINEER				
NA	NA	SCOTT F. ASSENMACHER, P.E. <sup>1</sup>		840 S. TELEGRAPH RD	MONROE	MI	48161

1. The Monroe County Road Commission holds a right-of-way (ROW) adjacent to the Fermi site. A portion of the existing two-track road (Toll Road) within that ROW would be improved to provide access from Fermi Drive to the new operations access road. Impacts associated with the new operations access road (floodplain, wetlands, bridges and culverts) are limited to the Fermi property.

Figure 8-1. Property Parcel Map



# Attachment 10-1 Warehouse, PAP/VIB, and Parking Garage

### WETLAND H AND U

Water Level Elevation 🛛 On a Great Lake use IGLD 85

### A. PROJECTS REQUIRING FILL

# Check all that apply:

$\boxtimes$ Floodplain fill $\boxtimes$ Wetland fill	🗌 riprap	🗌 seawa	all 🗌 culvert 🗌	other	
			FILL DIM	ENSIONS	
Activity Area	Length	Width	Max Dopth (ET)	Total Fill	Max Water Depth
	(FT)	(FT)	Max Depth (FT)	Volume (CY)	in fill area (FT)
Wetland U	1,267	109	12	29,082	3
Wetland H	510	357	10	16,651	3
Refer to Warehouse, PAP/VIB and	Parking Ga	rage Figure	e 10-1A and 10-1B		
Type of clean fill  pea sto	one 🛛 sar	nd 🛛 🖾 gra	vel 🗌 wood chips	🖂 other	
Mostly in situ material.					
Refer to Attachment 12-7 for inform	nation speci	fic to wetlar	id fill.		
Will filter fabric be used under prop	oosed fill?	🛛 No	Yes		
Source of fill Source of source of fill	e 🛛 comm	ercial 🗌	other		
In situ materials with commercial s	and and gra	vel used for	construction of road	s and other facilities.	
Refer to Figure 2-1 for location of p	proposed on	-site in situ	source of fill material		
Fill will extend across water.					
Fill Volume below OHWM12	2,322 CY – V	Netland H A	pprox. MDEQ OHW	Μ	
16	5,651 CY – V	Vetland H L	JSACE OHWM		
22	1,935 CY – V	Vetland U A		M	
2* 29	1,935 CY – V 9,082 CY – V	Netland U A Netland U L	Approx. MDEQ OHW JSACE OHWM	M	

# **Attachment 10-2 Lake Erie Construction Area**

# DISCHARGE PIPE AND INTAKE STRUCTURE

Water Level Elevation On a Great Lake use IGLD 85

A. PROJECTS REQUIRING FILL

### Check all that apply: N/A

 $\square$  Floodplain fill  $\square$  Wetland fill  $\square$  riprap  $\square$  seawall  $\square$  culvert  $\square$  other (pipe construction)

		FILL DIMENSIONS							
Activity Area	Length (FT)	Width (FT)	Max Depth (FT)	Total Fill Volume (CY)	Max Water Depth in fill area (FT)				
Discharge Pipe	1,340	17	6	970	16				
Intake Structure	160	80	12	5,600	5				
Refer to Lake Erie Construction A	rea Figures ´	10-2A, 10-2	B, 10-2E						

Type of clean fill	🛛 pea stone	🛛 sand	🗌 gravel	wood chips	other
--------------------	-------------	--------	----------	------------	-------

Source of fill	🗌 on-site	🛛 commercial	other
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<u>Fill will extend</u> – Discharge Pipe – 1,340 feet waterward of shoreline Intake Structure – 160 feet landward of shoreline

Fill Volume below MDEQ OHWM – 970 CY – Discharge Pipe

5,500 CY – Intake Structure

Fill Volume below USACE OHWM – 970 CY – Discharge Pipe

5,600 CY – Intake Structure

### DISCHARGE PIPE AND INTAKE STRUCTURE

### B. PROJECTS REQUIRING DREDGING AND EXCAVATION

#### Check all that apply:

☐ floodplain excavation ☐ wetland dredge or draining ⊠ seawall ⊠ other – Pipeline installation, intake structure

		DIMENSIONS				
Activity Area	Total Dredge/Excavation Volume (CY)	Length (FT)	Width (FT)	Max Depth (FT)	Dredge/Excavation Volume below Approx. MDEQ OHWM (CY)	Dredge/Excavation Volume below USACE OHWM (CY)
Discharge Pipe Dredging	3,300	1,340	17	6	3,300	3,300
Fish Return Pipe Dredging	93	120	10	3	93	93
Intake Structure Dredge	16,900	160	80	12	16,400	16,900

Refer to Lake Erie Construction Area Figures 10-2A through 10-2G

#### Methods for Dredging

To be determined by selected contractor but is expected to be mechanical for areas outside Lake Erie and mechanical or hydraulic for areas within Lake Erie.

Has proposed dredge material been tested for contaminants?

Dredged or excavated spoils will be placed Solution on-site Solution of the state o

Is long-term maintenance dredging planned? Yes, but not as part of this application.

### DISCHARGE PIPE AND INTAKE STRUCTURE

C. PROJECTS REQUIRING RIPRAP – Waterward of the shoreline

		DIMENS	Total fill Valuma		
Activity Area	Length (FT)	Width (FT)	Max Depth (FT)	(CY)	
Discharge Pipe	1,340	17	2	1,690	
Fish Return	120	10	2	40	

Refer to Lake Erie Construction Area Figures 10-2A, 10-2B, 10-2C

Type of Riprap –  field stone	🛛 angular rock	other
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Will filter fabric be used under proposed fill?	🖂 No	🗌 Yes
---	------	-------

D. SHORE PROTECTION PROJECTS

Check all that apply

Seawall/bulkhead: Length 220 FT along the shoreline; 320 FT along south side of barge slip; Distance from property line – over 1,000 feet

J. INTAKE PIPES/OUTFALL PIPES

 Discharge Outfall (Refer to Figures 10-2A, 10-2B)

 Type - ☑ other - diffusers, no exposed ends

 Discharge is to - ☑ Great Lake (Erie)

 Dimensions of Headwall - No headwall

 Number of Pipes - One

 Pipe diameters and invert elevations - 48-inch, Invert Elevation - Approximately 558 feet at the outlet

 Fish Return Outfall (Refer to Figures 10-2A, 10-2C)

 Type - ☑ Pipe

 Discharge is to - ☑ Great Lake (Erie)

 Discharge is to - ☑ Great Lake (Erie)

 Dimensions of Headwall - No headwall

 Number of Pipes - One

Pipe diameters and invert elevations – 24-inch, Invert Elevation – Approximately 572 feet at the outlet

M. Other: Details for an intake structure along the shoreline are provided.

# **Attachment 10-3 Construction Area 5**

# SOUTH CANAL

Water Level Elevation	🛛 On a Great Lake use IGLD 85

A. PROJECTS REQUIRING FILL

### Check all that apply:

Eloodplain fill	⊠ Wetland fill	🛛 riprap	seawall	🛛 culvert	other
	Refer to Attachr	ment 12-6 fo	r information s	pecific to wet	land fill.

Type of clean fill pea stone sand gravel wood chips other A culvert with an earthen bottom is proposed for the South Canal. Refer to Figure 12-6B Section A for details.

Source of fill	🗌 on-site	🔀 commercial	other
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C. PROJECTS REQUIRING RIPRAP

		DIME	Total Fill Volume	
Activity Area	Length (FT)	Width (FT)	Max Depth (FT)	(CY)
South Canal Culvert – Riprap waterward of the OHWM	10	6	1.5 (same dimension each side)	3.3 each side (6.6 total)
South Canal Culvert – Riprap landward of the OHWM	10	2	1.5 (same dimension each side	1.1 each side (2.2 total)

Refer to Construction Area 5 Figures 10-3A and Figure 10-3B

Type of Riprap – 🗌 field stone	🛛 angular rock	other
--------------------------------	----------------	-------

Will filter fabric be used under proposed fill? No Yes

# Attachment 10-4 New Operations Access Road

# BOX CULVERT CROSSING UNDER TOLL ROAD

Water Level Elevation	🛛 On a Great Lake use IGLD 85
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A. PROJECTS REQUIRING FILL

### Check all that apply:

⊠ Wetland fill	🛛 riprap	seawall	culvert	other
Refer to Attachr	ment 12-8 fo	or information s	pecific to we	tland fill.
🗌 pea sto	ne 🗌 san	d 🗌 gravel	🗌 wood d	hips 🛛 other
used under prop	osed fill?		Yes	
🗌 on-site	🖂 comme	ercial 🗌 oth	er	
UIRING DREDGI	NG AND EX	CAVATION -	N/A	
	Wetland fill Refer to Attachr pea sto used under prop on-site	☑ Wetland fill       ☑ riprap         Refer to Attachment 12-8 for         □ pea stone       □ san         used under proposed fill?         □ on-site       ☑ comme         UIRING DREDGING AND EX	☑ Wetland fill       ☑ riprap       □ seawall         Refer to Attachment 12-8 for information s         □ pea stone       □ sand       □ gravel         used under proposed fill?       ☑ No       ○         □ on-site       ☑ commercial       □ oth         UIRING DREDGING AND EXCAVATION –	☑ Wetland fill       ☑ riprap       ☐ seawall       ☐ culvert         Refer to Attachment 12-8 for information specific to we         ☐ pea stone       ☐ sand       ☐ gravel       ☐ wood of         ☐ used under proposed fill?       ☑ No       ☐ Yes         ☐ on-site       ☑ commercial       ☐ other         UIRING DREDGING AND EXCAVATION – N/A

Refer to Attachment 12-8 for information specific to dredging or excavation.

Fermi 3 Joint Permit Application Tables

Β.

# BOX CULVERT CROSSING UNDER TOLL ROAD

### C. PROJECTS REQUIRING RIPRAP

		DIME			
Activity Area	Length Width (FT) (FT)		Max Depth (FT)	Total Fill Volume (CY)	
Box Culvert – Riprap Waterward of OHWM	14	3	1.5 (same dimension each quadrant)	2.3 each quadrant (9.2 total)	
Box Culvert – Riprap landward of OHWM	14	3	1.5 (same dimension each quadrant)	2.3 each quadrant (9.2 total)	

Refer to New Operations Access Road Figures 10-4A, 10-4B

Type of Riprap	field stone	🛛 angular rock	other
----------------	-------------	----------------	-------

	DREDGE	EXCAVATION		WETLAND DREDGE/ EXCAVATION					FILL				
Activity Area	Volume (CY) <sup>®</sup>	Volume (CY) <sup>(0)</sup>	Max Length (FT)	Max Width (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY) <sup>(1)</sup>	Max Length (FT)	Max Width (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY) <sup>(0</sup>	
Construction Area 1	NA	8,680	1,395	419	2.69	2	8,680	1,395	419	2.69	3.8	14,123	
Construction Area 2	NA	3,570	428	280	1.14	2	3,570	428	280	1.14	5	7,905	
Construction Area 3	97,641	6,823	652	772	12.97	5	104,464	652	772	12.97	5.8	121,880	
Construction Area 4	NA	15,211	774	393	4.59	2	15,211	774	393	4.59	3.5	20,989	
Construction Area 5	2,065	3,120	713	182	1.62	2	5,185	839	182	2.79	4.5	20,226	
Warehouse, PAP/VIB, and Parking Garage	17,991	NA	801	226	2.24	5	17,991	1,267	357	7.66	11.0	83,905	
New Operations Access Road	400	78	1,205	52	0.95	2.5	478	1,205	52	0.95	3.2	2,563	
Onsite Transmission	768	NA	36	36	0.24	12	768	36	36	0.24	12	768	
Site Totals	118,865	37,482	NA	NA	26.44	4	156,347	NA	NA	33.03	6.1	272,359	

# Attachment 12-2 Construction Area 1

Wetland AA (PEM) - 0.80 ac proposed impact Wetland II (PEM) - 0.52 ac proposed impact Wetland JJ (PSS) - 1.37 ac proposed impact

#### i) Check all that apply to this activity area:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

ii)	Totals
,	

		USA	CE OHWM							
		DREDGE	EXCAVATION	1	WETLAND DREDGE/EXCAVATION					
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)		
	AA	NA	2,568	354	234	0.80	2	2,568		
Construction Area 1	Π	NA	1,675	616	363	0.52	2	1,675		
	JJ	NA	4,437	1,395	419	1.37	2	4,437		
Totals		NA	8,680	NA	NA	2.69	2	8,680		

		FILL						
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)		
Construction Area 1	AA	354	234	0.80	5.5	6,593		
	II	616	363	0.52	3	1,746		
	JJ	1,395	419	1.37	3	5,784		
Totals		NA	NA	2.69	3.8	14,123		

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to Construction Area 1 Figures 12-2A, 12-2B, 12-2C

### iii) Describe the wetland impacts, proposed use or development, and any alternatives considered.

The proposed regulated activity is to entirely but temporarily fill three wetlands in the construction spoils disposal area. Construction will require up to 10 years to complete. The area will be restored to PEM for Wetlands AA and II and PSS for Wetland JJ. The functions and values of these wetlands are expected to be restored and enhanced within 3 to 5 years after construction.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Construction Area 1 Figures 12-2A through C for plan view and section details.

# Attachment 12-3 Construction Area 2

Wetland Y (PFO) - 1.14 ac proposed impact

#### i) <u>Check all that apply to this activity area</u>:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

ii) <u>Totals</u>

		USA	CE OHWM						
		DREDGE	EXCAVATION	WETLAND DREDGE/EXCAVATION					
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)	
Construction Area 2	Y	NA	3,570	428	280	1.14	2	3,570	
Totals	NA	3,570	NA	NA	1.14	2	3,570		

		FILL						
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> Area (FT) (ACRE)		Volume (CY)		
Construction Area 2	Y	428	280	1.14	5	7,905		
Totals		NA	NA	1.14	5	7,905		

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to Construction Area 2 Figures 12-3A, 12-3B

#### iii) Describe the wetland impacts, proposed use or development, and any alternatives considered.

The proposed regulated activity is temporarily filling Wetland Y entirely for the purpose of providing a temporary construction laydown area in the southwest corner of the property. The area will be used for the placement of support structures and buildings that will be used during Fermi 3 construction activities. Specifically, this wetland area will be filled and covered with gravel to become a parking area for the proposed buildings.

Construction will require up to 10 years to complete. Following construction, a portion of the wetland functions and values in this area will be restored within 3 to 5 years after construction. Wetlands in this area will be fully restored in 10 to 20 years.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Construction Area 2 Figures 12-3A and B for plan view and section details.

Wetland B (PFO) – 0.76 ac proposed impact Wetland C (PEM) – 6.93 ac proposed impact Wetland D (PFO) – 1.37 ac proposed impact Wetland E-North (PSS) – 1.87 proposed impact Wetland E-South (PSS) – 2.04 proposed impact

i) Check all that apply to this activity area:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

ii)	Totals

		USA						
	Impacted Wetland	DREDGE	EXCAVATION	١	VETLAND I	DREDGE/E	XCAVATION	l
Activity Area		Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	В	4,276	1,855	652	83	0.76	5	6,131
	С	55,772	NA	524	772	6.93	5	55,772
Construction Area 3	D	11,039	NA	310	292	1.37	5	11,039
	E-North	12,193	2,885	461	292	1.87	5	15,078
	E-South	14,361	2,083	443	394	2.04	5	16,444
Totals		97,641	6,823	NA	NA	12.97	5	104,464

		FILL						
Activity Area	Impacted Wetland	Max Length (FT)	Max. Width (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)		
	В	652	83	0.76	6	5,805		
	С	524	772	6.93	6	71,226		
Construction Area 3	D	310	292	1.37	6	12,341		
	E-North	461	292	1.87	5	15,465		
	E-South	443	394	2.04	6	17,043		
Totals		NA	NA	12.97	5.8	121,880		

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to Construction Area 3 Figures 12-4A, 12-4B, 12-4C

# Attachment 12-4 Construction Area 3

Fermi 3 Joint Permit Application Tables

#### iii) <u>Describe the wetland impacts, proposed use or development, and any alternatives considered.</u>

The area north of Fermi Drive will be used temporarily for construction laydown and support structures and buildings. The proposed regulated activity is temporarily filling PFO Wetlands B and D, PSS Wetland E-South and E-North and PEM Wetland C: 12.97 acres of wetland.

Construction will require up to 10 years to complete after which the area will be restored to the pre-impact wetland types. The functions and values of Wetland C, E-North and E-South will be restored within 3 to 5 years and partially restored for Wetlands B and D. The functions and values of Wetlands B and D will be fully restored in 10 to 20 years.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Construction Area 3 Figures 12-4A through C for plan view and section details.

# Attachment 12-5 Construction Area 4

Wetland W (PEM) – 4.59 ac proposed impact

#### i) <u>Check all that apply to this activity area</u>:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

#### ii) <u>Totals</u>

		USA	СЕ ОНWM						
		DREDGE	EXCAVATION	WETLAND DREDGE/EXCAVATION					
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)	
Construction Area 4	W	NA	15,211	774	393	4.59	2	15,211	
Totals		NA	15,211	NA	NA	4.59	2	15,211	

				FILL		
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
Construction Area 4	W	774	393	4.59	3.5	20,989
Totals		NA	NA	4.59	3.5	20,989

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to Construction Area 4 Figures 12-5A, 12-5B

#### iii) Describe the wetland impacts, proposed use or development, and any alternatives considered.

The proposed regulated activity is temporarily filling the entirety of Wetland W, for the purposes of a construction laydown area. Construction will require up to 10 years to complete. Wetland W will be restored to a wet meadow with enhanced functions and values re-established within 3 to 5 years after construction.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Construction Area 4 Figures 12-5A and B for plan view and section details. Considered alternatives are outlined in Section 4 of the JPA.

# Attachment 12-6 Construction Area 5

South Canal (PEM) – 1.17 ac proposed impact Wetland KK (PFO) – 1.62 ac proposed impact

#### i) Check all that apply to this activity area:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

#### ii) <u>Totals</u>

		USA	СЕ ОНWM					
	DREDGE	EXCAVATION	۱ ۱	<b>NETLAND</b>	DREDGE/E	XCAVATION	l	
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
Construction Area 5	South Canal	NA	NA	NA	NA	NA	NA	NA
Construction Area 5	KK	2,065	3,120	713	182	1.62	2	5,185
Totals		2,065	3,120	NA	NA	1.62	2	5,185

				FILL		
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
Construction Area 5	South Canal	839	99	1.17	5.5	11,342
	KK	713	182	1.62	3.5	8,884
Totals		NA	NA	2.79	4.5	20,226

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to Construction Area 5 Figures 12-6A, 12-6B

# Attachment 12-6 Construction Area 5

Fermi 3 Joint Permit Application Tables

#### iii) <u>Describe the wetland impacts, proposed use or development, and any alternatives considered.</u>

The proposed regulated activity includes permanently filling the entirety of PFO Wetland KK and 1.17-acres of PEM South Canal for the purposes of providing a construction area for the new cooling tower.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Figures 12-6A and B for plan view and section details.

Wetland C (PEM) – 2.24 ac proposed impact Wetland H (PEM – 1.96 ac proposed impact Wetland U (PEM) – 3.46 ac proposed impact

i) <u>Check all that apply to this activity area</u>:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

ii) <u>Totals</u>

		USACE	OHWM					
	DREDGE	EXCAVATION		WETLAND DREDGE/EXCAVATION				
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	С	17,991	NA	801	226	2.24	5	17,991
Warehouse, PAP/VIB, and Parking Garage	Н	0	NA	NA	NA	0	0	0
	U	0	NA	NA	NA	0	0	0
Totals		17,991	NA	NA NA 2.24 5 17,99				17,991

				FILL		
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	С	801	226	2.24	11	38,172
Warehouse, PAP/VIB, and Parking Garage	Н	510	357	1.96	10	16,651
Faiking Galage	U	1,267	109	3.46	12	29,082
Totals		NA	NA	7.66	11	83,905

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD.

Max length and max width are depicted on Warehouse, PAP/VIB and Parking Garage Figure 12-7A. Average depth of wetland dredge/excavation and fill is on Figures 10-1C and 10-1D. Refer to Figure 12-7A and 12-7B for other details.

#### iii) Describe the wetland impacts, proposed use or development, and any alternatives considered.

The proposed regulated activity is permanently filling 2.24 acres of Wetland C, 1.96 acres of Wetland H, and 3.46 acres of Wetland U for the purposes of supporting a Warehouse, PAP/VIB and parking garage. Wetland C will require excavating wetland soils, backfilling and compacting. The vegetation and soil surrounding the perimeter of Wetland H and Wetland U will be removed. Wetland H and Wetland U will be filled and compacted.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to Warehouse, PAP/VIB and Parking Garage Figures 12-7A and 12-7B for plan view and section details.

# Attachment 12-8 New Operations Access Road

Wetland I (PFO) - 0.44 ac proposed impact Wetland C (PEM) - 0.33 ac proposed impact Wetland F (PFO) - 0.18 ac proposed impact

i) Check all that apply to this activity area:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other

ii) <u>Totals</u>

		USA	CE OHWM					
		DREDGE	EXCAVATION	١	WETLAND DREDGE/EXCAVATION			
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	Ι	NA	37	1,205	48	0.44	2	37
New Operations Access Road	С	400	NA	386	52	0.33	3.5	400
	F	NA	41	282	38	0.18	2	41
Totals		400	78	NA NA 0.95 2.5 478				478

				FILL		
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	I	1,205	48	0.44	3	603
New Operations Access Road	С	386	52	0.33	3.5	1,364*
	F	282	38	0.18	3	596
Totals		NA	NA	0.95	3.2	2,563

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to New Operations Access Road Figures 12-8A, 12-8B and 12-8C

\*This is the sum of Wetland C fill from road improvements (784 CY) and the box culvert (580 CY).

#### iii) <u>Describe the wetland impacts, proposed use or development, and any alternatives considered.</u>

The proposed regulated activity includes long-term impacts to Wetlands I and F, both rare and imperiled southern hardwood swamps, for the purpose of creating a new access road and expansion of the existing culvert. The northern edge of Wetland I, where permanent impacts are proposed, exhibits vegetation communities and conditions that reflect a high degree of disturbance including invasive species and altered hydrology associated with the adjacent roadway and other human activities. The proposed regulated activity also includes impacts to Wetland C, a rare and imperiled emergent Great Lakes marsh, which is fragmented from Lake Erie by access roads, but connected hydrologically through culverts.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached New Operations Access Road Figures 12-8A, 12-8B and 12-8C for plan view and section details.

# Attachment 12-9 Onsite Transmission

#### Wetland C (PEM) - 0.24 ac Tower Footprint proposed impact

- 0.34 ac Toll Rd Access proposed temporary impact
- 0.35 ac Doxy Rd Access proposed temporary impact
- 1.6 ac Tower Impact proposed temporary impact
- i) Check all that apply to this activity area:

Fill dredge or excavation boardwalk or deck dewatering fences bridges and culverts draining surface water stormwater discharge restoration other – tree clearing

### ii) <u>Totals</u>

		USA	СЕ ОНWM					
		DREDGE	EXCAVATION	۱	WETLAND DREDGE/EXCAVATION			
Activity Area	Impacted Wetland	Volume (CY)	Volume (CY)	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	C - Permanent	768	NA	36	36	0.24	12	768
Onsite Transmission	C - Temporary	NA	NA	NA	NA	NA	NA	NA
	F	NA	NA	NA	NA	NA	NA	NA
Totals		768	NA	NA NA 0.24 12 76				768

				FILL		
Activity Area	Impacted Wetland	Max Length <sup>(1)</sup> (FT)	Max Width <sup>(1)</sup> (FT)	Area (ACRE)	Average Depth (FT)	Volume (CY)
	C - Permanent	36	36	0.24	12	768
Onsite Transmission	C - Temporary	NA	NA	NA	NA	NA
	F	NA	NA	NA	NA	NA
Totals		NA	NA	0.24	12	768

<sup>1</sup> Max length and max width are not totals; they are the maximum value as calculated in AutoCAD. Refer to Onsite Transmission Figures 12-9A, 12-9B

#### iii) Describe the wetland impacts, proposed use or development, and any alternatives considered.

The proposed regulated activity requires long-term impacts to 0.24 acres of Wetland C, a rare and imperiled Great Lakes marsh, to accommodate the tower footprints for eight transmission towers. Temporary impacts to 2.29 acres in Wetland C are proposed for the installation of tower support structures and two access roads. Vegetation clearance of 50 feet on either side of the transmission towers along a length of approximately 750 feet will be required for the transmission lines parallel and east of Toll Road over Wetland F. As a result of the vegetation clearance, 2.53 acres of PFO Wetland F will convert from a forested wetland to an emergent wetland.

To reduce impacts to vegetation and soil, balloon tires will be used on equipment and the construction activities can be completed during the winter. Restoration is expected to occur within the following growing season.

Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Onsite Transmission Figures 12-9A and B for plan view and section details.

# CONSTRUCTION AREA 5 (SOUTH CANAL) CULVERT

	Existing	Proposed
Culvert Type	None	Twin precast 3-sided arch culvert (24 feet x 6 feet)
Entrance Design	N/A	Wingwalls
Total Structure Waterway Opening	360 sq. feet	288 sq. feet
Elevation of Culvert Crown/Bottom of Beam	N/A	577
Elevation of Road Grade at Structure	N/A	Varies (578 to 579)
Elevation of Low Point of Road	N/A	578
Bridge Span Length	N/A	2 feet x 24 feet
Bridge Width (parallel to stream)	N/A	880 feet
Bridge/Culvert Rise	N/A	6 feet
Approach Slope Fill	N/A	N/A
Streambed Within Culvert	570.0 – Downstream	570.0 – Downstream
	571.0 – Upstream	571.0 - Upstream
Distance from Low Point of Road to Mid-Point of Crossing	N/A	40 feet

Refer to Construction Area 5 Figures 10-3A, 10-3B, 12-6B, 14-1A, 14-1B

# Attachment 14-1 Construction Area 5

Fermi 3 Joint Permit Application Tables

Cross-sectional Area of Primary Channel	360 sq. feet							
Average Stream Width at MDEQ and USACE O	HWM Outside S	<u>tructure</u>						
Upstream	60 feet							
Downstream	60 feet							
Reference Datum Used	□NGVD 29	NAVD 88	⊠IGLD 85	□other				
High Water Elevation	Not available							
#### TOLL ROAD BOX CULVERT

	Existing	Proposed
Culvert Type	Steel I-beam bridge	Precast box culvert
Entrance Design	Projecting	Wingwalls
Total Structure Waterway Opening	35 sq. feet	68 sq. feet
Elevation of Culvert Crown/Bottom of Beam	574.6	574.9
Elevation of Road Grade at Structure	575.8	576.76
Elevation of Low Point of Road	575.8	575.8
Bridge Span Length	12 feet	22 feet
Bridge Width (parallel to stream)	14 feet	50 feet
Bridge/Culvert Rise	2.8 feet	3.1 feet
Approach Slope Fill	0 feet	0.96 feet
Streambed Within Culvert	571.8 – Downstream 572.0 – Upstream	571.8 – Downstream 572.0 - Upstream
Distance from Low Point of Road to Mid-Point of Crossing	0 feet	60 feet

Refer to New Operations Access Road Figures 10-4A, 10-4B and 14-2A through 14-2G

### Attachment 14-2 New Operations Access Road

Cross-sectional Area of Primary Channel	75 square feet	(within first 6 inc	hes of depth)	
Average Stream Width at MDEQ and USACE OHWM Outside Structure				
Upstream	200 feet			
Downstream	260 feet			
Reference Datum Used	NGVD 29	NAVD 88	⊠IGLD 85	Other
High Water Elevation	Not available			







FIGURE 2-2 WETLAND DELINEATION MAP

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NO SCALE



37 FERMI 2/FERMI 3 COMMON WARE

37 PERM 38 PARKO 39 ISFSI 40 PAP/V OUSE

**FIGURE 2-5 SITE PLAN** 









Fermi 3 Joint Permit Application Figures



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### **LEGEND**

	APPROX. MDEQ OHWM
<u> </u>	USACE OHWM
	WETLAND LIMIT
	CONSTRUCTION BOUNDARY



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- 1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITY WILL BE USED FOR BACKFILL ONSITE. AFTER WHICH, THE AREA WILL BE USED TO STOCKPILE SPOILS FROM LOCATIONS ONSITE.
- 2. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND II AREA = 0.52 acres USACE OHWM DREDGE = NA USACE OHWM EXCAVATION = 1,675 CY WETLAND EXCAVATION = 1,675 CY WETLAND FILL = 1,746 CY WETLAND JJ AREA = 1.37 acres USACE OHWM DREDGE = NA USACE OHWM EXCAVATION = 4,437 CY WETLAND EXCAVATION = 4,437 CY WETLAND FILL = 5,784 CY

# FIGURE 12-2A CONSTRUCTION AREA 1 PLAN VIEW A

SCALE: 1"=150'



LOCATION MAP

# FIGURE 12-2B CONSTRUCTION AREA 1 PLAN VIEW B

SCALE: 1"=150' Revision 1





### LOCATION MAP

#### NOTE:

- 1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITIES WILL BE USED FOR SUBCONTRACTOR BUILDINGS AND GRAVEL PARKING.
- 2. UTILITIES SHALL BE PLACED IN UPLAND AREAS.
- 3. SPOILS FROM EXCAVATION WILL BE PLACED IN
- CONSTRUCTION AREA 1. 4. MECHANIZED LAND CLEARING WILL OCCUR
- 4. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND Y AREA = 1.14 acres USACE OHWM DREDGE = NA USACE OHWM EXCAVATION = 3,570 CY WETLAND EXCAVATION = 3,570 CY WETLAND FILL = 7,905 CY

# FIGURE 12-3A CONSTRUCTION AREA 2 PLAN VIEW

FIGURE 12-3B CONSTRUCTION AREA 2 SECTION DETAILS





PROPOSED

GRADE

WETLAND Y

**EXISTING** 

590

GRADE

PROPOSED 2"x3"

21AA LIMESTONE

595 <u>SW</u>

590

STONE COVERED BY -

Fermi 3

Figures

Joint Permit Application



# FIGURE 12-4A CONSTRUCTION AREA 3 PLAN VIEW A

SCALE: 1"=150' Revision 1 Fermi 3



WETLAND C AREA = 6.93 acres USACE OHWM DREDGE = 55,772 CY USACE OHWM EXCAVATION = NA WETLAND EXCAVATION = 55,772 CY WETLAND FILL = 71,226 CY

WETLAND FILL = 5,805 CY

WETLAND EXCAVATION = 11,039 CY WETLAND FILL = 12,341 CY

WETLAND E-NORTH AREA = 1.87 acres USACE OHWM DREDGE = 12,193 CY USACE OHWM EXCAVATION = 2,885 CY WETLAND EXCAVATION = 15,078 CY WETLAND FILL = 15,465 CY

WETLAND E-SOUTH AREA = 2.04 acres USACE OHWM DREDGE = 14,361 CY USACE OHWM EXCAVATION = 2,083 CY WETLAND EXCAVATION = 16,444 CY WETLAND FILL = 17,043 CY

## FIGURE 12-4B CONSTRUCTION AREA 3 PLAN VIEW B

SCALE: 1"=150' **Revision** 1

FIGURE 12-4C CONSTRUCTION AREA 3 SECTION DETAILS Page 22 of 57 Revision 1

August 2011



PROPOSED 2"x3"



#### Fermi 3 Joint Permit Application Figures





SCALE: 1"=150' Revision 1



## FIGURE 12-5B CONSTRUCTION AREA 4 SECTION DETAILS

Page 24 of 57



## FIGURE 10-3A CONSTRUCTION AREA 5 PLAN VIEW

SCALE: 1"=150'



### FIGURE 10-3B CONSTRUCTION AREA 5 PROFILE OF PROPOSED SOUTH CANAL CULVERTS

SCALE: 1"=300' HORZ.; 1"=20' VERT. (IGLD 85 DATUM)



- SPOILS FROM EXCAVATION WILL BE PLACED IN CONSTRUCTION AREA 1.
  MECHANIZED LAND CLEARING WILL OCCUR
- 3. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND KK AREA = 1.62 acres USACE OHWM DREDGE = 2,065 CY USACE OHWM EXCAVATION = 3,120 CY WETLAND EXCAVATION = 5,185 CY WETLAND FILL = 8,884 CY SOUTH CANAL AREA = 1.17 acres USACE OHWM DREDGE = NA USACE OHWM EXCAVATION = NA WETLAND EXCAVATION = NA WETLAND FILL = 11,342 CY

# FIGURE 12-6A CONSTRUCTION AREA 5 PLAN VIEW

SCALE: 1"=150'



August 2011







FIGURE 12-6B CONSTRUCTION AREA 5 SECTION DETAILS

**Revision 1** 



## FIGURE 14-1A CONSTRUCTION AREA 5 PLAN VIEW

SCALE: 1"=150'



LEGEND

------- USAEC OHWM ------- APPROX. MDEQ OHWM

FIGURE 14-1B CONSTRUCTION AREA 5 PROFILE OF PROPOSED SOUTH CANAL CULVERTS

SCALE: 1"=300' HORZ.; 1"=20' VERT. (IGLD 85 DATUM)



SCALE: 1"=300'

WAREHOUSE, PAP/VIB PARKING GARAGE PLAN VIEW OF CULVERTS AT DOXY ROAD



LEGEND

### FIGURE 10-1B WAREHOUSE, PAP/VIB PARKING GARAGE PROFILE OF PROPOSED CULVERTS AT DOXY ROAD

SCALE: 1"=300' HORZ.;1"=20' VERT. (IGLD 85 DATUM)

Fermi 3





Revision 1

Page 33 of 57





### FIGURE 10-1D WAREHOUSE, PAP/VIB PARKING GARAGE SECTION 'B' DETAILS


SCALE: 1"=150 Revision 1



### FIGURE 12-7B WAREHOUSE, PAP/VIB PARKING GARAGE SECTION 'C' DETAILS



### FIGURE 10-4A NEW OPERATIONS ACCESS ROAD PLAN VIEW

SCALE: 1"=500'



SCALE: 1"=20' Revision 1



- SPOILS FROM EXCAVATION WILL BE PLACED IN 1 CONSTRUCTION AREA 1.
- MECHANIZED LAND CLEARING WILL OCCUR WITHIN 2 THE CONSTRUCTION FOOTPRINT.
- 3. WETLAND C IMPACTS ARE FROM THE ROAD IMPROVEMENTS AND BOX CULVERT. (FIGURE 14-2E)

WETLAND I AREA = 0.44 acres USACE OHWM DREDGE = NA USACE OHWM EXCAVATION = 37 CY WETLAND EXCAVATION = 37 CY WETLAND FILL = 603 CY

## FIGURE 12-8A NEW OPERATIONS ACCESS ROAD PLAN VIEW A

SCALE: 1"=150'



2. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND EXCAVATION = 37 CY WETLAND FILL = 603 CY

### FIGURE 12-8B NEW OPERATIONS ACCESS ROAD PLAN VIEW B

SCALE: 1"=150'

Fermi 3



Page 41 of 57



### FIGURE 14-2A NEW OPERATIONS ACCESS ROAD PLAN VIEW

SCALE: 1"=500'







Fermi 3 Joint Permit Application Figures E



Fermi 3 Joint Permit Application Figures



#### PROFILE OF PROPOSED CULVERT A (LOOKING NORTHWEST)

SCALE: 1"=200' HORZ.;1"=20' VERT. (IGLD 85 DATUM)



# PROFILE OF PROPOSED CULVERT C (LOOKING EAST)

590

580

570

12" CULVERT

I.E. 577.71

4+00

EXISTING GRADE

SCALE: 1"=200' HORZ.;1"=20' VERT. (IGLD 85 DATUM)

590

580

PROPOSED TOLL ROAD

12" CULVERT

I.E. 577.09

570



### PROFILE OF PROPOSED CULVERT B (LOOKING EAST)

PROFILE OF PROPOSED CULVERT D (LOOKING NORTHWEST)

2+00

SCALE: 1"=200' HORZ.;1"=20' VERT. (IGLD 85 DATUM)

SCALE: 1"=200' HORZ.;1"=20' VERT. (IGLD 85 DATUM)

FIGURE 14-2D NEW OPERATIONS ACCESS ROAD PROFILE OF PROPOSED CULVERTS A - D Revision 1 - 2D NEW OPERATIONS ACCESS ROAD PROFILE OF PROPOSED CULVERTS A - D August 2011



SCALE: 1"=20' Revision 1









C STREAM CROSS SECTION 200 FEET DOWNSTREAM OF PROPOSED TOLL ROAD (LOOKING DOWNSTREAM) SCALE: 1"=40' HORZ.; 1"=5' VERT. (IGLD 85 DATUM)

FIGURE 14-2G NEW OPERATIONS ACCESS ROAD SECTION 'C' DETAILS

Page 48 of 57



### FIGURE 12-9A ONSITE TRANSMISSION PLAN VIEW

SCALE: 1"=250' Revision 1



Fermi 3 Joint Permit Application Figures



FIGURE 12-9B ONSITE TRANSMISSION SECTION DETAILS

**Revision 1** 

Page 50 of 57





Page 52 of 57



### FIGURE 10-2C LAKE ERIE CONSTRUCTION AREA PIPE DREDGING SECTION 'B' DETAILS







Page 54 of 57



Page 55 of 57





NOTE: TYPICAL RISER DETAIL ALONG DISCHARGE PIPE

# 10-2G LAKE ERIE CONSTRUCTION AREA PROPOSED DISCHARGE PIPE RISER DETAIL

### Lake Erie Construction Area



Photo – 10a: Looking east along South Groin (April 2011)



Photo – 10b: Looking east along South Groin (April 2011)

#### Lake Erie Construction Area



Photo – 10c: Looking north along shore line between groins (April 2011)



Photo – 12a: Looking west at Wetland II ditch (August 2010)



Photo – 12b: Looking east at Wetland JJ (August 2010)



Photo – 12c: Looking west at Wetland AA (August 2010)



Photo – 12d: Looking west at Wetland Y (August 2010)



Photo – 12e: Looking west-northwest down railroad tracks at Wetland B (April 2011)



Photo – 12f: Looking northwest at Wetland D from Wetland C (August 2010)



Photo 12g: Looking west-northwest at Wetland D (August 2010)



Photo – 12h: Looking west-southwest at Wetland E-South/power lines (August 2010)



Photo – 12i: Looking north at Wetland E-North (brush-hogged) (August 2010)



Photo – 12j: Looking northwest at Wetland C (August 2010)



Photo – 12k: Looking east at power lines in Wetland C (August 2010)



Photo – 12I: Looking southeast at northern end of Wetland W (April 2011)



Photo – 12m: Looking south from northern end of Wetland W (April 2011)



Photo – 12n: Looking east at Wetland KK from Doxy Road (August 2010)



Photo – 12o: Looking south at South Canal (August 2010)

### **Construction Area 5**



Photo – 12p: Looking north at South Canal from Fermi Drive (April 2011)

### Warehouse, PAP/VIB, and Parking Garage



Photo – 12q: Looking west at Wetland C along Doxy Road (April 2011)



Photo – 12r: Looking west at Wetland C (August 2010)
#### Warehouse, PAP/VIB, and Parking Garage



Photo – 12s: Looking south at Wetland U (April 2011)



Photo – 12t: Looking southeast at Wetland U (August 2010)



Photo – 12u: Looking east on side slope of Wetland H (August 2010)



Photo – 12v: Looking southeast along Toll Road. Wetland C is to the left in the photograph and further left is Wetland F (October 2010)



Photo – 12w: Looking southeast along Toll Road. Wetland I is to the left in the photograph (October 2010)



Photo – 12x: Looking south at Wetland C in the foreground and Wetland F in the background (October 2010)



Photo – 12y: Looking southeast at Wetland C from Toll Rd (April 2011)

### New Operations Access Road

Fermi 3 Joint Permit Application Photographs



Photo – 14a: Downstream of existing culvert along Toll Road (April 2011)



Photo – 14b: Downstream of existing culvert along Toll Road (April 2011)

#### New Operations Access Road

Fermi 3 Joint Permit Application Photographs



Photo – 14c: Upstream of existing culvert along Toll Road (April 2011)



Photo – 14d: Upstream side of existing culvert along Toll Road (April 2011)

# DUCKS UNLIMITED

## **MICHIGAN**

## Detroit Edison Fermi Site, Monroe County Wetland Investigation Report

July 2008 Updated April 2011

Prepared for: Detroit Edison Power Company Attn: Randall Westmoreland 2000 2nd Avenue Detroit, Michigan 48226



1220 Eisenhower Place | Ann Arbor, MI 48108 Sheila S. Hess | shess@ducks.org | (734) 623-2000



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## **TABLE OF CONTENTS**

SECTION/TITLE	PAGE
1.0 INTRODUCTION	2
2.0 BACKGROUND/SITE DESCRIPTION	3
3.0 METHODS 3.1 WETLAND DELINEATION 3.2 FUNCTIONS/VALUES ASSESSMENT	4 4 5
4.0 RESULTS/CONCLUSION 4.1 WETLAND DELINEATION 4.2 FUNCTIONS/VALUES ASSESSMENT	6 6 13
FIGURES	

#### Figure 1. Watershed Map

- Figure 2. USGS Map
- Figure 3. Aerial Photo
- Figure 4. NWI Wetlands Map
- Figure 5. MDEQ Wetlands Map
- Figure 6. Soil Survey Map
- Figure 7. Landcover Map

#### APPENDICES

Appendix A. Wetland Delineation Map Set Appendix B. Wetland Delineation Data Sheets

- Appendix C. Functions and Values Data Forms
- Appendix D. Flora and Fauna Species Lists
- Appendix E. Qualifications

#### **1.0 INTRODUCTION**

Detroit Edison Energy Company (DTE) contracted with Ducks Unlimited, Inc. (DU) to provide wetland delineation and functions and values assessment on 1,106 acres of undeveloped land at their Fermi II Nuclear Power Plant Site (Site). DU has completed the following services as reported herein:

- 1. Acquired and reviewed existing topographic maps, National Wetlands Inventory maps, soil surveys, technical publications, aerial photographs and other existing information necessary for determining the potential locations of wetlands within the project boundaries and for evaluating soil, hydrology, vegetation and related characteristics.
- 2. Conducted onsite investigations of soil, hydrology, flora and fauna characteristics of all wetlands.
- Based on information derived from 1 and 2 above, delineated all wetlands using the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual for Vegetated Wetlands, cross referencing the Michigan Department of Environmental Quality (MDEQ) delineation methods.
- 4. Produced the following report with full size maps that includes:
  - a. Surveyed and mapped boundaries of all wetlands. Classification of all wetlands according to Cowardin et al. (1979). Calculation of acreage figures for each delineated wetland.
  - b. Fully documented data sheets for each sampling plot used in determining wetland boundaries.
  - c. Narrative discussion of each delineated wetland, including Cowardin classifications and summaries of key soil, vegetation, and hydrology characteristics used in making wetland boundary determinations.
  - d. Narrative discussion of functions and values associated with delineated wetlands.

5. Updated the 2008 Wetland Investigation Report with information provided from the USACE and MDEQ.

#### 2.0 BACKGROUND AND SITE DESCRIPTION

The Site is located at Latitude: 41.961 and Longitude: -83.261 on the western shore of Lake Erie at Lagoona Beach, Monroe County, Michigan in the Ottawa-Stony watershed (HUC 04100001, Figure 1). The site encompasses 1,106 acres and is owned by DTE. The topography of the site has approximately 22 feet of relief from the upland fields to the wetlands adjacent to Lake Erie (Figure 2).

The majority of the Site is periodically to permanently inundated. An aerial view shows the interspersion of open water, emergent marsh, forested wetlands and upland fields, forests and fill areas across the Site (Figure 3). Multiple roadways bisect these wetland and upland cover types. The National Wetland Inventory map indicates the presence of palustrine forested (PFO1A), palustrine scrub-shrub (PSS1C), palustrine emergent (PEM1A and PEM1C), and open water (PUBHx) in this area (Figure 4). The State Wetland Inventory indicates that most of the site contains hydric soils and hydrophytic vegetation (Figure 5).

The Monroe County Soil Survey lists 10 - Lenawee Silty Clay Loam, ponded (hydric soil) and 21 – Lenawee Silty Clay Loam as the primary mapped soil types on the Site (Figure 6). Other soils found onsite include 57 – Urban land-Lenawee Complex on the southern edge of the Site, 33 - Pit-Aquents Complex and 13A - Blount Loam on the northwestern side of the Site, and 27 – Beaches along the western edge of the Site adjacent to Lake Erie.

Water is seasonally to permanently present throughout the majority of the Site. Average annual precipitation is 31.5 inches and generally well distributed throughout the year. The site receives direct, surface runoff from a 2,440-acre drainage basin with cropland, wetland and forestland as the primary cover types (Figure 7). Surface water is also received from Lake Erie during periods of high water and storm events.

In 2003 the Detroit River International Wildlife Refuge (DRIWR), managed by the U.S. Fish and Wildlife Service (USFWS), signed a cooperative management agreement with DTE for wildlife habitat management activities at the Site. Refuge staff work with DTE to maximize habitat conditions for wildlife by enhancing existing habitat, providing habitat structures and restoring native vegetation communities. The USFWS has identified the wetland resources at the Site to provide important habitat for wildlife with opportunity for further enhancement and restoration.

#### 3.0 METHODS

Prior to field investigations, the Monroe County Soil Survey (USDA-SCS, 1981), the United State Geological Survey (USGS) topographic mapping (Stony Point, Estral Beach, MI 7.5 minute quadrangles), United States Fish and Wildlife Service (USFWS) National Wetland Inventory, Michigan Department of Environmental Quality (MDEQ) State Wetland Inventory and aerial photographs were reviewed to determine possible location, extent and types of wetlands on the Site.

#### 3.1 Wetland Delineation

Flagging of wetland boundaries and data collection along the boundaries were performed by DU staff (Appendix E) between May 16, 2008 and June 13, 2008. The boundaries were delineated in accordance with procedures outlined in the USACE 1987 Wetland Delineation Manual. Delineation followed the Routine On-site Method described in Section D of Chapter IV in the 1987 Manual. Prior to initiating sampling, the property was traversed to identify general topographic conditions and drainage patterns, major plant communities and potential areas of disturbance. After examining plant communities and determining whether normal environmental conditions were present, a representative data point was selected in each plant community. Information on vegetation, soils and hydrology was collected at each data point using the federal criteria for vegetation, soils, and hydrology.

Ocular estimates of the percent area cover by plant species for each vegetation layer (tree, shrub, and herbaceous layers) were recorded. The presence of wetland vegetation was determined

when more than 50 percent of the dominant species in a sample plot had an indicator status of obligate (OBL), facultative-wet (FACW), or facultative (FAC+, FAC), excluding FAC-. The dominant species for each layer in a plot were determined by ranking the species in decreasing order of percent cover and recording those species which, when cumulatively totaled, immediately exceeded 50 percent of the total cover of that layer. Additionally, any plant species that comprised 20 percent or more of the total cover for each layer was considered to be a dominant species.

Soil and hydrology data were collected in soil pits to 18 inches within each sample plot. Soil characteristics were noted along the soil profile at the depth specified. The soil survey for Monroe County was reviewed. Soil colors were determined by using the Munsell color chart. Primary and secondary indicators of hydrology were also noted at each sample plot.

#### 3.2 Functions/Values Assessment

Wetlands delineated on the 1,106 DTE property were evaluated using *Wetland Functions and Values: A Descriptive Approach.* (The New England Method) 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. Supporting documentation for the 13 functions and values used are presented in Appendix C.

The three main wetland types found on DTE were palustrine forested (PFO), palustrine scrubshrub (PSS) and palustrine emergent marsh (PEM). Delineated wetlands representing each wetland type were visited during June 2008. Wetland Function-Value Evaluation Forms were completed for both woody (PFO and PSS) and non-woody (PEM) wetland types based on both office (existing data) and field (direct observation) evaluation (Appendix C). In addition, vegetation community characteristics and wildlife observations were recorded. Vegetation characteristics were examined to support functions and values designations. Vegetation was sampled along transects that sampled the range of hydrologic regimes present in DTE wetlands. Aerial coverage and species were recorded in 1 m<sup>2</sup> plots along transects. Woody vegetation species were recorded in a circular radius up to 11.6 m from the center of each m<sup>2</sup> plot. In each m<sup>2</sup> plot total areal coverage was estimated for all species combined and for the three most dominant species. A total number of plant species in each plot was tallied. All identified species were associated with their respective wetland indicator status classification. During the course of conducting wetland delineation and assessment activities, all wildlife species observed were recorded along with evidence of wildlife use.

#### 4.0 RESULTS/CONCLUSION

#### 4.1 Wetland Delineation

DU identified 41 wetlands on the Site (Table 1). The boundaries between each type of wetland were identified and flagged with coded surveyor's ribbon to facilitate a functions and values assessment. The delineated wetlands were surveyed by DU staff and acreage was calculated for each wetland. The primary wetland type on the Site is PEM comprising 325 acres followed by PFO (168 acres) and PSS (16 acres). Approximately 45 acres of the site were designated as open water. The wetland delineation survey is shown in Appendix A. The sample plot data sheets are provided in Appendix B.

Wetland Name	Area Designation	Total Acres	Report Map Location	Mapped NWI	Mapped MDEQ	USACE/MDEQ Jurisdiction
А	PEM/WM	1.88	3	Yes	Yes	Non Jurisdictional
В	PFO	0.76	4	Yes	Yes	USACE/MDEQ
С	PEM	48.18	5&6	Yes	Yes	USACE/MDEQ
D	PFO	1.37	4	Yes	Yes	USACE/MDEQ
E	PSS	4.71	4	Yes	Yes	USACE/MDEQ
F	PFO	31.07	7&8	No	Yes	USACE/MDEQ
G	PFO	5.29	9	No	Yes	USACE/MDEQ
Н	PEM	0.1	10	No	Yes	MDEQ
Н	Open Water	1.86	10	No	Yes	MDEQ

**Table 1. Delineated Wetlands** 

	PFO	39.74	11	Yes	Yes	USACE/MDEQ
J	PEM	2.8	9	No	Yes	USACE/MDEQ
К	PSS	5.56	9	No	Yes	USACE/MDEQ
L	PFO	62.18	12 & 13	Yes	Yes	USACE/MDEQ
Μ	PEM	161.65	14 & 15	No	Yes	USACE/MDEQ
N	PEM	11.13	16	Yes	Yes	USACE/MDEQ
0	PFO	0.72	16	Yes	Yes	USACE/MDEQ
Р	PFO	0.21	17	No	No	USACE/MDEQ
Q	PSS	2.04	17	Yes	No	USACE/MDEQ
R	PEM	1.97	18	No	No	USACE/MDEQ
S	PFO	1.41	18	No	No	USACE/MDEQ
Т	PFO	5.71	17	No	No	USACE/MDEQ
U	PEM	0.15	10	No	No	USACE/MDEQ
U	Open Water	3.32	10	No	No	USACE/MDEQ
V	PFO	0.34	9	No	Yes	USACE/MDEQ
W	PEM/WM	4.59	19	No	No	MDEQ
Х	PFO	3.37	19	No	No	MDEQ
Y	PFO	1.14	20	No	No	MDEQ
Z	PEM	0.39	20	Yes	No	USACE/MDEQ
AA	PEM	0.8	21	No	No	USACE/MDEQ
BB	PFO	11.8	22 & 23	Yes	Yes	USACE/MDEQ
CC & DD	PEM	86.38	24 & 25	Yes	Yes	USACE/MDEQ
EE	PEM	0.77	24 & 25	No	Yes	USACE/MDEQ
FF	PEM	0.39	22	No	Yes	USACE/MDEQ
GG	PFO/PSS/PEM	0.93	26	No	No	USACE/MDEQ
НН	PSS	2.47	27	Yes	Yes	USACE/MDEQ
П	PEM	0.52	21	No	No	MDEQ
JJ	PSS	1.37	21	No	No	MDEQ
KK	PFO	1.62	28	No	Yes	USACE/MDEQ
WW	PEM	0.26	29	No	No	MDEQ
XX	PEM	0.25	29	No	No	MDEQ
YY	PEM	0.21	29	No	No	MDEQ
ZZ	PEM	0.11	29	No	No	MDEQ
Northernmost						
Canal	OW	3.55	25	No	Yes	USACE/MDEQ
South Canal	PEM	1.97	6	No	Yes	USACE/MDEQ
Quarry Lake	<b></b>					
1	OW	5.45	2	Yes	Yes	MDEQ
Quarry Lake	0.04	12.07	2	Voc	Voc	MDEO
∠ Quarry Lake		13.07	۷	165	165	
3	ow	17.24	2	Yes	Yes	MDEQ
Along Quarry						
Lake Road	OW	0.55	20	Yes	Yes	USACE/MDEQ

Rainfalls during the field work period had a noticeable impact on the saturation of the soil. Data points taken on days shortly after a significant rainfall showed saturation to the surface, but no

free water in pits excavated to an 18" depth. The saturation level is greater than expected from capillary fringe effects and can be attributed to the recent rainfall. In these cases, saturation in the upper 12" may be misleading in the determination of wetlands. This information was taken into account during determinations that occurred shortly after a rainfall event. Significant rainfall events (>0.1") occurred on the following dates: May 11, 14, 18 and June 8, 9, 10, 13.

#### Wetland Descriptions

#### **Palustrine Forested Wetland (PFO)**

Wetlands with basal area dominated by woody vegetation 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. Typical 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 amonum), and green ash (Fraxinus pennsylvanica) saplings. Herbaceous vegetation was sparse during delineation. Common species included black raspberry (Rubus sp.), 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 vegetation species were plants that favor upland areas. Soils are hydric and saturated with pockets of standing water throughout the PFO wetlands. Approximately 168 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 (Table 1, Appendix A).



PFO Photo - DTE Site - May 2008



PFO Photo – DTE Site – June 2008



PFO Photo – DTE Site – June 2008



PFO Photo – DTE Site – June 2008

#### Palustrine Scrub-Shrub Wetland (PSS)

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 sp.). 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 (Table 1, Appendix A).



PSS Photo – DTE Site – May 2008



PSS Photo – DTE Site – June 2008



PSS Photo – DTE Site – June 2008

#### Palustrine Emergent Wetland (PEM)

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 sp.), narrow-leaf cattail (Typha angustifolia), water lily (Nymphaea sp.), and coontail (Ceratophyllum demersum). Approximately 325 acres of wetlands were delineated as PEM and include: A, C, H, J, M, N, R, U, W, Z, AA, CC, DD, EE, FF, II, WW, XX, YY, ZZ, and the South Canal. 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 wetlands. There is significant build up of plant duff in PEM wetlands primarily from large, persistent stands of common reed.



PEM Photo - DTE Site - May 2008



PEM Photo – DTE Site – June 2008



PEM Photo – DTE Site – June 2008



PEM Photo – DTE Site – June 2008

#### **Open Water Habitat**

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 approximately 45 acres of open water habitat on the Site. Open water habitats located include H, U, the Northernmost Canal, Quarry Lake 1, Quarry Lake 2, Quarry Lake 3, and Along Quarry Lake Road.

#### 4.2 Functions/Values Assessment

With the exception of a few wetlands isolated by berms or roads the majority of wetland communities at the Site are hydrologically connected and thus, for the purposes of the functions-values assessment, considered one wetland system. A functions-values assessment form 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 site. The principal functions of the wetland system include floodflow alteration, sediment/toxicant retention, nutrient removal and fish and wildlife habitat. Additional 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. Below is a summary of the principal functions of the wetland system. Appendix C includes a copy of the Wetland Function-Value Evaluation Forms for woody and non-woody wetland communities and a list of considerations/qualifiers for each function and value assessed.

#### **Principal Functions and Values**

*Floodflow alteration, sediment/toxicant retention and nutrient removal:* The Site'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. DTE's Fermi II Nuclear Plant including cooling towers and control centers are 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 sites excessive nutrient levels as a documented impairment in waterbodies (http://cfpub.epa.gov/surf/huc.cfm?huc\_code=04100001). There is opportunity for sediment trapping and nutrient uptake in diffuse, slow moving and deepwater areas of the Site's wetlands that are edged or interspersed with dense herbaceous and woody vegetation.

Fish and wildlife habitat: The deepwater PEM of the Site's 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 indirect disturbance in all wetlands observed, there remains significant abundance and diversity in habitat cover to support wildlife. With the exception of the buildings and roadways associated with the nuclear plant, the landscape is largely undeveloped with relatively large parcels of vegetated wetlands and uplands. The majority of the wetlands evaluated are connected hydrologically in spite of fragmentation by multiple roadways. The wetland system presents an interspersion of open water areas with dense emergent vegetation grading into shrub dominated and tree dominated communities. Some portions of the wetlands have a high degree of diversity in vegetation structure and species. The Clean Water Act Status Report for the Monroe County portion of the Ottawa-Stony watershed sites loss of aquatic life benefits as the most common impairment of waterbodies in the watershed (http://cfpub.epa.gov/surf/huc.cfm?huc\_code=04100001).

There are several threatened and endangered species observed or potentially present as well as included in the table below:

Common Name	Scientific Name	Status
Barn owl	Tyto alba	State endangered
Common tern	Sterna hirundo	State threatened
Eastern fox snake	Pantherophis gloydi	State threatened
Bald eagle	Haliaeetus leucocephalus	State threatened
Brindled madtom	Noturus miurus	Special concern
American lotus	Nelumbo lutea	State threatened
Arrowhead	Sagittaria montevidensis	State threatened
Frank's sedge	Carex frankii	State threatened
Trailing wild bean	Strophostyles helvula	Special concern

 Table 2. Threatened and Endangered Species

Appendix D lists all wildlife species observed during delineation and assessment field work.

#### CONCLUSION

For the purposes of delineating wetland boundaries and grouping wetland types on the Site, 37 individual wetland units were flagged. The primary wetland type on the Site is PEM comprising 325 acres followed by PFO (168 acres) and PSS (16 acres). Approximately 45 acres of the site were designated as open water. For the functions and values assessment, the majority of the delineated wetland units were considered one large wetland system, hydrologically connected by direct, contiguous water ways or culverts under roads. Wetland functions and values were assigned to woody and non-woody wetland communities. The primary functions and values of the wetland system are floodflow alteration, sediment/toxicant retention, nutrient removal and habitat for fish and wildlife.



















## **APPENDIX A**

## WETLAND DELINEATION MAP SET

DTE Wetland Investigation Report