

Detroit Edison Fermi 3 Project  
US Army Corps of Engineers and Michigan  
Department of Environmental Quality  
Joint Permit Application

June 2011  
Revision 0

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



June 17, 2011  
2011-MEP-F3COLA-0041

Michigan Department of Environmental Quality  
Land and Water Management Division  
Permit Consolidation Unit  
P.O. Box 30204  
Lansing, MI 48909-7704

Subject: Joint Permit Application for Detroit Edison, Fermi 3 Nuclear Power Plant

Permit Consolidation Unit:

Detroit Edison is submitting the enclosed joint permit application (JPA) and supporting documentation for the proposed construction of a new nuclear power unit and ancillary facilities (Fermi 3) at the site of the existing Enrico Fermi Atomic Power Plant (Fermi 2) site.

A pre-application meeting was held with MDEQ representatives, Kate Lederle and Wendy Fitzner on March 24, 2011. A second pre-application meeting was held with USACE representatives, Colette Luff and Tom Allenson on March 30, 2011. Both pre-application meetings provided the regulatory agencies an overview of the current JPA progress; review of applicable JPA sections; review of applicable regulated activities including but not limited to the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, including: Part 301, Inland Lakes and Streams; Part 303, Wetlands Protections; Part 325, Great Lakes Submerged Lands; and Floodplain Regulatory Authority (found in Part 31, Water Resources Protection) and Section 10, Rivers and Harbors Act of 1899 and Section 404, Clean Water Act of 1977; review of DRAFT figures; permit fee; proposed JPA submittal; and proposed schedule of activities. The JPA and supporting documents have incorporated comments from both the MDEQ and USACE.

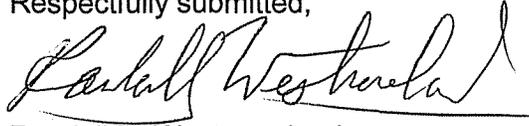
Included with this submittal are Pages 1 through 6 of the Joint Permit Application, 2 full size color copies of the preferred site plan to provide adequate detail for agency review and 5 unbound copies of the supporting documents (refer to enclosed Attachment List).

The proposed activities meet the requirements of a major permit category. A permit application fee for \$2,000 is enclosed.

Please feel free to contact me if you have questions regarding the JPA. Detroit Edison would like the opportunity to meet with the MDEQ staff to review any questions or comments at your earliest convenience.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Randall Westmoreland". The signature is written in a cursive style with a horizontal line underneath.

Randall D. Westmoreland  
Technical Expert - Nuclear  
Nuclear Development-Licensing  
Detroit Edison



<b>AGENCY USE</b>	Previous USACE Permit or File Number	Date Received	Land and Water Management Division, MDEQ File Number	<b>AGENCY USE</b>
	USACE File Number		Pre-application Number or Marina Operating Permit Number	
	District Office		Fee received \$	

Read Instructions pages i - iii. All of the following boxes below must be checked and information provided for the application to be processed:

- All items in Sections 1 through 9 are completed
- Date project was staked *Representatives from the USACE and MDEQ have conducted site visits and understand the proposed project scope. This site is an operating nuclear power plant and due to the nature and size of the project, site staking is not feasible at this time. Representatives from USACE and MDEQ are aware of this and are in agreement.*
- Items in Sections 10 through 21 that apply to the project are completed
- Application fee is attached
- Dimensions, volumes and calculations are provided
- All requested supplementary attachments (➔) are included
- Reproducible location map, site plan(s), cross sections and photographs are provided, one set must be black and white on 8 ½ by 11 inch paper.
- List any additional attachments, tables, etc.: *Refer to List of Attachments following this JPA form*

<b>1 PROJECT LOCATION INFORMATION</b>					
• Refer to your property's legal description for the Township, Range, and Section information, and your property tax bill for your Property Tax Identification Number(s).					
Site location Address (road, if no street address) <i>6400 North Dixie Highway</i>	Zip Code <i>48166</i>	Township Name(s) <i>Frenchtown</i>	Township(s) <i>T6S</i>	Range(s) <i>R10E</i>	Section(s) <i>16, 17, 20, 21, 28, 29</i>
City/Village <i>Newport</i>	County(ies) <i>Monroe</i>	Property Tax Identification Number(s) <i>See Attachment 1-1</i>			
Name of Waterbody <i>Lake Erie</i>	Project Name or Job Number <i>Fermi 3</i>	Subdivision/Plat	Lot Number	Private Claim	
Project types (check all that apply)	<input checked="" type="checkbox"/> private <input type="checkbox"/> building addition <input type="checkbox"/> project is receiving federal transportation funds	<input type="checkbox"/> public/government <input type="checkbox"/> new building or structure	<input checked="" type="checkbox"/> industrial <input type="checkbox"/> building renovation or restoration <input type="checkbox"/> other (explain)	<input type="checkbox"/> commercial <input type="checkbox"/> river restoration	<input type="checkbox"/> multi-family <input type="checkbox"/> single-family
The proposed project is on, within, or involves (check all that apply)		<input type="checkbox"/> a legally established County Drain (date established) (M/D/Y) / /			
<input type="checkbox"/> a stream	<input checked="" type="checkbox"/> a pond (less than 5 acres)	<input checked="" type="checkbox"/> a Great Lake or Section 10 Waters	<input type="checkbox"/> a natural river	<input type="checkbox"/> a new marina	
<input type="checkbox"/> a river	<input checked="" type="checkbox"/> a channel/canal	<input type="checkbox"/> a designated high risk erosion area	<input type="checkbox"/> a dam	<input type="checkbox"/> a structure removal	
<input checked="" type="checkbox"/> a ditch or drain	<input type="checkbox"/> an inland lake (5 acres or more)	<input type="checkbox"/> a designated critical dune area	<input checked="" type="checkbox"/> a wetland	<input type="checkbox"/> a utility crossing	
<input type="checkbox"/> a floodway area	<input checked="" type="checkbox"/> a 100-year floodplain	<input type="checkbox"/> a designated environmental area	<input checked="" type="checkbox"/> 500 feet of an existing waterbody		
<b>2 DESCRIBE PROPOSED PROJECT AND ASSOCIATED ACTIVITIES, AND THE CONSTRUCTION SEQUENCE AND METHODS (attached additional sheets)</b>					
Written Summary of All Proposed Activities. <i>See Attachments 2-1 and 2-2</i>					
Construction Sequence and Methods. <i>See Attachments 2-1 and 2-2</i>					
<b>3 APPLICANT, AGENT/CONTRACTOR, AND PROPERTY OWNER INFORMATION</b>					
Owner/Applicant (individual or corporate name) <i>Detroit Edison (Randall Westmoreland)</i>		Agent/Contractor (firm name and contact person) <i>Tetra Tech (Lisa Matis)</i>			
Mailing Address <i>One Energy Plaza, 337 WCB</i>		Address <i>900 Trail Ridge Rd</i>			
City <i>Detroit</i>	State <i>MI</i>	Zip Code <i>48226</i>	City <i>Aiken</i>	State <i>SC</i>	Zip Code <i>29803</i>
Daytime Phone Number with Area Code <i>313-235-3368</i>		Cell Phone Number	Daytime Phone Number with Area Code <i>509-375-3584</i>		Cell Phone Number
Fax - -	E-mail <i>westmorelandr@dteenergy.com</i>	Fax - -	E-mail <i>lisa.matis@tetrattech.com</i>		
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? ➔ If no, attach letter(s) of authorization from all owners. A letter signed by each property owner authorizing the agent/contractor/other owner to act on his or her behalf or a copy of easements or right-of-ways must be provided. If multiple property owners, also attach a list of all owners along with their names, mailing addresses, and telephone numbers. If the applicant is a corporation, a corporate officer must provide written document authorizing any agent/contractor listed above to act on its behalf. A letter of authorization must be provided from an owner receiving dredge spoils on their property, or where access through their property is required..					
Property Owner's Name (If different from applicant)			Mailing Address		



Daytime Phone Number with Area Code - - - - -	Cell Phone Number - - - - -	City	State	Zip Code
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No  Yes Is there a MDEQ conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property in the project area?  
 ➔ If yes, attach a copy. *See Attachments 3-1 through 3-3*

**4 PROPOSED PROJECT PURPOSE, INTENDED USE, AND ALTERNATIVES CONSIDERED** (Attach additional sheets if necessary)  
**Purpose/Intended Use:** The purpose must include any new development or expansion of an existed land use. *See Attachment 4-1*

**Alternatives:** Include a description of alternatives considered to avoid or minimize resource impacts. Include factors such as, but not limited to, alternative construction technologies; alternative project layout and design; and alternative locations. For utility crossings, include both alternative routes and alternative construction methods.  
*See Attachments 4-1 through 4-3*

**5 LOCATING YOUR PROJECT SITE**  
 ➔ Attach a black and white, legible copy of a map that clearly shows the site location and road from the nearest major intersection, and includes a north arrow.

Is there an access road to the project?  No  Yes (If Yes, type of road, check all that apply)  private  public  improved  unimproved

Name of roads at closest main intersection *Dixie Highway* and *Fermi Drive*

Directions from main intersection *From Dixie Highway turn at Enrico Fermi Energy Center sign and follow Fermi Drive to the Security Gatehouse*

Style of house or other building on site  ranch  2-story  cape cod  bi-level  cottage/cabin  pole barn  none  other (describe) *nuclear electric generating plant*

Color \_\_\_\_\_ Color of adjacent property house and/or buildings \_\_\_\_\_ House number \_\_\_\_\_ Street name \_\_\_\_\_

Fire lane number \_\_\_\_\_ Lot number \_\_\_\_\_ Address is visible on  house  garage  mailbox  sign  other (describe) \_\_\_\_\_

How can your site be identified if there is no visible address?  
 Provide directions to the project site, with distances from the best and nearest visible landmark and waterbody. *See Attachment 5-1 for a location map and directions*

Does the project cross the boundaries of two or more political jurisdictions? (City/Township, Township/Township, County/County, etc.)  
 No  Yes ➔ If Yes, list jurisdictions:

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

Agency	Type approval	Identification number	Date applied	Date approved / denied	If denied, reason for denial
<i>See Attachment 6-1</i>					

**7 COMPLIANCE**

If a permit is issued, date activity will commence (M/D/Y) <i>no sooner than 2012</i>	Proposed completion date (M/D/Y) <i>approximately 2020</i>
Has any construction activity commenced or been completed in a regulated area? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes ➔ If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s) (M/D/Y) <i>/ /</i>	Were the regulated activities conducted under a MDEQ permit? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, list the MDEQ permit number _____
Are you aware of any unresolved violations of environmental law or litigation involving the property? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, explain)	

**8 ADJACENT/RIPARIAN AND IMPACTED OWNERS** (Attach additional sheets if necessary)

- Complete information for all adjacent and impacted property owners and the lake association or established lake board, including the contact person's name.
- If you own the adjacent lot, provide the requested information for the first adjacent parcel that is not owned by you.

Property Owner's Name	Mailing Address	City	State	Zip Code
<i>See Attachment 8-1</i>				

Name of  Established Lake Board  or Lake Association and the Contact Person's name, phone number, and mailing address

**9 APPLICANT'S CERTIFICATION READ CAREFULLY BEFORE SIGNING**

I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application; that it is true and accurate; and, to the best of my knowledge, that it is in compliance with the State Coastal Zone Management Program. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue. I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the MDEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site and the completed project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.

<input type="checkbox"/> Property Owner <input type="checkbox"/> Agent/Contractor <input type="checkbox"/> Corporation/Public Agency – Title	Printed Name <i>PETER W SMITH</i>	Signature 	Date (M/D/Y) <i>6/16/2011</i>
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**10 PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE**

- Check boxes A through M that may be applicable to your project and provide all the requested information.
- If your project may affect wetlands, also complete Section 12. If your project may impact regulated floodplains, also complete Section 13.
- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27.
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.
- ➔ Provide a cross-section and overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for completing site-specific drawings.
- ➔ Provide tables for multiple impact areas or multiple activities and provide fill and excavation/dredge calculations. *See Attachments 10-1 through 10-4*

**Water Level Elevation**

On a Great Lake use IGLD 85  surveyed  converted from observed still water elevation. On inland waters,  NGVD 29  NAVD 88  other  Observed water elevation (ft) date of observation (M/D/Y) *See Attachments 10-1 through 10-4 for information related to water level elevations*

**A. PROJECTS REQUIRING FILL** (See All Sample Drawings)

- Attach both overall site plan and cross-section views to scale showing maximum and average fill dimensions.
- *See Attachments 10-1 through 10-4 for information related to projects requiring fill*

(Check all that apply)  floodplain fill  wetland fill  riprap  seawall, bulkhead, or revetment  bridge or culvert  
 boat launch  off-shore swim area  beach sanding  boatwell  crib dock  other

Fill dimensions (ft) length                      width                      maximum depth	Total fill volume (cu yd)	Maximum water depth in fill area (ft)
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Type of clean fill  pea stone  sand  gravel  wood chips  other  
 Will filter fabric be used under proposed fill?  No  Yes (If Yes, type)

Source of clean fill  on-site, ➔ If on-site, show location on site plan.  commercial  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 yd)

**B. PROJECTS REQUIRING DREDGING OR EXCAVATION** (For dredging projects see Sample Drawing 7, for excavation see other applicable Sample Drawings)

- Attach both overall site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions and dredge disposal location.
- Refer to [www.michigan.gov/jointpermit](http://www.michigan.gov/jointpermit) for disposal requirements and authorization.
- *See Attachment 10-2 for information related to projects requiring dredging or excavation*

(Check all that apply)  floodplain excavation  wetland dredge or draining  seawall, bulkhead, or revetment  
 navigation  boat well  boat launch  other *Pipeline and intake structure installation*

Total dredge/excavation volume (cu yd)	Dimensions length                      width                      depth	Dredge/excavation volume below OHWM (cu yd)	Method and equipment for dredging
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Has proposed dredge material been tested for contaminants?  No  Yes  
 ➔ If Yes, provide test results with a map of sampling locations.  
 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  Yes If Yes, date and permit 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 how much?

**C. PROJECTS REQUIRING RIPRAP** (See Sample Drawings 2, 3, 8, 12, 14, 17, 22, and 23. Others may apply)

*See Attachments 10-2 through 10-4 for information related to projects requiring riprap*

Riprap waterward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions (ft) length                      width                      depth	Volume(cu yd)
Riprap landward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions (ft) length                      width                      depth	Volume(cu yd)

Type of riprap  field stone  angular rock  other  
 Will filter fabric be used under proposed riprap?  No  Yes (If Yes, type)

**D. SHORE PROTECTION PROJECTS** (See Sample Drawings 2, 3, and 17) Complete Sections 10A, B, and/or C above, as applicable.

(check all that apply)  
 riprap – length (ft)  seawall/bulkhead – length (ft)  revetment – length (ft) Distances of project from both property lines (ft)

**E. DOCK - PIER – MOORING PILINGS – ROOFS** (See Sample Drawing 10)

Dock Type Seasonal support structure? <input type="checkbox"/> open pile <input type="checkbox"/> filled <input type="checkbox"/> crib <input type="checkbox"/> No <input type="checkbox"/> Yes	Permanent Roof? <input type="checkbox"/> No <input type="checkbox"/> Yes Mounted on
Proposed structure dimensions (ft) length                      width	Maximum Dimensions: length                      width                      height
	Dimensions of nearest adjacent structures (ft) length                      width

**F. BOAT WELL** (See EZ Guides)

Type of sidewall stabilization  wood  steel  concrete  vinyl  riprap  other  
 Boat well dimensions (ft)  
 length                      width                      depth  
 Volume of backfill behind sidewall stabilization (cu yd)                      Number of boats  
 Distances of boat well from adjacent property lines (ft)



10 Continued - PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE

**G. BOAT LAUNCH** (See EZ Guide) (check all that apply)  new  existing  public  private  commercial  replacement

Proposed overall boat launch dimensions (ft) length width depth	Type of material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other
Existing overall boat launch dimensions (ft) length width depth	Boat launch dimensions (ft) below ordinary high water mark length width depth
Distances of launch from both property lines (ft)	Number of adjacent Skid piers Skid pier dimensions (ft) length width

**H. BOAT HOIST** (See EZ Guide)

(Check all that apply)  seasonal  permanent  cradle  side lifter  other located on  seawall  dock  bottomlands

**I. BOARDWALKS AND DECKS IN  WETLANDS - OR -  FLOODPLAINS** (See Sample Drawings 5 and 6. Provide table if necessary)

Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Dimensions (ft) length width	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Dimensions (ft) length width
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**J. INTAKE PIPES** (See Sample Drawing 16)  **OUTLET PIPES** (See Sample Drawing 22) *See Attachment 10-2 for information related to intake and outlet pipes*

Type  headwall  end section  pipe  other

If outlet pipe, discharge is to  wetland  inland lake  stream, drain, or river  Great Lake  other

Dimensions of headwall OR end section (ft) length width depth	Number of pipes	Pipe diameters and invert elevations
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**K. MOORING AND NAVIGATION BUOYS** (See EZ Guide for Sample Drawing)

➔ Provide an overall site plan showing the distances between each buoy, distances from the shore to each buoy, and depth of water at each buoy in feet.

➔ Provide cross-section drawing(s) showing anchoring system(s) and dimensions.

Number of buoys	Boat Lengths	Type of anchor system	Purpose of buoy <input type="checkbox"/> mooring <input type="checkbox"/> navigation <input type="checkbox"/> swimming
Dimensions of buoys (ft) width height swing radius chain length	Do you own the property along the shoreline? <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ Attach Authorization Letter from the property owner(s), if No above.		

**L. FENCES IN WETLANDS, STREAMS, OR FLOODPLAINS** (No Sample Drawing available)

- Provide an overall site plan showing the proposed fencing through wetlands, streams, or floodplains.
- Provide drawing of fence profile showing the design, dimension, post spacing, board spacing, and distance from ground to bottom of fence.

(check all that apply) <input type="checkbox"/> wetlands <input type="checkbox"/> streams <input type="checkbox"/> floodplains	Total length (ft) of fence through wetlands streams floodplains	Fence height (ft)	Fence type and material
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**M. OTHER** - e.g., structure removal or construction, breakwater, aerator, fish shelter, and structural foundations in wetlands or floodplains

11 EXPANSION OF AN EXISTING OR CONSTRUCTION OF A NEW LAKE OR POND (See Sample Drawings 4 and 15)

Which best describes your proposed waterbody use (check all that apply)

wildlife  stormwater retention basin  recreation  wastewater basin  other

Water source for lake/pond

groundwater  natural springs  Inland Lake or Stream  stormwater runoff  pump  sewage  other

Location of the lake/basin/pond  floodplain  wetland  upland

Maximum dimensions (ft) length width depth	Spoils will be placed <input type="checkbox"/> onsite <input type="checkbox"/> offsite outside of wetland and floodplain <input type="checkbox"/> other ➔ Provide a Detailed Disposal Area Site Plan with location map, address and disposal dimensions ➔ Provide a Letter of Authorization from off site disposal site owner ➔ Provide elevations and cross sections for outlets and/or emergency. Complete Section 10J,
Maximum Area: <input type="checkbox"/> acres <input type="checkbox"/> sq ft	

Will project involve construction of a dam, dike, outlet control structure, or spillway?  No  Yes (If Yes, complete Section 17)

12 ACTIVITIES THAT MAY IMPACT WETLANDS (See Sample Drawings 8 & 9, and complete sections 10 A and 10 B for dredge or excavation as applicable)

- For information on the MDEQ's Wetland Identification Program (WIP) visit [www.michigan.gov/deqwetlands](http://www.michigan.gov/deqwetlands) or call 517-373-1170.
- Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area. ➔ Attach tables for multiple impact areas or activities
- Label the impacted wetland areas on a site plan, drawn to scale or with dimensions. ➔ Attach at least one cross-section for each wetland dredge and/or fill area.
- If dredge/excavation material will be disposed of on site, show the location on site plan and include soil erosion and sedimentation control measures.

(check all that apply)  fill (Section 10A)  dredge or excavation (Section 10B)  boardwalk or deck (Section 10I)  dewatering  fences (Section 10L)  bridges and culverts (Section 14)  draining surface water  stormwater discharge  restoration  other *bag mat laydown and vegetation clearing*

wetland dredge/excavation dimensions <i>Refer to Attachments 12-2 to 12-9 for individual wetland dredge/excavation dimensions</i>	maximum length (ft) <i>See Attachment 12-1 for max lengths by Activity Area and Attachments 12-2 to 12-9 for max lengths by individual wetland</i>	maximum width (ft) <i>See Attachment 12-1 for max width by Activity Area and Attachments 12-2 to 12-9 for max width by individual wetland</i>	dredge/excavation area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <i>26.44</i>	average depth (ft) <i>See Attachment 12-1 for average depth by Activity Area and Attachments 12-2 to 12-9 for average depth by individual wetland</i>	dredge volume (cu yd) <i>157,315</i>
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wetland fill dimensions <i>Refer to Attachments 12-2 to 12-9 for individual wetland fill dimensions</i>	maximum length (ft) <i>See Attachment 12-1 for max lengths by Activity Area and Attachments 12-2 to 12-9 for max lengths by individual wetland</i>	maximum width (ft) <i>See Attachment 12-1 for max width by Activity Area and Attachments 12-2 to 12-9 for max width by individual wetland</i>	fill area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <i>27.86</i>	average depth (ft) <i>See Attachment 12-1 for average depth by Activity Area and Attachments 12-2 to 12-9 for average depth by individual wetland</i>	fill volume (cu yd) <i>229,744</i>
Total wetland dredge/excavation area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <i>26.44</i>	Total wetland dredge/excavation volume (cu yd) <i>157,315</i>	Total wetland fill area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <i>27.86</i>	Total wetland fill volume (cu yd) <i>229,744</i>		
The proposed project will be serviced by: <input checked="" type="checkbox"/> public sewer <input type="checkbox"/> private septic system → Show system on plans	<input checked="" type="checkbox"/> If septic system, has an application for a permit been made to the County Health Department? <input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, has a permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes → Provide a copy.			
Has a professional wetland delineation been conducted for this parcel? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes → Provide a copy of the delineation. <i>Attachment 12-10</i>			Applicant purchased property <input checked="" type="checkbox"/> before OR <input type="checkbox"/> after October 1, 1980.		
Is there a recorded MDEQ easement on the property? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide the easement number)					
Has the MDEQ conducted a wetland assessment for this parcel? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes → If Yes, provide a copy of assessment or WIP number: <i>This document is provided as Attachment 12-11 (WAP# 08-58-0003-WA). A USACE Jurisdiction determination is included as Attachment 12-12.</i>					
Describe the wetland impacts, the proposed use or development, and any alternatives considered: <i>All wetland impacts, proposed uses, and developments are provided in Attachment 12-2 to 12-9. Considered Alternatives are outlined in Section 4.</i>					
Does the project impact more than 1/3 acre of wetland? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes → If Yes, submit a Mitigation Plan that includes the type and amount of mitigation proposed. <i>Attachment 12-13</i> For more information go to <a href="http://www.michigan.gov/deqwetlands">www.michigan.gov/deqwetlands</a>					
Describe how impacts to waters of the United States will be avoided and minimized: <i>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. 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 impacts to waters of the United States. See Section 4 of this permit for onsite layout alternatives considered and the relevant impacts to aquatic resources associated with those alternatives for the Fermi 3 project.</i>					
Describe how impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts. <i>Proposed impacts include 30.37 acres of mixed wetland types within the coastal zone of Western Lake Erie and the northern portion of the Ottawa-Stony Watershed, USGS Cataloging Unit and Hydrologic Unit Code (HUC): 04100001. To compensate for wetland impacts, Detroit Edison proposes to restore approximately 21 acres of wetlands onsite post-construction and restore approximately 82 acres of wetland offsite in the coastal zone of Western Lake Erie and the northern portion of the Ottawa-Stony Watershed. The attached narrative (Attachment 12-13) provides an overview of the conceptual mitigation strategy and its development.</i>					
Is any grading or mechanized land clearing proposed? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes → Show locations on submitted site plan. <i>All grading and mechanized land clearing will occur within limits of construction boundary as indicated within Attachments 12-2 through 12-9.</i>			Has any of the proposed grading or mechanized land clearing been completed? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes → Show labeled locations on site plan.		



**13 FLOODPLAIN ACTIVITIES** (See Sample Drawing 5. Others may apply.) For more information go to [www.michigan.gov/deq/floodplainmanagement](http://www.michigan.gov/deq/floodplainmanagement)

- Complete Sections 10 A and 10 B and other Sections, as applicable.
- A hydraulic analysis or hydrologic analysis may be required to fully assess floodplain impacts. ➔ Attach hydraulic calculations.
- ➔ Attach additional sheets or tables with the requested information when multiple floodplain activities are included in this application.

(check all that apply)  fill  excavation  other

Site is \_\_\_\_\_ feet above  ordinary high water mark (OHWM) OR  observed water level. Date of observation (M/D/Y) / /

Fill volume below the 100-year floodplain elevation (cu yd)	Compensating cut volume below the 100-year floodplain elevation (cu yd)
---	---

**14 BRIDGES AND CULVERTS** (Including Foot and Cart Bridges) (See Sample Drawings 5, 14A, 14B, 14C, 14D, and EZ Guides)

- Provide detailed site-specific drawings of existing and proposed Plan and Elevation View, (Sample Drawing 14A), Elevation View (Sample Drawing 14B), Stream and Floodplain Cross-Section (Sample Drawing 14C), Stream Profile (Sample Drawing 14D) and Floodplain Fill (Sample Drawing 5) at a scale adequate for detailed review.
- Provide the requested information that applies to your project. If there is not an existing structure, leave the "Existing" column blank.
- If you choose to have a Licensed Professional Engineer "certify" that your project will not cause a "harmful interference" for a range of flood discharges up to and including the 100-year flood discharge, then you must use the "Required Certification Language." You may request a copy by phone, email, or mail. A hydraulic report supporting this certification may also be required. Is Certification Language attached?  No  Yes
- ➔ Attach additional sheets and table with the requested information for multiple crossings. Include hydraulic calculations. *See Attachments 14-1 and 14-2*

		Existing	Proposed			Existing	Proposed
Culvert type (box, circular, arch) and material (corrugated metal, timber, concrete, etc.)				Bridge span (length perpendicular to stream) OR culvert <input type="checkbox"/> width <input type="checkbox"/> diameter (ft)			
Bridge type (concrete box beam, timber, concrete I-beam, etc.)				Bridge width (parallel to stream) OR culvert length (ft)			
Entrance design (projecting, mitered, wingwalls, etc.)				Bridge rise (from bottom of beam to streambed) OR Culvert rise (fill from top of culvert to streambed) (ft)			
Total structure waterway opening above streambed (sq ft)				Approach slope fill from existing grade to culvert or bridge			
<input type="checkbox"/> elevation of culvert crown	Upstream			Higher elevation of <input type="checkbox"/> culvert invert OR <input type="checkbox"/> streambed within culvert (ft)	Upstream		
<input type="checkbox"/> bottom of bridge beam (ft)	Downstream				Downstream		
Elevation of road grade at structure (ft)				Distance from low point of road to mid-point of bridge crossing (ft)			
Elevation of low point in road (ft)							
Cross-sectional area of primary channel (sq ft) (See Sample Drawing 14C)		Average stream width at OHWM outside the influence of the structure (ft)		Upstream		Downstream	

Reference datum used (show on plans with description)  NGVD 29  NAVD 88  IGLD 85 (Great Lakes coastal areas)  other

High water elevation – describe reference point and highest known water level above or below reference point and date of observation.

**15 STREAM, RIVER, OR DRAIN CONSTRUCTION ACTIVITIES** (No sample drawing available)

- Complete Section 10A for fill, Section 10B for dredge or excavation, and Section 10C for riprap activities.
- If side casting or other proposed activities will impact wetlands or floodplains, complete Sections 12 and 13, respectively.
- ➔ Provide an overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures and land change activities.
- ➔ Provide cross-section (elevation) drawings necessary to clearly show existing and proposed conditions. Be sure to indicate drawing scales.
- ➔ For activities on legally established county drains, provide original design and proposed dimensions and elevations.

(check all that apply)  maintenance  improvement  relocation  enclosure  new drain  wetlands  other

Dimensions (ft) of existing stream/drain channel to be worked on.		length	width	depth
Dimensions (ft) of new, relocated, or enclosed stream/drain channel.		length	width	depth
Existing channel average water depth in a normal year (ft)		Proposed side slopes (vertical / horizontal)		

How will slopes and bottom be stabilized?

Will old/enclosed stream channel be backfilled to top of bank grade? <input type="checkbox"/> No <input type="checkbox"/> Yes	Length of channel to be abandoned (ft)	Volume of fill (cu yds)
---	--	-------------------------

If an enclosed structure is proposed, check type  concrete  corrugated metal  plastic  other

Dimensions of the structure: diameter \_\_\_\_\_ length \_\_\_\_\_ volume of fill \_\_\_\_\_

Will spoils be disposed of on site?  No  Yes ➔ Show location of spoils on site plan if spoils disposed of on an upland area.)

Water elevation \_\_\_\_\_ Reference datum used  NGVD 29  NAVD 88  IGLD 85 (Great Lakes coastal areas)  other

➔ Show elevation on plans with description.

**Acronym List**

**Preferred Site Plan**    **24 x 36" Colored Site Map**  
Provided for review purposes

**Attachment 1-1**        **Section 1: Project Location Information**  
Table 1-1. Detroit Edison Owned Fermi Site Property

**Attachment 2-1**        **Section 2: Proposed Project and Associated Activities, and the Construction Sequence and Methods**  
Summary of Proposed Project and Associated Activities, and the Construction Sequence and Methods  
Table 2-1. Summary of Impacts  
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

**Attachment 2-2**        **Section 2: Proposed Project and Associated Activities, and the Construction Sequence and Methods**  
USACE Supplemental RAI Response – Section 3 Project Description  
Summary of the project description as presented in Section 3 of the January 2011 Combined License  
Application, USACE Supplemental RAI Response

**Attachment 3-1**        **Section 3: Applicant, Agent/Contractor, and Property Owner Information**  
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

**Attachment 3-2**        **Section 3: Applicant, Agent/Contractor, and Property Owner Information**  
DRWIR Cooperative Agreement

**Attachment 3-3**        **Section 3: Applicant, Agent/Contractor, and Property Owner Information**  
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

- Attachment 4-1**      **Section 4: Proposed Project Purpose, Intended Use, and Alternatives Considered**  
Summary of the proposed project purpose, intended use and alternatives considered  
Table 4-1. Potential Construction Impacts for the Alternative Sites  
Table 4-2. Comparison of Impacts for Alternative Site Layouts
- Attachment 4-2**      **Section 4: Proposed Project Purpose, Intended Use, and Alternatives Considered**  
USACE Supplemental RAI Response – Appendix B Alternative Sites Analysis  
This attachment provides supplemental information regarding Detroit Edison’s alternative sites analysis as presented in Appendix B of the January 2011 Combined License Application, USACE Supplemental RAI Response
- Attachment 4-3**      **Section 4: Proposed Project Purpose, Intended Use, and Alternatives Considered**  
USACE Supplemental RAI Response – Section 5 Alternatives Analysis  
This attachment provides supplemental information regarding Detroit Edison’s alternatives analysis as presented in Section 5 of the January 2011 Combined License Application, USACE Supplemental RAI Response.
- Attachment 5-1**      **Section 5: Locating Your Project Site**  
Project Location Map
- Attachment 6-1**      **Section 6: All Other Agency Authorizations Required for the Proposed Activity**  
Table 6-1. Federal, State and Local Environmental Authorizations
- Attachment 8-1**      **Adjacent/Riparian and Impacted Owners**  
Table 8-1. Fermi Site Adjacent Property Owners  
Figure 8-1. Property Parcel Map
- Attachment 10-1**      **Section 10: Projects Impacting Wetlands or Floodplains or Located on an Inland Lake or Stream or a Great Lake - 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

- Attachment 10-2**      **Section 10: Projects Impacting Wetlands or Floodplains or Located on an Inland Lake or Stream or a Great Lake – Lake Erie Construction Area**  
Photographs 10a – 10c  
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
- Attachment 10-3**      **Section 10: Projects Impacting Wetlands or Floodplains or Located on an Inland Lake or Stream or a Great Lake – Construction Area 5**  
Figure 10-3A. Construction Area 5 Plan View  
Figure 10-3B. Construction Area 5 Profile of Proposed South Canal Culverts
- Attachment 10-4**      **Section 10: Projects Impacting Wetlands or Floodplains or Located on an Inland Lake or Stream or a Great Lake – 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
- Attachment 12-1**      **Section 12: Activities that May Impact Wetlands  
Site Wide Total of Wetland Impact Volumes**
- Attachment 12-2**      **Section 12: Activities that May Impact Wetlands - Construction Area 1**  
Photographs 12a – 12c  
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
- Attachment 12-3**      **Section 12: Activities that May Impact Wetlands - Construction Area 2**  
Photograph 12d  
Figure 12-3A. Construction Area 2 Plan View  
Figure 12-3B. Construction Area 2 Section Details

- Attachment 12-4**      **Section 12: Activities that May Impact Wetlands - Construction Area 3**  
Photographs 12e - 12k  
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
- Attachment 12-5**      **Section 12: Activities that May Impact Wetlands - Construction Area 4**  
Photographs 12l – 12m  
Figure 12-5A. Construction Area 4 Plan View  
Figure 12-5B. Construction Area 4 Section Details
- Attachment 12-6**      **Section 12: Activities that May Impact Wetlands - Construction Area 5**  
Photographs 12n – 12p  
Figure 12-6A. Construction Area 5 Plan View  
Figure 12-6B. Construction Area 5 Section Details
- Attachment 12-7**      **Section 12: Activities that May Impact Wetlands - Warehouse, PAP/VIB, and Parking Garage**  
Photographs 12q – 12u  
Figure 12-7A. Warehouse, PAP/VIB and Parking Garage Plan View  
(Refer to Figure 10-1D for Section Details)
- Attachment 12-8**      **Section 12: Activities that May Impact Wetlands – New Operations Access Road**  
Photographs 12v – 12w  
Figure 12-8A. New Operations Access Road Plan View  
Figure 12-8B. New Operations Access Road Section Details
- Attachment 12-9**      **Section 12: Activities that May Impact Wetlands – Onsite Transmission**  
Photographs 12x – 12y  
Figure 12-9A. Onsite Transmission Plan View  
Figure 12-9B. Onsite Transmission Section Details
- Attachment 12-10**      **Section 12: Activities that May Impact Wetlands**  
Ducks Unlimited Wetland Investigation Report

- Attachment 12-11**     **Section 12: Activities that May Impact Wetlands**  
MDEQ Wetland Assessment  
Wetland Identification File Number: 8-58-0003-WA  
November 7, 2008
- Attachment 12-12**     **Section 12: Activities that May Impact Wetlands**  
USACE Jurisdictional Determination  
November 9, 2010
- Attachment 12-13**     **Section 12: Activities that May Impact Wetlands**  
Fermi 3 Conceptual Aquatic Resource Mitigation Strategy
- Attachment 12-14**     **Section 12: Activities that May Impact Wetlands**  
Detroit Edison Correspondence with MDNRE  
Mitigation Ratio Letter 2010-MEP-F3COLA-0071  
Letter of Understanding, Documenting Conclusions of the Fermi Site Meeting  
October 2010
- Attachment 14-1**     **Section 14: Bridges and Culverts – Construction Area 5**  
Figure 14-1A. Construction Area 5 Plan View  
Figure 14-1B. Construction Area 5 Profile of Proposed South Canal Culverts
- Attachment 14-2**     **Section 14: Bridges and Culverts – New Operations Access Road**  
Photographs 14a – 14d  
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 Section ‘C’ Details

<b>ACRONYM</b>	<b>DESCRIPTION</b>
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

<b>ACRONYM</b>	<b>DESCRIPTION</b>
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	Rigid Corrugated 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



N

0 500 1000  
SCALE: 1" = 500'

### LEGEND

- PSS PALUSTRINE SCRUB SHRUB WETLAND
- PEM PALUSTRINE EMERGENT WETLAND
- PFO PALUSTRINE FORESTED WETLAND
- APPROXIMATE PROPERTY LINE
- OPEN WATER
- WETLAND BOUNDARY
- HORIZONTAL & VERTICAL CONTROL

- PALUSTRINE SCRUB-SHRUB (PSS) POTENTIAL WETLAND IMPACTS
- PALUSTRINE EMERGENT (PEM) POTENTIAL WETLAND IMPACTS
- PALUSTRINE FORESTED (PFO) POTENTIAL WETLAND IMPACTS
- OPEN WATER POTENTIAL IMPACTS

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

**Attachment 1-1**

Section 1:  
Property Location Information

Property Tax Identification Numbers  
(following 1 page)

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

**Attachment 2-1**

Section 2:  
Proposed Project and Associated Activities, and the Construction  
Sequence and Methods

Summary of Proposed Activities and  
Construction Sequence and Methods  
(following 10 pages)

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

1) Summary of All Proposed Activities:

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 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 and associated wetland fringes permanently impacting 0.25 acres of emergent marsh wetlands and 5.18 acres of open water.

Construct four 24-inch diameter rigid corrugated pipe (RCP) culverts to carry flow from outfalls previously directed to one of the canals. Match slope and invert elevations to existing culverts. Construct two 24-foot by 6-foot arch concrete culverts 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. (Refer to **Figure 3.3-6 in Attachment 2-2** for the existing dredging activity).

Barges will be offloaded using a ramp to the shoreline. Construction below the ordinary high water mark of Lake Erie will include placement of sheet piling to create the vertical face needed to dock and unload the barge. The piling will be perpendicular to the southern groin to facilitate ingress and egress of the barge. The piling will also be used to transition into the intake structure. Piling will be installed at or landward of the existing shoreline (the need to be perpendicular to 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.

*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 (Refer to **Figure 3.3-3 in Attachment 2-2** for the diffuser design).

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. 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 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 620 linear feet of sheet piling for shore protection extending in both directions from the intake structure.

*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. 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, 4.22 acres of emergent wetlands, and 5.18 acres of open water. 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 30.37 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) Construction Sequence and Methods:

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 placement of sheet piling 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 an intermittent stream 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.

Additional details of the proposed activities and construction sequence can be found in **Attachment 2-2**.

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

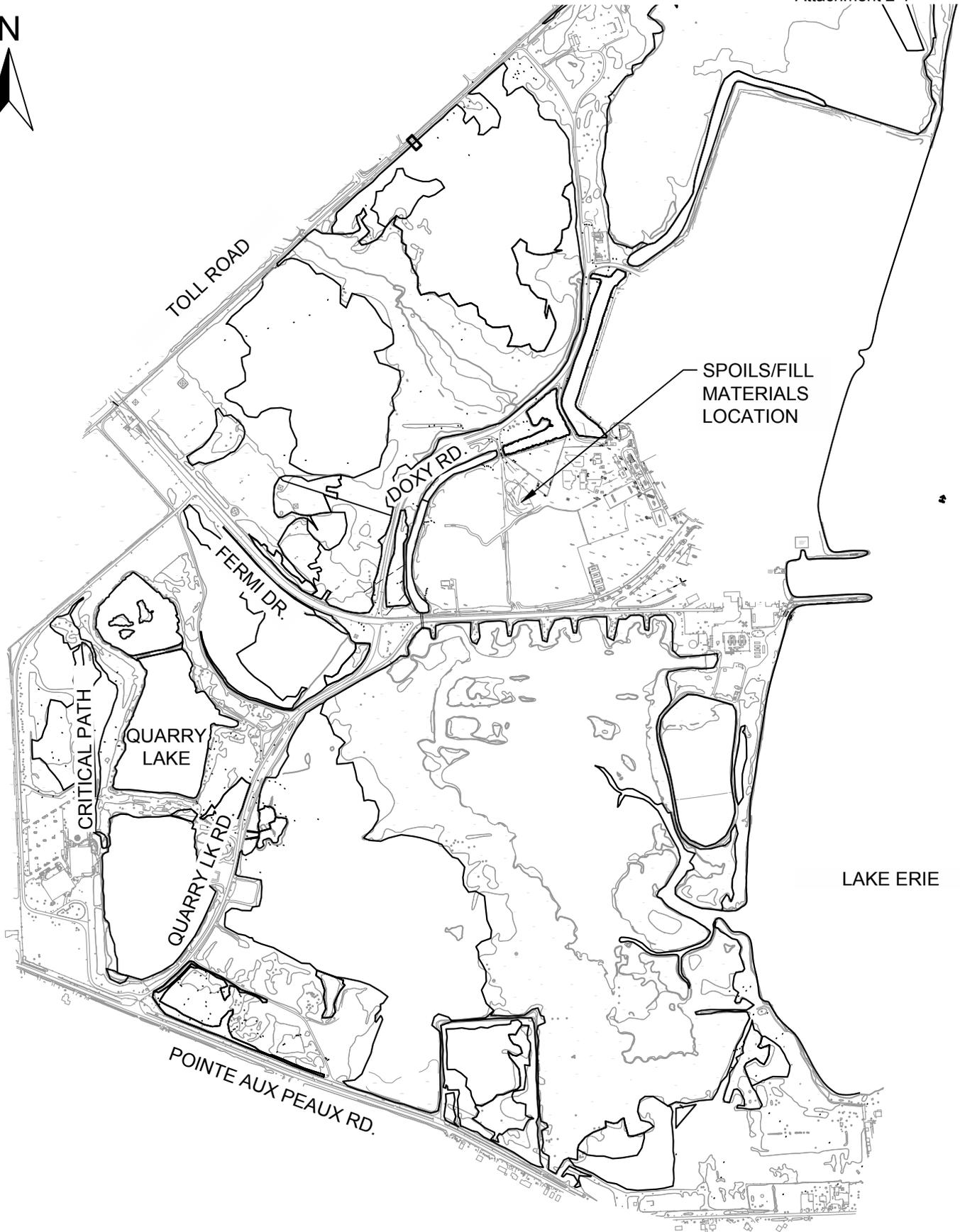
Impact Type	Wetland ID	Proposed Impacts (acres)	Permanent (P) or Temporary (T)
<b>Emergent marsh wetland</b>			
Great Lakes marsh (rare and imperiled)	C	2.80	P
	C	6.93	T
	C <sup>a</sup>	2.29	T
	South Canal	1.17	P
	Total	13.19	
Palustrine emergent (coastal)	AA	0.80	T
Palustrine emergent (other)	W	4.59	T
	II	0.52	T
	H	0.10	P
	U	0.15	P
	Total	5.36	
Total emergent marsh		19.35	
<b>Forested wetland</b>			
Southern hardwood swamp (rare/imperiled)	I	0.44	P
	F	2.71	P
	Total	3.15	
Palustrine forested (coastal and other)	B	0.76	T
	D	1.37	T
	Y	1.14	T
	KK	1.62	P
	Total	4.89	
Total forested wetland		8.04	
<b>Scrub-shrub wetland</b>			
Southern shrub carr (coastal)	E-North	1.87	T
	E-South	2.04	T
	Total	3.91	
Palustrine scrub shrub (other)	JJ	1.37	T
Total scrub shrub wetland		5.28	
<b>Total Wetland Impacts</b>		<b>30.37</b>	

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

Impact Type	Wetland ID	Proposed Impacts (acres)	Permanent (P) or Temporary (T)
Open water	H	1.86	P
	U	3.32	P
	Lake Erie	0.08	T
	Total <sup>b</sup>	5.26	

<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.



**FIGURE 2-1 EXISTING SITE CONDITIONS**

SCALE: 1"=1000'

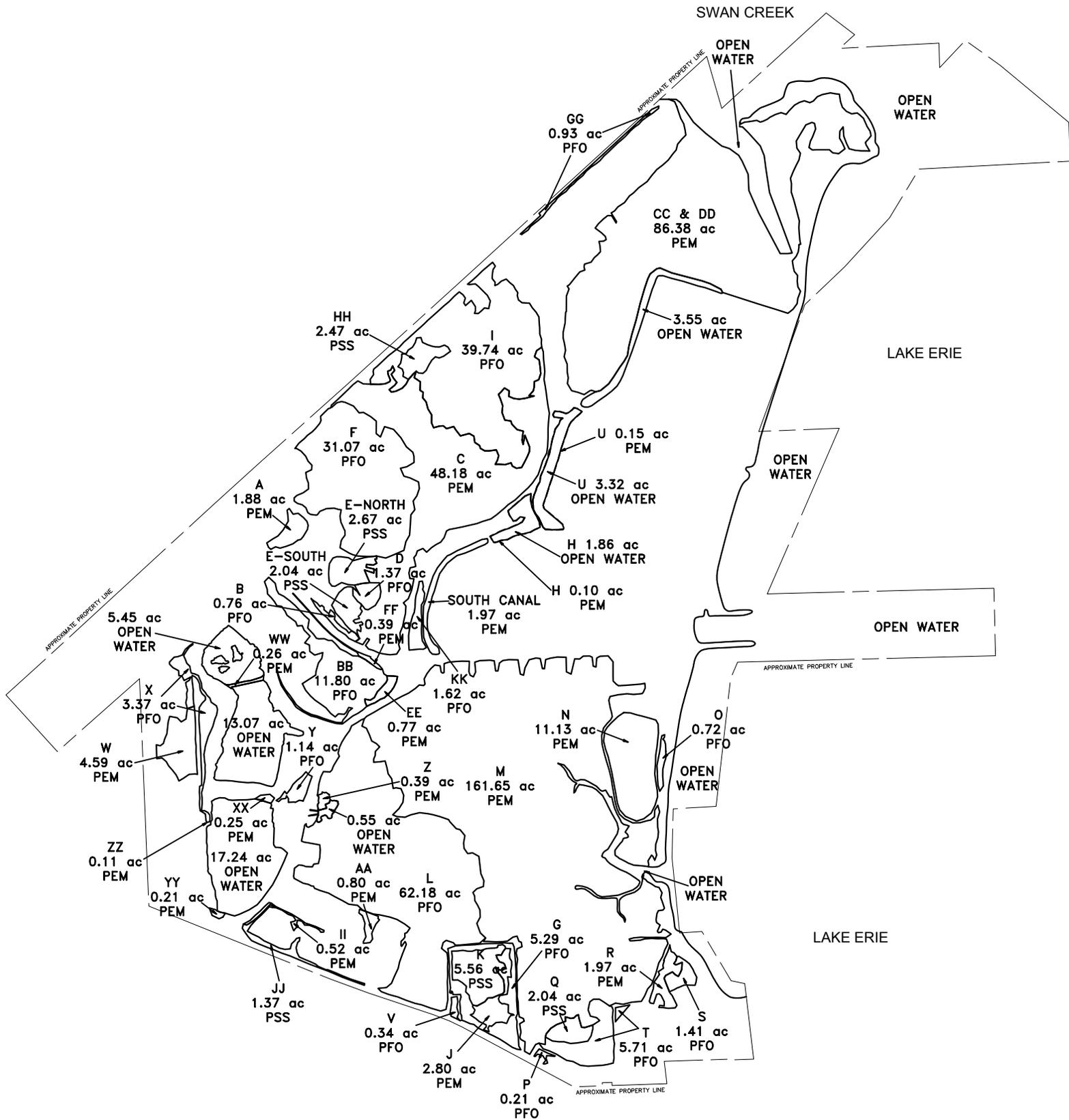
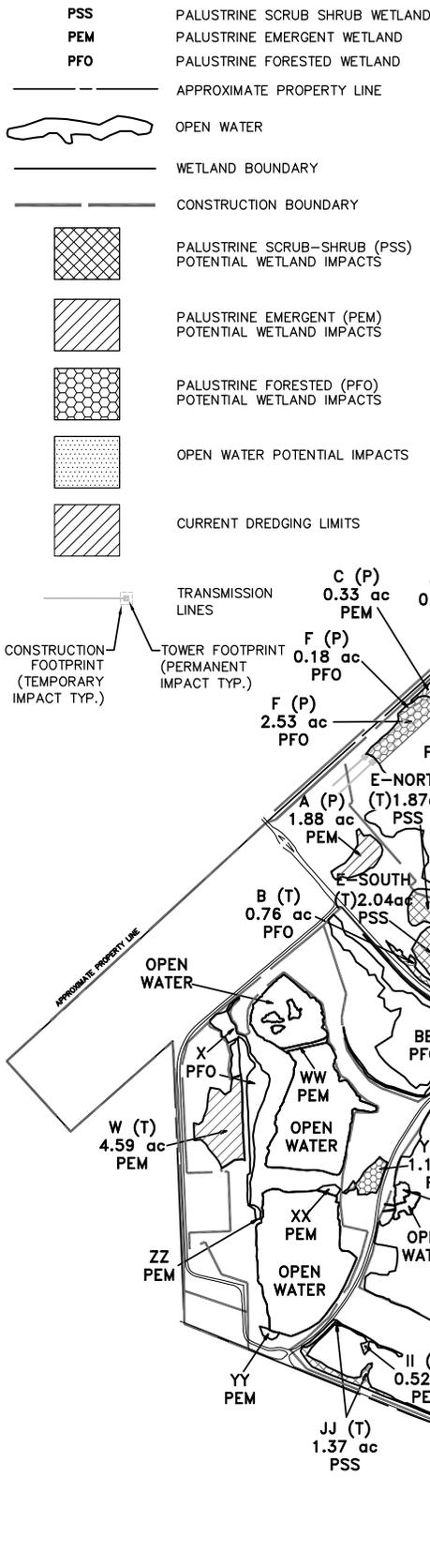


FIGURE 2-2 WETLAND DELINEATION MAP

**LEGEND**



**FIGURE 2-3 WETLAND IMPACT MAP**



**NEW OPERATIONS ACCESS ROAD**

FIGURE 10-4A, FIGURE 12-8A  
FIGURE 10-4B, FIGURE 12-8B  
FIGURE 14-2A, FIGURE 14-2E  
FIGURE 14-2B, FIGURE 14-2F  
FIGURE 14-2C, FIGURE 14-2G  
FIGURE 14-2D

**ONSITE TRANSMISSION**

FIGURE 12-9A  
FIGURE 12-9B

TOLL ROAD

**WAREHOUSE, PAP/VIB AND PARKING GARAGE**

FIGURE 10-1A  
FIGURE 10-1B  
FIGURE 10-1C  
FIGURE 10-1D  
FIGURE 12-7A

**CONSTRUCTION AREA 3**

FIGURE 12-4A  
FIGURE 12-4B  
FIGURE 12-4C

DOXY RD.

**CONSTRUCTION AREA 5**

FIGURE 10-3A, FIGURE 12-6A  
FIGURE 10-3B, FIGURE 12-6B  
FIGURE 14-1A  
FIGURE 14-1B

**CONSTRUCTION AREA 4**

FIGURE 12-5A  
FIGURE 12-5B

FERMI DR.

**LAKE ERIE CONSTRUCTION AREA**

FIGURE 10-2A, FIGURE 10-2E  
FIGURE 10-2B, FIGURE 10-2F  
FIGURE 10-2C  
FIGURE 10-2D

CRITICAL PATH

QUARRY LAKE

**CONSTRUCTION AREA 2**

FIGURE 12-3A  
FIGURE 12-3B

QUARRY LK RD.

LAKE ERIE

**CONSTRUCTION AREA 1**

FIGURE 12-2A  
FIGURE 12-2B  
FIGURE 12-2C

POINTE AUX PEaux RD.

# FIGURE 2-4 LEGEND OF CONSTRUCTION AREA LOCATIONS

## **Attachment 2-2**

### Section 2: Proposed Project and Associated Activities, and the Construction Sequence and Methods

#### USACE RAI Response – Section 3 Project Description (following 39 pages)

**Note:**

This attachment provides supplemental information regarding Detroit Edison's alternatives analysis. This document was prepared as part of the USACE Supplemental RAI Response. Figures presented in the Supplemental RAI Response have been superseded by the figures included in the Joint Permit Application. There may be differences in the dimensions and acreages between the Supplemental RAI Response and the information presented in the Joint Permit Application. The headers, footers and page numbers apply to the original document.

### **3.0 PROJECT DESCRIPTION**

The following sections provide a description of the overall construction approach and sequence proposed at the Fermi site and mitigation techniques that will be implemented to minimize the effect on waters and wetlands of the United States. Specific project descriptions for regulated activity areas are included that define the limits of the work area. If applicable, area-specific construction approaches, sequencing and mitigation techniques and the restoration of temporary impacts are also described.

#### **3.1 Overall Construction Approach/Sequence**

The overall construction approach and sequencing will be used for the preparation of temporary construction laydown, 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. Vegetation and trees will be disposed of onsite in a designated area. Materials suitable for backfill and compaction may be obtained from an offsite source until onsite excavation is underway.

#### **3.2 Overall Mitigation Techniques (Best Management Practices, Erosion and Sediment Control Measures, Restoration of Temporary Impacts)**

Detroit Edison successfully implemented a planning process that will avoid, minimize and then compensate for unavoidable, permanent impacts on waters of the U.S., including wetlands, from the construction and operation of Fermi 3. These include using developed and previously disturbed lands where practicable and limiting clearing to the smallest construction footprint possible. Detroit Edison will obtain the necessary authorizations prior to initiating the regulated activities associated with the construction and operation of Fermi 3. Detroit Edison's compliance with permit conditions and implementation of associated plans (e.g., Soil Erosion and Sedimentation Control [SESC] Plan, Storm Water Pollution Prevention Plan [SWPPP], and Compensatory Mitigation Plan) will afford further environmental protection. Figure 3.3-1 shows potential wetland construction impacts.

One purpose of mitigation is to avoid or minimize impacts to jurisdictional wetlands and waters. Mitigation includes:

- minimizing dredging and construction-related turbidity;
- minimizing erosion, chemical releases, and stormwater impacts to water quality and wetland habitat;
- minimizing potential impacts to aquatic species during dredging and construction activities in the water;
- minimizing impacts to the fishery by, for example, scheduling dredging and construction of the intake and discharge structures to avoid fish spawning;

- minimizing impacts to terrestrial habitats and wildlife by, for example, scheduling land clearing and construction to avoid nesting/breeding habitats where practicable;
  - scheduling construction activities in wetlands in the winter when possible to reduce compaction, runoff and vegetation destruction.

A summary of restoration methods for temporary impacts is provided below.

- Best management practices (BMPs) will be implemented during construction, as applicable:
  - Any ground-disturbing activities will be in accordance with permit requirements, including a construction stormwater discharge permit and SESC permit under National Pollutant Discharge Elimination System (NPDES) regulations. The SESC Plan to control erosion and run-off will include: silt fence or curtain installation as applicable, and the placement of straw bales, slope breakers, or other erosion prevention measures, as necessary.
  - Compliance with SWPPP.
  - Protecting existing runoff drains from excessive sedimentation.
  - Using standard stabilization and restoration methods such as re-contouring, mulching, seeding and replanting cleared land; encouraging natural re-vegetation; permanent stabilization using pavement, rock or gravel; and installing temporary or permanent stormwater management and erosion and SESC measures.
  - Site grading and drainage during construction will be designed to avoid erosion and in compliance with the SESC Plan.
  - Run-on flow diversion, stormwater collection ponds, seeding and re-vegetation plans will be used as appropriate.
  - Final stabilization will consist of restoration or re-vegetation at final grade conditions as practical.
- Regular visual inspections of erosion control measures will be conducted to monitor the effectiveness of the control measures and to aid in determining if other mitigation measures are necessary;
- Sediment build up around silt fencing will be removed to prevent fabric tears, undermining and fence failures.
  - Construction barriers will delineate construction zones, to minimize the destruction of vegetation and reduce the potential for erosion and compaction;
  - Vegetation removal will be limited to those areas designated for construction activities.
  - Temporarily disturbed areas will be restored;
  - Exposed spoils piles will be stabilized with cover to minimize run-off;

- Spill prevention, control, and response measures will be implemented as part of the Pollution Incident Prevention Plan (PIPP) to minimize/eliminate possible spills from construction and/or construction equipment;
- Inspections of the storage areas will be completed periodically to ensure equipment is not leaking;
- Fugitive dust will be controlled through watering of construction roads;
- Vehicle emissions will be controlled with regular maintenance;
- The following BMPs will be implemented to minimize the impacts of dewatering, dredging, and backfilling, as applicable:
  - Backfilling Open Waters H and U and the South Canal east of current operations, may impact stormwater runoff flowing to the North and South Lagoons, potentially causing a small increase of sediment into Lake Erie. The NPDES Stormwater Construction Permit will be in effect during construction. As part of the NPDES Stormwater Construction Permit, an SESC Plan will be required to be in place. As part of the SESC Plan, actions will be taken to minimize the potential increased sediment. Backfilling Open Waters H and U and the South Canal will have a small impact on Lake Erie sediment loading, and no mitigative measures beyond those described here will be necessary. Backfilling Open Waters H and U and the South Canal are the most significant hydrological alteration of construction of Fermi 3.

Fermi 2 currently releases stormwater via the North Lagoon to the mouth of Swan Creek. Due to its proximity to the construction site, Swan Creek may experience elevated sedimentation from increased runoff from the backfilled onsite water bodies. Although a small increase in sediment loading into Lake Erie through Swan Creek's discharge is expected as a result of filling in the onsite water bodies, the implementation of the SESC Plan and BMPs will reduce the potential for sediment loading during construction. SESC Plan mitigation measures will be implemented to alleviate the potential for increased sedimentation in Swan Creek and other onsite water bodies.

Slight increases in stormwater runoff are expected from new impervious areas at Fermi 3. This impact would be minimal due to the relatively small Fermi 3 developed area in the Swan Creek Watershed.

- Implementing the SESC Plan will limit sedimentation of drainage to Lake Erie;
- Dewatering will include barriers to minimize the groundwater flow entering the excavation, reducing the amount of water discharged;

- Dewatering will occur at a rate such that that the velocity of the discharged water does not cause scouring of the receiving area;
- Sediment-laden water from cofferdams, trenches and other areas will be pumped through a geotextile material before the water is discharged to a watercourse;
- Rock groins will limit the turbidity to the intake bay during dredging and limit scouring at the intake structure during construction of the intake;
- Spoil collected during dredging will be placed in the existing onsite dredged spoils disposal basin;

### ***Restoration of Temporary Construction Impacts***

Most of the regulated activities affecting waters of the U.S. are temporary impacts resulting from Fermi 3 construction. 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, 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 will be replaced to their preconstruction contours and elevations and aerated 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. The restored wetlands are expected to have an improved plant species composition that should, in turn, provide enhanced wildlife habitat by supplying an improved forage and shelter. Through restoration, preexisting or enhanced functions and values will be restored as much as practical. A final design and mitigation plan will be developed and implemented in conjunction with the wetland permit for the Fermi 3 construction.

### ***Mitigation of Operational Impacts***

The Fermi 3 facilities will be designed to minimize operational impacts to waters of the U.S.

- The diffuser design will minimize the size of the thermal mixing zone, both lateral and vertical in extent. The diffuser, as well as localized armoring, will minimize bottom scour and associated turbidity;
- Location and orientation of discharge ports and diffuser design will minimize siltation resulting from turbidity at the diffuser ports;
- Compliance with NPDES permit effluent limits and use of one Lake Erie outfall for Fermi 3 will minimize chemical impacts;

- Impingement, entrapment, or entrainment of aquatic species by the intake system will be minimized by maintaining a low intake velocity; intake screens will be designed with appropriate size mesh and include a trash rack; regular washing of the intake screens will minimize impingement; and locating the Fermi 3 intake near the Fermi 2 intake will reduce the cumulative entrapment.

### **3.3 Proposed Regulated Activity and Aquatic Resource Impacts**

A description of the regulated construction activity that would affect water and wetlands of the U.S. is provided below. The limits of the work area are defined and area-specific construction approaches, sequencing, and mitigation techniques and/or restoration activities not described in Section 3.2 are provided. An overall site layout with proposed impacts is included as Figure 3.3-1. A summary of the proposed impacts is included as Table 3.3-1.

#### **3.3.1 Barge Slip/Water Intake/Discharge Pipe/Fish Return (Figure 3.3-2)**

##### ***Description/Limits of Work Area***

The Fermi plant was issued USACE Permit Number 88-001-040-8 on May 26, 2004. The permit authorizes hydraulic dredging of up to 25,000 cu. yards annually from the Fermi 2 intake area and disposal of dredged material into the onsite Dredged Material Disposal Basin (Reference 1). The MDEQ issued Permit Number 04-58-0009-P to the Fermi site that authorizes hydraulic dredging of the Fermi 2 intake area (Reference 2).

Dredging of a barge slip within the existing Lake Erie intake embayment will be conducted to allow delivery of heavy construction equipment and building materials during Fermi 3 construction and for removal of construction debris. Dredging also will take place at the intake embayment to allow for the addition of a new water intake for Fermi 3, installation of the discharge pipe and diffuser, and access for barge unloading. The location of these structures is shown on Figure 3.3-2.

##### ***Barge Docking Facility***

Barges will be used to deliver equipment and construction materials for Fermi 3. Barges may be used for the removal of construction debris. Near the northeast corner of the Fermi site in the area of the Fermi 2 cooling towers, there is a former barge slip that was used to offload equipment during Fermi 2 construction. The environment of the former Fermi 2 barge slip and offloading area is cleared gravel with some trees and weedy vegetation along a sandy inlet area with no permanent structures. The Fermi 2 barge slip would require substantial dredging and other preparation work before it could be used as the Fermi 3 barge slip. Also, the Fermi 2 barge slip is located on the opposite side of the Fermi 2 protected area from the Fermi 3 construction site. A key consideration in the construction of Fermi 3 is the requirement to minimize construction impacts to Fermi 2 operations. Therefore, use of the existing barge slip is not practicable and Detroit Edison proposes to construct a barge slip within the existing embayment

where the Fermi 2 water intake structure is located. Construction of the Fermi 3 intake structure, discharge pipe, and barge slip within the existing intake embayment reduces the cumulative area of lake bottom that will be disturbed. Construction would occur at different times, starting with construction and operation of the barge slip.

The reactor vessel is the largest single component that could be delivered via barge. It is anticipated that a barge size of 260 feet by 72 feet with a maximum load of 1500 tons would be utilized for delivery of the reactor vessel. A barge of this size would require a draft of no more than 5.5 feet. The existing USACE Permit 88-001-040-8 allows dredging of the intake channel to create a lake bottom elevation of 560.0 feet (1985 International Great Lakes Datum [IGLD] low water datum of 569.2 feet). An elevation of 560.0 feet 1985 IGLD results in a channel that is 9.2 feet deep. Therefore, it is anticipated that dredging (beyond that already performed) would not be required for delivery of the reactor vessel, because the channel depth is 9.2 feet and the required barge draft is 5.5 feet.

The aggregate materials necessary for Fermi 3 construction could also be delivered to the site via barge. The delivery of bulk materials is anticipated to be restricted to a maximum load of 1000 tons, or similar load to limit the maximum draft of the barge to approximately 7 feet. Thus Detroit Edison anticipates that dredging to deepen the channel would not be required because no barge deliveries would require a draft of greater than 7 feet and the current channel depth is 9.2 feet.

Barges will be offloaded using a ramp to the shoreline. Construction below the ordinary high water mark of Lake Erie would include placement of sheet piling (see Figure 3.3-2) necessary to create the vertical face needed to dock and unload the barge. The pilings will be perpendicular to the southern groin to facilitate ingress and egress of the barge. The piling will also be used to transition into the intake structure. Piling will be installed at or landward of the existing shoreline (the need to be perpendicular to the groin necessitates it be installed somewhat to the upland side of the shoreline).

### ***Discharge Pipe***

The 48-inch diameter discharge pipe will extend approximately 1340 feet into Lake Erie to avoid recirculation of discharged water through the cooling system. Another consideration in the length of the discharge pipe was to preclude the discharge plume from intruding on environmentally sensitive onsite areas (such as wetlands) during wind-driven rises in Lake Erie water level (seiche events). 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 (see Figure 3.3-3) 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 ports are assumed to discharge into water approximately 8 feet deep, depending on the time of year and are designed to achieve a desired exit velocity and direction.

The exact method and means of dredging the barge slip and installing the discharge pipe will be determined once a construction contractor is retained. The installation of the discharge pipe is anticipated to require dredging to remove approximately 3300 cu. yards of overburden to create a trench approximately 1340 feet long, 17 feet wide at the top (11 feet average width), and 6 feet deep (see Figure 3.3-4). The discharge pipe is planned to be installed after barge operations supporting construction of Fermi 3 are completed. The route of the pipe will cross some of the area used for the barge slip (Figure 3.3-2). The material removed through mechanical dredging is expected to be used onsite as fill. Turbidity curtains are anticipated during the work to contain suspended sediments. After installation the pipeline trench will be fortified with riprap to prevent scouring. Approximately 1690 cu. yards of heavy riprap and 970 cu. yards of stone would be necessary for the full installation of the discharge pipe.

The current USACE permit allows for dredging from an area 200 feet wide and extending 1100 feet into Lake Erie, to a depth of 9.2 feet below the low water datum elevation of 569.2 feet IGLD 1985 (Reference 1). The existing area of dredging operations is shown on Figures 3.3-5 and 3.3-6. Installation of the Fermi 3 discharge pipe will require dredging a distance of approximately 240 feet beyond the area authorized for maintenance dredging under the existing USACE permit. The additional dredging would result in approximately 0.08 acre of open water impacts.

Maintenance dredging is conducted using a hydraulic dredge with an 8-inch slurry discharge line to the existing 11-acre dredge spoils disposal basin where the spoils settle. Chemical additives (Polyfloc AP1120 and Klaraid PC2700) may be used to assist in the settling of suspended solids from the water column. The clarified water returns to Lake Erie through outfall 013, as authorized under the Fermi 2 NPDES permit (Reference 3), via a weir and valve system at the south end of the basin. Per the existing NPDES permit requirements, prior to returning the clarified water to Lake Erie, the water is tested and must meet permit limits for total suspended solids and pH. In addition, while discharging to Lake Erie, a daily visual observation is performed to ensure the discharge does not contain unnatural turbidity, color, oil films, floating solids, foams, settleable solids, or deposits that are or may become injurious to any designated use. Future treatment of dredge slurry entering the basin is expected to be consistent with the permit conditions, and water effluents from the basin will meet or exceed permit conditions. Maintenance dredging is prohibited between March 31 and June 30.

### ***Intake Structure***

The Fermi 3 water intake structure will be built at the location indicated in Figure 3.3-2. The general dimensions and layout of the structure are shown in Figures 3.3-7 and 3.3-8. In order to build this structure a cofferdam will be installed to isolate the construction zone. The cofferdam will span the width separating the groins. The water behind the dam will be pumped back into Lake Erie. Any ingress or rain water which accumulates behind the cofferdam will be pumped to the lake. Heavy excavation equipment will be used to remove materials from the shoreline for the intake structure's foundation.

The top of the cofferdam is estimated to be at elevation 576.0 feet plant datum (574.78 feet NAVD 88). In addition to the cofferdam, sheet piling will be erected and extend an additional 3 feet above the top elevation of the cofferdam. The sheet piling will protect the work area against the wave action of Lake Erie. Removing the cofferdam will require dredging approximately 1100 cu. yards of fill material.

### ***Fish Return***

Detroit Edison will design a fish return system that takes into consideration research findings to ensure the highest possible fish survival, but it is premature to design such a system until more of the plant requirements/engineering parameters are established. Figure 3.3-2 depicts a conceptual layout based on a review of the CWA Section 316(b) literature and discussions with environmental staff at operating power plants with fish return systems.

Due to the topography at the Fermi site, gravity flow would not be sufficient to carry the screenwash and fish from the intake pump house to the lake. Water would be pumped through the system. A 24-inch diameter pipe is estimated to be used. The route of the pipe extends south from the intake pumphouse and bends gradually to the east, ultimately emptying into the lake south of the southernmost rock groin.

Detroit Edison would engage the natural resource and regulatory agencies during the design for the fish return system. The fish return system could terminate at the lake's edge. However, it may be preferable for the system to convey fish to a deeper portion of the lake that has better circulation and does not warm up as much in summer. In that case, water and fish would be pumped from the pumphouse to the lake via a pipe that terminates on the lake bottom. That is the scenario depicted in Figure 3.3-2. In either case, the fish return system would terminate in the arm of the lake adjacent to the southernmost rock groin. This would physically separate impinged/returned fish from the intake area, preventing re-impingement, and from the discharge pipe and diffuser, preventing thermal shock. (The potential for thermal shock is low in any case, as the mixing zone/thermal plume is small.) The impacts associated with construction within the lake are anticipated to be similar in both cases.

### ***Construction Approach/Sequence***

The proposed dredging would be similar to ongoing operations and maintenance dredging used to maintain the barge slip and the intake embayment in operable condition under the existing USACE permit. Maintenance dredging for the Fermi 2 intake embayment has been performed every 4 years. Approximately 22,000 cu. yards of material are removed from the intake embayment during these activities. The permit allows for removal of up to 25,000 cu. yards of material each year for 5 years. Approximately 200 gallons (roughly 1 cu. yard) per minute of flow from dredge material is anticipated from construction efforts at the location of intake structure. Effects of the dredging activities include increased turbidity, siltation, and temporary loss of benthic habitat and associated biota. Impacts to the biota are expected to be temporary. Adverse effects would cease on completion of dredging. Affected aquatic

systems are expected to revert to pre-construction conditions following construction. The open water impacts are considered temporary.

As described earlier, the dredged materials will be deposited in the permitted dredged spoils disposal basin encircled by Boomerang Road (Wetland N on Figure 2.7-3). The basin has an area of approximately 11 acres and is supported by embankments that are used to retain the dredged spoils. The basin has a weir that allows water to return to Lake Erie while retaining the sediment (Reference 1). The dredged spoils disposal basin discharges through Outfall 013, as authorized under the Fermi 2 NPDES permit (Reference 3). Wetland O is a linear PFO wetland covering 0.72 acre along the east side of the basin. No impacts to this wetland are expected due to construction activities or operation of the dredged spoils disposal basin.

The Fermi site accumulates spoils from periodic dredging activities. Detroit Edison contracts the dredging of the water intake canal on approximately a 4-year cycle. Spoils accumulate in the onsite dredged spoils disposal basin. Additional spoils are generated by yearly cleaning of pump house intakes with approximately 1000 cu. yards of spoils generated every year. Dredged material may either be used onsite as fill or sold for use as topsoil. In the past, dredge material had been removed from the basin periodically and used onsite as fill material under case-by-case approval of the Office of Monroe County Drain Commissioner. Because other dredging projects in the area have been able to sell the dredge material as prime topsoil, Detroit Edison is considering options to sell spoils in the future if they are not needed for onsite fill purposes.

### **3.3.2 Construction Area 1 (Figure 3.3-9)**

The proposed area for disposal of spoils generated during the construction of Fermi 3 is in a 27-acre area (Figure 3.3-9). The excavated material from the power block and circulating water pipe runs will be processed and used as backfill and structural fill for the cooling tower and circulating water pipe run area. An estimated 265,000 cu. yards of excavated material is expected to be excess, and will be used in onsite construction laydown, parking areas and for filling in canals.

The proposed area has historically been used for spoils disposal and is a likely candidate for further disposal activities. Another potential location that has been used in the past for spoils disposal is adjacent to the access road in the northwestern portion of the site (Figure 5.2-2). Transfer of spoils to that area would require use of the access road supporting Fermi 2 operations, which is inconsistent with Detroit Edison's objective to separate the Fermi 3 construction activities from Fermi 2.

The proposed regulated activity is to entirely but temporarily fill three wetlands in the construction spoils disposal area. The following table summarizes the total acreage of each wetland and the proposed impact acreage and square footage for each wetland in Construction Area 1.

<b>Wetland</b>	<b>Type</b>	<b>Total Acreage</b>	<b>Impact Acreage</b>	<b>Impact Square Footage</b>
AA	PEM	0.80	0.80	3.469E04
II	PEM	0.52	0.52	2.261E04
JJ	PSS	1.37	1.37	5.956E04

The temporary loss of these wetlands will result in minimal impact to the overall functions and values of the wetland system at Fermi and in the watershed as a whole because they provide minimal floodflow alteration, sediment/toxicant retention and nutrient removal. Wetlands II and JJ are ditches surrounding the roadside that contain sparse wetland vegetation. The poor quality, limited size and connectivity of these three wetlands to other wetlands, combined with the previous disposal practices support the designation of this area for spoils disposal. All three of these wetlands are located in an established spoil area and share the following properties:

- Highly disturbed by fill (spoil piles, concrete, gravel), ditching and multiple access roads
- Vegetation communities with high structural diversity and low species diversity with well-established invasive species populations
- Seasonal water

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.

**3.3.3 Construction Area 2 (Figure 3.3-10)**

An 18-acre temporary construction laydown area is proposed in the southwest corner of the property and includes both wetland and upland communities. The proposed regulated activity is temporarily filling Wetland Y entirely. Wetland Y is 1.14 acres (4.967E04 sq. feet) of the proposed 18 acres of laydown area (Figure 3.3-10). The proposed temporary laydown area will be used for the placement of support structures and buildings that will be used during Fermi 3 construction activities.

Wetland Y is a fragmented early successional PFO wetland with mixed vegetation and a partially open canopy. It has a high level of disturbance with both pioneer and non-native species present. The temporary impact of Wetland Y is expected to result in minor impacts to the overall functions and values of the wetland system at Fermi and the watershed as a whole. Wetland Y provides marginal wildlife habitat for edge species and limited water storage. The proposed activity will restrict surface hydrology and route rainwater to the lower adjacent areas, including the Quarry Lakes to the west, and the PFO Wetland L on the eastern side of the road. Although a coastal wetland, Wetland Y does not represent a Michigan Natural Community.

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

**3.3.4 Construction Area 3 (Figure 3.3-11)**

The 20.5-acre construction area north of Fermi Drive will be the location of the Fermi 3 switchyard, and will be used temporarily for construction laydown and support structures and buildings. It will require rerouting the existing transmission lines. The Fermi 2 345-kV and 120-kV transmission lines traverse the site northwest to southeast, bisecting Wetland E into a north and south portion.

This area includes both wetland and upland communities. 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 the total 20.5 acres of laydown area (Figure 3.3-11). The following table summarizes the total acreage of each wetland and the proposed impact acreage and square footage for each wetland in Construction Area 3.

<b>Wetland</b>	<b>Type</b>	<b>Total Acreage</b>	<b>Impact Acreage</b>	<b>Impact Square Footage</b>
B	PFO	0.76	0.76	3.309E04
C	PEM – Great Lakes marsh	48.18	6.93	3.018E05
D	PFO	1.37	1.37	5.957E04
E-North	PSS	2.67	1.87	8.142E04
E-South	PSS southern shrub carr	2.04	2.04	8.890E04

This staging, modular fabrication, and assembly area will be subject to heavy machinery staging, equipment hauling, materials handling and delivery. The Fermi 3 switchyard will be located north of Fermi Drive and east of Toll Road, permanently impacting an upland prairie restoration area and nonjurisdictional Wetland A.

Wetlands B and D have a high level of disturbance with both pioneer and non-native species present. Both are coastal wetlands; however neither represents a Michigan Natural Community. Wetland C is a Great Lakes marsh fragmented from Lake Erie by access roads but connected hydrologically through culverts. As a result, the wetland has high ecological value. Wetland E-North is an emergent marsh/wet meadow and scrub shrub mix that does not represent a Michigan Natural Community. Wetland E-South is likely a southern shrub carr. Both portions of E have high species diversity due to transmission line ROW maintenance. These wetlands primarily provide floodflow alteration, sediment retention, toxicant retention, nutrient removal and wildlife habitat.

The short-term impact to wetlands B, D, E-South and portions of C and E-North is expected to result in minor impacts on the overall functions and values of the wetland system at Fermi and the watershed as a whole. 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.

### **3.3.5 Construction Area 4 (Figure 3.3-12)**

The 11.5-acre area east and south of Critical Path Road will be used temporarily for Fermi 3 construction laydown and includes both wetland and upland communities.

The proposed regulated activity is temporarily filling the entire 4.59 acres (2.001E05 sq. feet) of PEM Wetland W, in the primarily upland 11.5 acre temporary laydown area (Figure 3.3-12). Wetland W is a wet meadow dominated by invasive species. This activity will result in minimal and short-term impact to the overall functions and values of the wetland system at Fermi and the watershed as a whole. Wetland W is isolated from other wetlands and provides minimal floodflow alteration, sediment/toxicant retention, nutrient removal and marginal wildlife habitat.

Construction will require up to 10 years to complete. Wetland W will be restored to a wet meadow with enhanced functions and values reestablished within 3 to 5 years after construction.

### **3.3.6 Warehouse, PAP/VIB and Parking Garage (Figure 3.3-13)**

Approximately 7 acres east of Wetland C, south of the northernmost canal and west of the Fermi 2 operating facility is proposed to support permanent structures including the Fermi 2/Fermi 3 Warehouse, PAP/VIB and parking garage.

Open Water H is an isolated pond. Based on aquatic surveys completed in 2008 (Section 2.5.2), this pond was characterized by relatively low numbers and diversity of fish. Collections in 2008 were dominated by common sunfish and gizzard shad. Dewatering/filling this waterbody will not impact any rare, unusual, or special-status fish species and, by virtue of its hydrological isolation, will have no impact on fish communities of nearby waterbodies or Lake Erie. Open Water U was not sampled but because of culverts to the north (Figure 2.6-1) it is assumed to contain an assemblage of fish that is a subset of those in the North Canal. The North Canal was characterized by high numbers and high measures of species richness in 2008 and 2009, due presumably to its connection with Swan Creek and Lake Erie. North Canal collections were dominated by common sunfish (e.g., bluegill and pumpkinseed), gizzard shad, and notropids (shiners/minnows). Almost all of the fish lost as a result of dewatering/filling Open Water U would be representatives of species that are common to ubiquitous in Swan Creek and Lake Erie and prolific, maturing early and producing large numbers of young. Some would leave the affected area via connections to the North Canal. Any impact to Swan Creek and Lake Erie would be very small.

Wetland C is a large Great Lakes marsh fragmented from Lake Erie by access roads but connected hydrologically to Lake Erie through culverts to Open Water U and the South Canal (Figure 2.6-1). The edge of Wetland C, 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 is permanently filling 2.24 acres (9.747E04 sq. feet) of PEM Wetland C. The wetland impact to H is 0.10 acres (4223 sq. feet) and to U is 0.15 acres (6477 sq. feet). The wetland impact represents a total of 2.49 acres of the total 7 acres of construction impacts (Figure 3.3-13).

Open Water H and U will be dewatered using standard dewatering practices. The isolated Open Water H will be dewatered to Open Water U. Once dewatered, H will serve as a dredge spoils basin. Sediments will be allowed to settle out in the basin. The water in the basin will be conveyed through an outfall structure to Wetland 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.

To accommodate the parking garage and PAP/VIB footprint, a portion of Wetland C will require excavating wetland soils, backfilling and compacting. Sheet piling will be installed on the west side of the construction footprint to minimize impacts to Wetland C and eliminate the need for additional excavation and fill material necessary for slope stabilization.

The Fermi 2 outfalls that currently discharge to Open Water U will be directed to culverts to the North Canal to Lake Erie. A concrete junction box at the north end of Open Water U will maintain the hydrologic connection between Wetland C and the North Canal to Lake Erie (Figure 3.3-13). New culverts through this connection will be installed with an earthen bottom to promote benthic habitat. After culvert installation, the remaining area will be backfilled and compacted. Final grade will be in accordance with the final construction grading plan for Fermi 3. Filling these areas will result in the loss of aquatic communities and aquatic organisms that currently reside in these areas. These include the loss of fringing wetland habitats, aquatic vegetation, fish and benthic species as well as reptile and amphibians. The long term impacts of Open Water areas H and U and the small roadside area of Wetland C will result in minimal disturbances to the functions and value of the wetland system at Fermi and the watershed as a whole. The edge of Wetland C along Doxy Road, and Open Waters H and U provide minimal floodflow alteration, sediment/toxicant retention, nutrient removal, and wildlife habitat.

### **3.3.7 Cooling Tower (Figure 3.3-14)**

The proposed location for the cooling tower is entirely within upland; however, the construction footprint is expected to impact the adjacent aquatic resources, South Canal and Wetland KK. The South Canal is a 1.97 acre PEM Great Lakes marsh with typical marsh zonation. South Canal is hydraulically connected to Lake Erie through a culvert under Fermi Drive to Wetland M and also to Wetland C through a culvert

under Doxy Road. Wetland KK is a 1.62 acre highly disturbed PFO wetland. It contains early successional species with an open canopy. A storm in June 2010 damaged or downed several trees in the wetland.

The proposed regulated activity includes permanently filling the entire 1.62 acres (7.062E04 sq. feet) of PFO Wetland KK and 1.17-acres (5.093E04 sq. feet) of PEM South Canal, totaling 2.79 acres of impact (Figure 3.3-14). The southern portion of the South Canal will be filled during construction of the new cooling tower. South Canal fish collections in 2008-2009 were dominated by goldfish and common carp, both invasives that are considered nuisance species or “rough fish” by many fisheries managers. Small numbers of common sunfish were also collected here. Given that no rare, unusual, or special-status species are found in the South Canal and the fish that are present are largely invasive species with no recreational or commercial value, impacts from cooling tower construction are considered negligible.

Site preparation activities include dismantling the current meteorological tower, transplantation of American lotus (*Nelumbo lutea*) from the South Canal and removal of vegetation in the impact areas. To maintain the hydraulic connection to Lake Erie and Wetland C, two arch shaped steel-reinforced concrete culverts will be installed in parallel. These will have an earthen bottom to promote habitat for benthic organisms and will be installed for a length of approximately 880 feet, maintaining connection to the northern portion of the South Canal (Figure 3.3-15). The culverts are sized to allow stormwater from upstream areas to be transported to Lake Erie. Likewise, the culverts will maintain the function of the existing canal to allow wind-driven Lake Erie water to be transported through the canals and into adjacent wetlands. Slight increases in stormwater runoff are expected from new impervious areas at Fermi 3. Implementation of the SESC Plan will prevent sediment loading during construction.

These long-term impacts will result in a decrease in functions provided primarily by the South Canal and, to a lesser extent, by Wetland KK. Currently, these wetlands provide floodflow alteration, sediment/toxicant retention, nutrient removal, biodiversity and wildlife habitat. These impacts will not have a significant effect on the functions and values provided by the larger, more intact wetland systems on the property; and the earthen culvert has been designed to maintain the biodiversity, fish and wildlife habitat function between the wetland onsite and Lake Erie.

### **3.3.8 New Operations Access Road (Figure 3.3-16)**

Toll Road at Fermi Drive to approximately 230 feet north of Langton Road is owned and maintained by the Monroe County Road Commission (MCRC). The remainder of Toll Road along the Fermi property boundary is privately owned. A new operations access road is proposed that will parallel the western property boundary. The access road will utilize the MCRC right-of-way, cross an intermittent stream and then transition along a slight angle to the east onto Fermi property. The transition will be at the location of the privately owned portion of Toll Road. The proposed road will turn east, onto existing Bullit Road and

continue through the site to the proposed parking garage and warehouse via the route shown on Figure 3.3-16.

The road has been designed to include two 12-foot lanes, 8 feet of shoulder, 17 feet of drainage to the west and 11 feet of drainage to the east and into the property. The road design includes sediment traps that will reduce erosion and stormwater runoff to the adjacent wetlands. The following SESC and BMPs will be implemented specifically for road construction:

- Concrete or hot mix asphalt paving
- Ditching
- Restoration
- Appropriate signage installations
- Culvert installation/construction
- Designation and implementation of material storage locations
- Designation and coordination of worker vehicles/parking

The proposed regulated activity includes long-term impacts to 0.42 acres (1.836E04 sq. feet) of PFO Wetland I, a rare and imperiled southern hardwood swamp (Figure 3.3-17). Wetland I is a 39.74 acre PFO wetland on the northwest perimeter of the Fermi property immediately east of Bullit Road. Wetland I grades into PEM Wetland C to the west and south. Vegetation is diverse, reflecting mixed upland and wetland conditions with hydrological fluctuations and evidence of past disturbance including ditching and soil piles.

Wetland I represents an intact PFO wetland habitat. The wetland is large, flat and has significant storage potential with dense vegetation and slow water flow. There is some diversity in structure and cover ranging from a disturbed, partially open canopy at the edges to a closed canopy interior with a predominance of native vegetation. This wetland is indirectly connected to Lake Erie and provides floodflow alteration, sediment/toxicant retention, nutrient removal and wildlife habitat. 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. This edge provides a buffer for the interior and less disturbed wetland conditions and edge impacts could result in minor impacts to overall wetland function to the wetland system on the Fermi site and the watershed as a whole.

### **3.3.9. Onsite Transmission (Figure 3.3-18)**

Transmission lines currently cross the site north of Fermi Drive. To accommodate the Fermi 2 and Fermi 3 transmission needs and avoid construction equipment clearance issues in the area north of Fermi Drive, the transmission lines have been proposed to be rerouted. The new onsite transmission lines will begin at the northeast corner of Fermi Drive and Toll Road, just east of the proposed Fermi 3 switchyard.

The line will continue north on the east side of Toll Road and turn northeast/east toward the power block via the route shown on Figure 3.3-18. The transmission lines will cross over Wetlands F and C and require the installation of towers in Wetland C. The proposed transmission plan includes placing the Fermi 3 and Fermi 2 lines on common towers to reduce the overall impacts of the transmission rerouting. The placement of the Fermi 3 switchyard location in Construction Area 3 is based on rerouting and alignment with the existing transmission corridor to the site.

The proposed regulated activity requires long-term impacts to 0.24 acres (1.037E04 sq. feet) of Wetland C, a rare and imperiled Great Lakes marsh, to accommodate the tower footprints for eight transmission towers. Because the onsite transmission of electricity would consist of elevated lines, permanent impacts would occur only within the footprint required for support structures. Excavation and pile driving / drilling would be required for transmission tower foundations

An additional 2.29 acres of temporary and short-term impacts are estimated in Wetland C for the installation of the support structure, and two access roads to install and maintain the towers. Construction work mats, or bog mats are expected to be used within a 20-foot wide easement. The following table summarizes the acreage and square footage for each of the temporary impacts in Wetland C.

<b>Temporary Impact Location</b>	<b>Impact Acreage</b>	<b>Impact Square Footage</b>
Doxy Road Access	0.35	1.512E04
Toll Road Access	0.34	1.493E04
Tower footprint	1.60	6.963E04

Vegetation clearance of 50 feet on either side of the transmission towers along a length of approximately 700 feet will be required for the transmission lines parallel and east of Toll Road over Wetland F. As a result of the vegetation clearance, PFO Wetland F will convert from a forested wetland to an emergent wetland. Wetland F is a rare and imperiled southern hardwood swamp. The long term impact to Wetland F is 1.53 acres (6.657E04 sq. feet).

The edge of Wetland C, on the west side of Doxy Road is tree-lined. Tree clearing is necessary where the elevated transmission line exits Wetland C at Doxy Road. Silt fencing will be installed in the area as depicted on Figure 3.3-18 to minimize impacts to the wetland. Because Wetland C is a PEM, there will not be a conversion of wetland types and therefore compensation is not required for this tree clearing activity.

The additional 1.60 acres of temporary impact to Wetland C and long term impacts to Wetland F are due to the following:

- Provisions for installation of the transmission line structures and stringing the lines. This includes providing area for drilling equipment work locations for trucks and cranes, laydown areas for equipment and supplies, etc.
- Provisions for access of equipment and personnel to the work locations.
- Provisions for trimming and clearing activities.

The construction period to install the towers and wires is expected to be up to 3 months. Impacts to wetland plant communities consist of plant damage, compaction of wetland soils and short-term reductions in productivity.

Structures and access ways would be sited, to the extent practical, to avoid and minimize impacts to wetlands and streams. Construction impacts associated with transmission line crossings are associated with clearing activities and potential runoff and sedimentation. Tree cutting will occur along the transmission line right of way east of Toll Road. Bog mats will be laid in the wetland to facilitate access by construction equipment. Bog mats will be removed upon completion of the tower construction and installation of the lines and are considered a temporary impact that will minimize soil compaction and vegetation damage. 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.

### **3.4 Proposed Wetland, Stream, and Water Impacts**

Potential wetland impacts include 12.86 acres of Great Lakes marsh, 1.95 acres of southern hardwood swamp, 3.91 acres of southern shrub carr, 0.80 acres of coastal emergent wetland, 7.24 acres of other emergent wetland, 4.89 acres of other forested wetland and 1.37 acres of other scrub shrub wetland. This total wetland acreage includes 1.88 acres of nonjurisdictional emergent wetland impacts (Wetland A) and activities associated with the rerouting of onsite transmission lines affecting 2.29 acres of Great Lakes marsh (Wetland C) for a brief period of time. A summary of the proposed Fermi site impacts is provided in Table 3.3-1.

### **3.5 Mitigation for Wetland and Stream Impacts**

Because of the Fermi site's location in the coastal zone of Lake Erie, any activity onsite will have the greatest local effects (either positive or negative) on coastal resources and Lake Erie itself. Detroit Edison recognizes the value of coastal wetland habitat along Lake Erie. Several investigations of wetlands were conducted at the site and landscape level assessments were performed within the watershed and coastal zone to determine the location, quantity and quality of existing wetlands onsite and their significance in the Monroe County coastal zone of Lake Erie. Information was then used in

conjunction with communication and feedback from regulatory agencies and conservation organizations to guide avoidance, minimization and mitigation strategies associated with design of Fermi 3. These strategies resulted in a significant reduction in proposed impacts to wetlands and their associated functions and values.

Since the first design iteration for Fermi 3, impacts to over a hundred acres of wetland considered rare and imperiled and of high ecological value have been avoided including Great Lakes marsh and southern hardwood swamp. The majority of remaining unavoidable wetland impacts have been restricted to areas that are highly disturbed, fragmented and are not considered natural communities. Mitigation actions proposed as compensation for these impacts have been designed to replace and exceed the quantity and quality of these wetland areas. In general, proposed compensation will exceed regulatory requirements for spatial mitigation and specifically address conservation priorities determined by a watershed assessment including protection, restoration and enhancement of rare and imperiled coastal wetlands, large blocks of natural area, and increased connectivity with ongoing conservation lands and initiatives. The conceptual mitigation strategy in Appendix C describes this information in greater detail.

In response to the rarity of forested wetlands and the length of time it takes to restore these systems, Detroit Edison's unavoidable impacts to southern hardwood swamps were reduced to 1.95 acres with a compensation strategy that will result in the restoration of approximately 54 acres of forested wetlands immediately adjacent to Lake Erie. As stated, unavoidable impacts were restricted to non-forested, low quality wetlands to the greatest extent possible. However, compensation is still proposed at an average ratio of 5:1; a ratio generally associated with impacts to high quality, intact wetland systems. Additional mitigation is proposed in the form of enhancement of Great Lakes marsh at a ratio 23:1. This strategy proposes compensation above and beyond guidance ratios to satisfy regulatory mitigation requirements and also in support of Detroit Edison's corporate environmental stewardship initiatives and ongoing partnership with USFWS and other conservation entities.

Once the proposed compensation actions have been implemented, an additional 390 acres of rare and imperiled wetland habitat will be restored, enhanced and permanently protected in the coastal zone of Lake Erie in Monroe County. This will result in a net positive benefit to the coastal zone in terms of quantity and quality of wetland, protected area and associated watershed functions including improved water quality outflow into Lake Erie, floodflow alteration and wildlife habitat. In addition to compensatory mitigation, any wetland areas with temporary impacts will be restored to wetland habitat that will exceed the original quality, functions and values that were temporarily lost during construction of Fermi 3. This includes an additional 21.39 acres of improved wetland habitat that will be restored after temporary impacts to Construction Area 1 through 4:

- 6.93 acres of Great Lakes marsh (Wetland C)
- 3.91 acres of southern shrub carr (Wetlands E-North and E-South)

- 3.27 of PFO wetland (Wetlands B, D and Y)
- 0.80 acres of coastal PEM (Wetland AA)
- 5.11 acres of PEM wetland (Wetlands W and II)
- 1.37 acres of PSS wetland (Wetland JJ)

**References**

1. Department of the Army, Detroit District Corps of Engineers, Engineering and Technical Services, Regulatory Office, Permit Number 88-001-040-8 issued to Detroit Edison, May 26, 2004.
2. Michigan Department of Environmental Quality, Permit Number 04-58-0009-P, Part 325, Great Lakes Submerged Lands, issued to Detroit Edison on July 21, 2004.
3. Michigan Department of Environmental Quality, "National Pollutant Discharge Elimination System (NPDES) Permit – Detroit Edison Company Fermi 2 Power Plant, Permit No. MI0037028," 2005, available online at <http://www.epa.gov/npdescan/MI0037028FS.pdf>.

**Table 3.3-1. Summary of Wetland Impacts (Sheet 1 of 2)**

Impact Type	Wetland ID	Proposed Impacts	
		Acres	Square Feet
<b>Emergent marsh wetland</b>			
Great Lakes marsh (rare and imperiled)	C	9.40	4.096E05
	C <sup>a</sup>	2.29	9.968E04
	South Canal	1.17	5.093E04
	Total	12.86	5.603E05
Palustrine emergent (coastal)	AA	0.80	3.469E04
Palustrine emergent (other)	A <sup>b</sup>	1.88	8.188E04
	W	4.59	2.001E05
	II	0.52	2.261E04
	H	0.10	4223
	U	0.15	6477
	Total	7.24	3.153E05
Total emergent marsh		20.90	9.102E05
<b>Forested wetland</b>			
Southern hardwood swamp (rare/imperiled)	I	0.42	1.836E04
	F	1.53	6.657E04
	Total	1.95	8.493E04
Palustrine forested (coastal and other)	B	0.76	3.309E04
	D	1.37	5.957E04
	Y	1.14	4.967E04
	KK	1.62	7.062E04
	Total	4.89	2.129E05
Total forested wetland		6.84	2.979E05
<b>Shrub scrub wetland</b>			
Southern shrub carr (coastal)	E-North	1.87	8.142E04
	E-South	2.04	8.890E04
	Total	3.91	1.703E05
Palustrine scrub shrub (other)	JJ	1.37	5.956E04
Total shrub scrub wetland		5.28	2.299E05
Total Wetland Impacts		33.01	1.438E06

**Table 3.3-1. Summary of Wetland Impacts (Sheet 2 of 2)**

Impact Type	Wetland ID	Proposed Impacts	
		Acres	Square Feet
Open water	H	1.86	8.120E04
	U	3.32	1.445E05
	Lake Erie	0.08	3600
	Total <sup>c</sup>	5.26	2.293E05

<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>Wetland A is included in the impacts to emergent wetland. Because Wetland A is unregulated, mitigation is not proposed for this acreage.

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

Figure 3.3-1. Potential Wetlands Construction Impacts

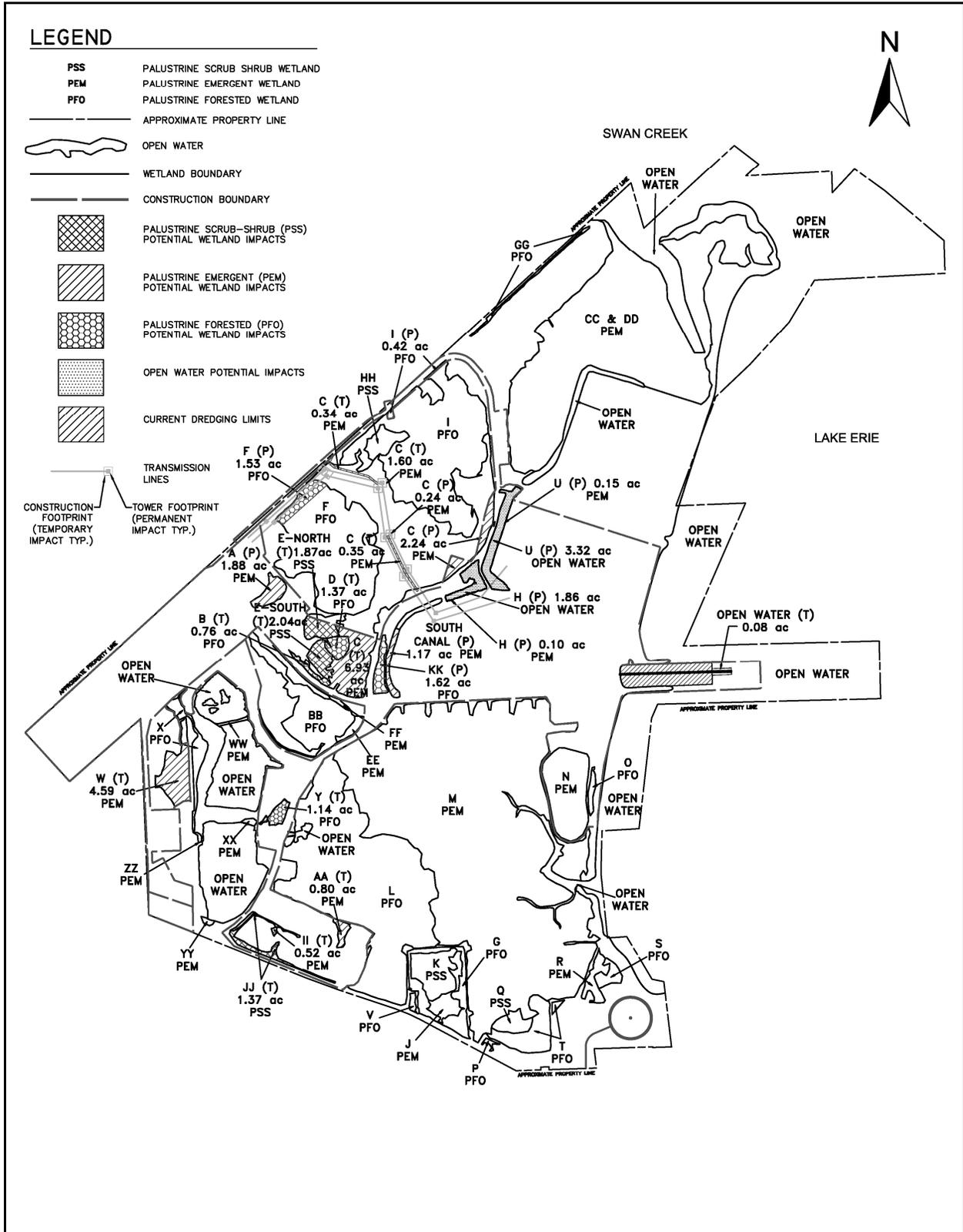


Figure 3.3-2. Location of Intake Structure/Discharge Pipe/Fish Return/Barge Slip

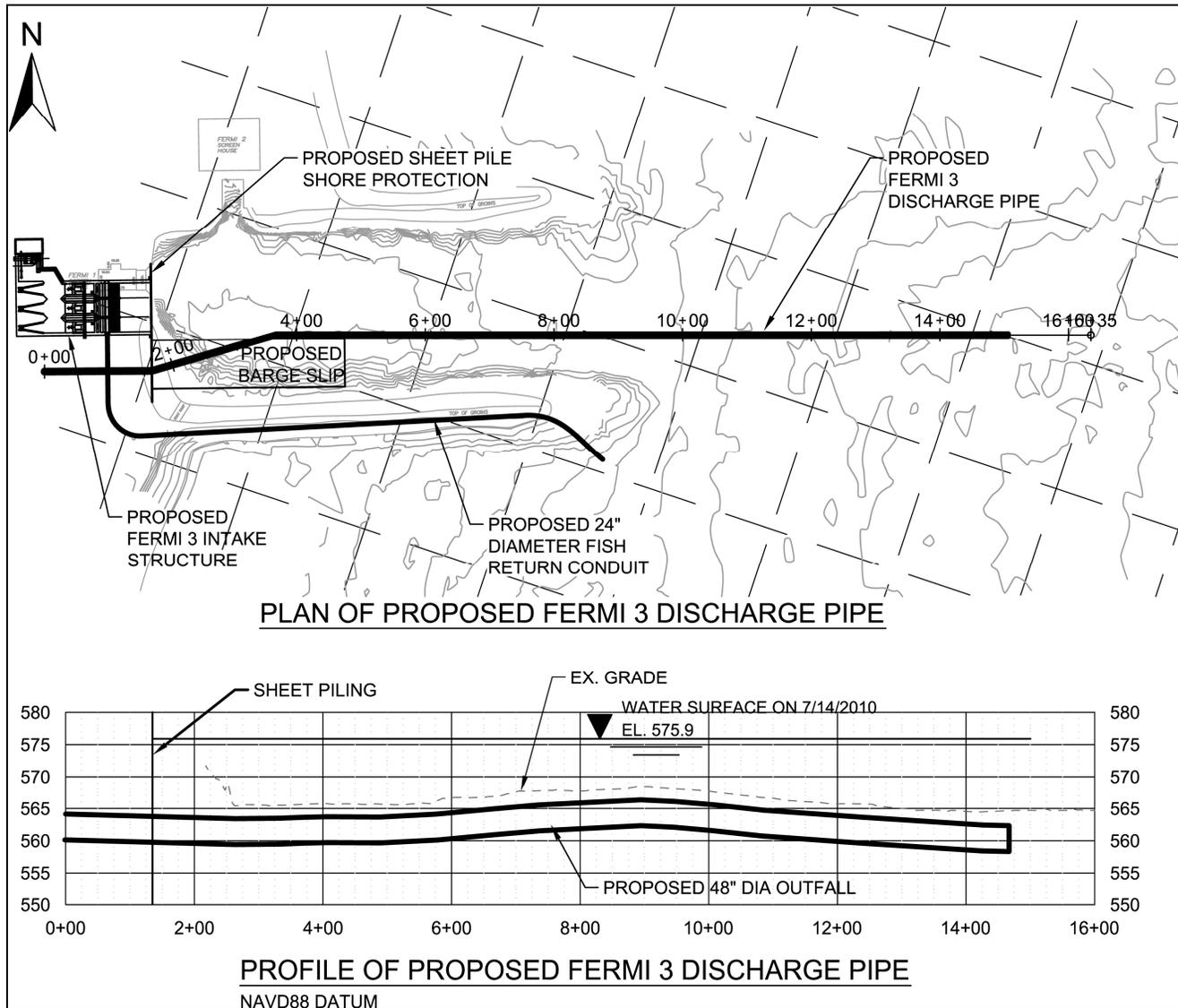


Figure 3.3-3. Outfall Diffuser Arrangement

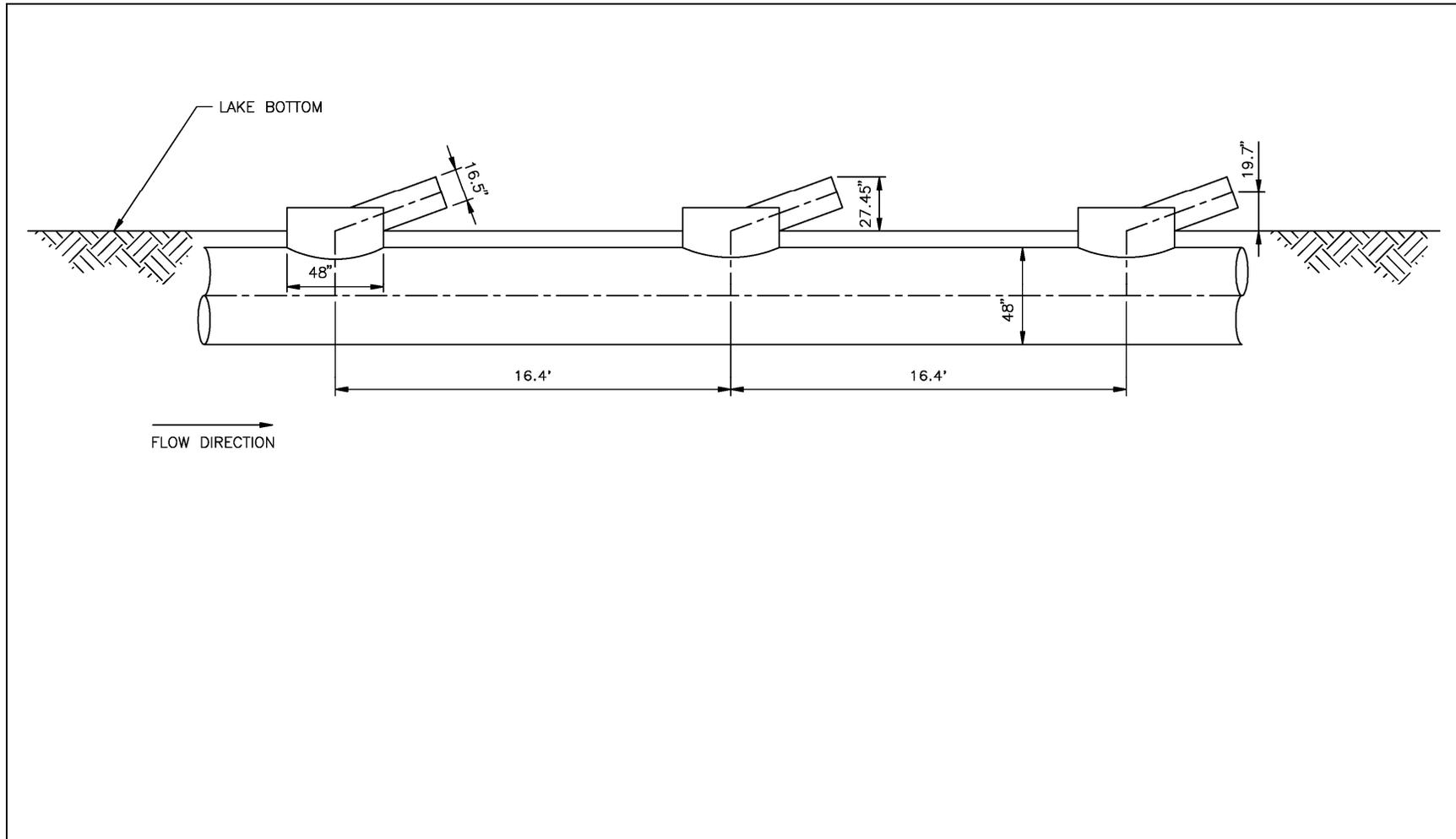


Figure 3.3-4. Discharge Pipe Dredging Cross Section

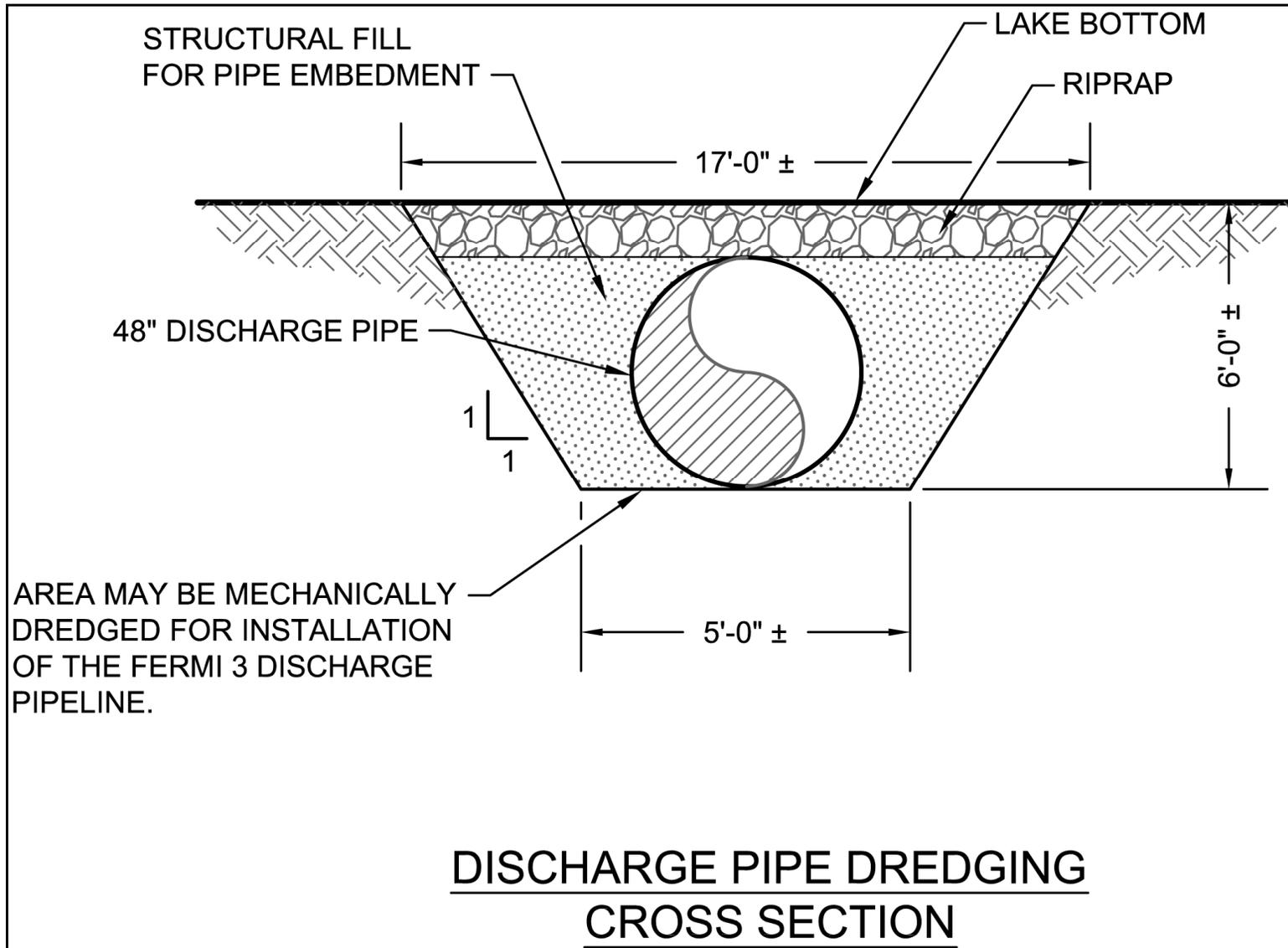


Figure 3.3-5. Existing Intake Canal Plan View

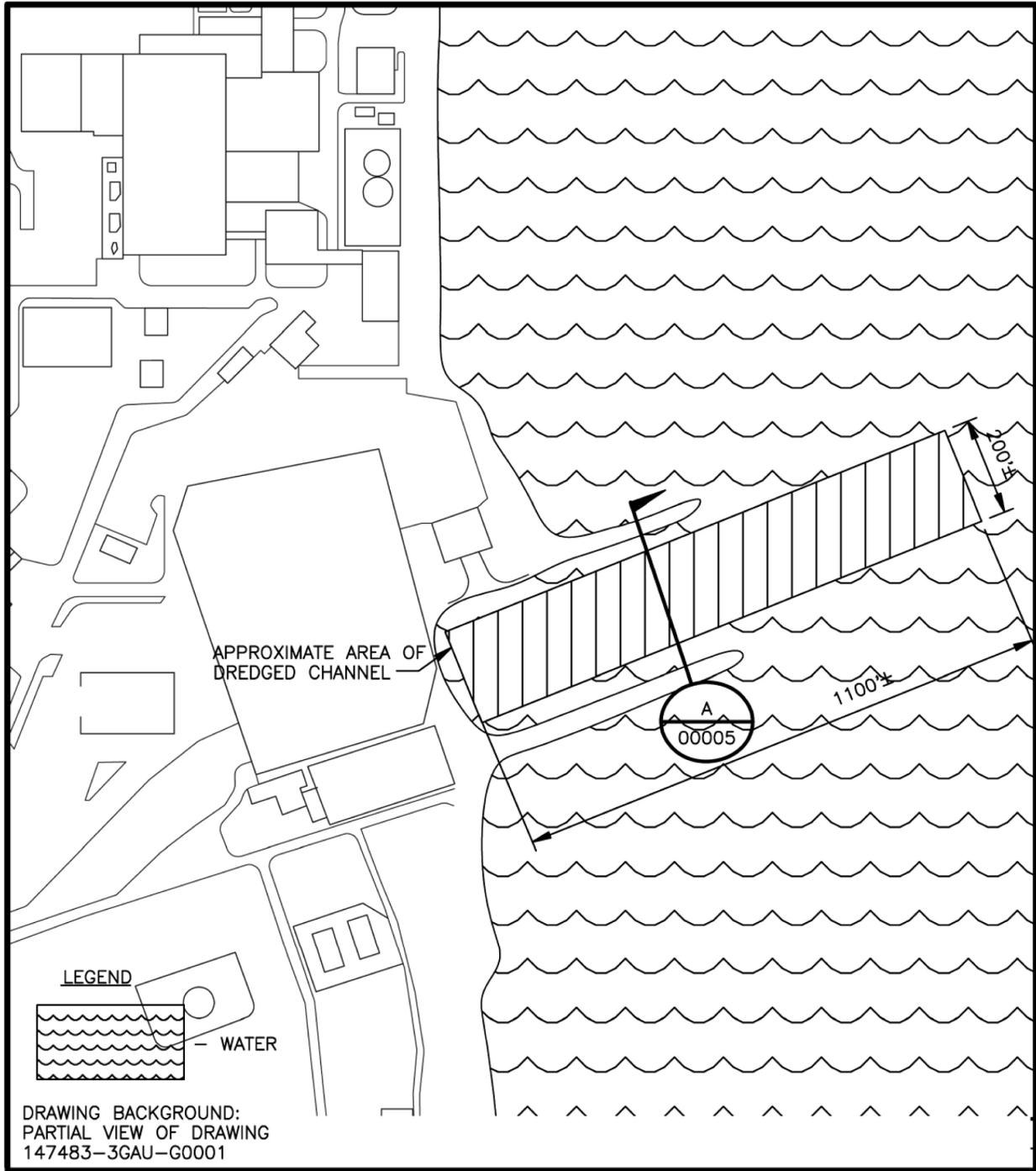


Figure 3.3-6. Existing Intake Canal Cross Section

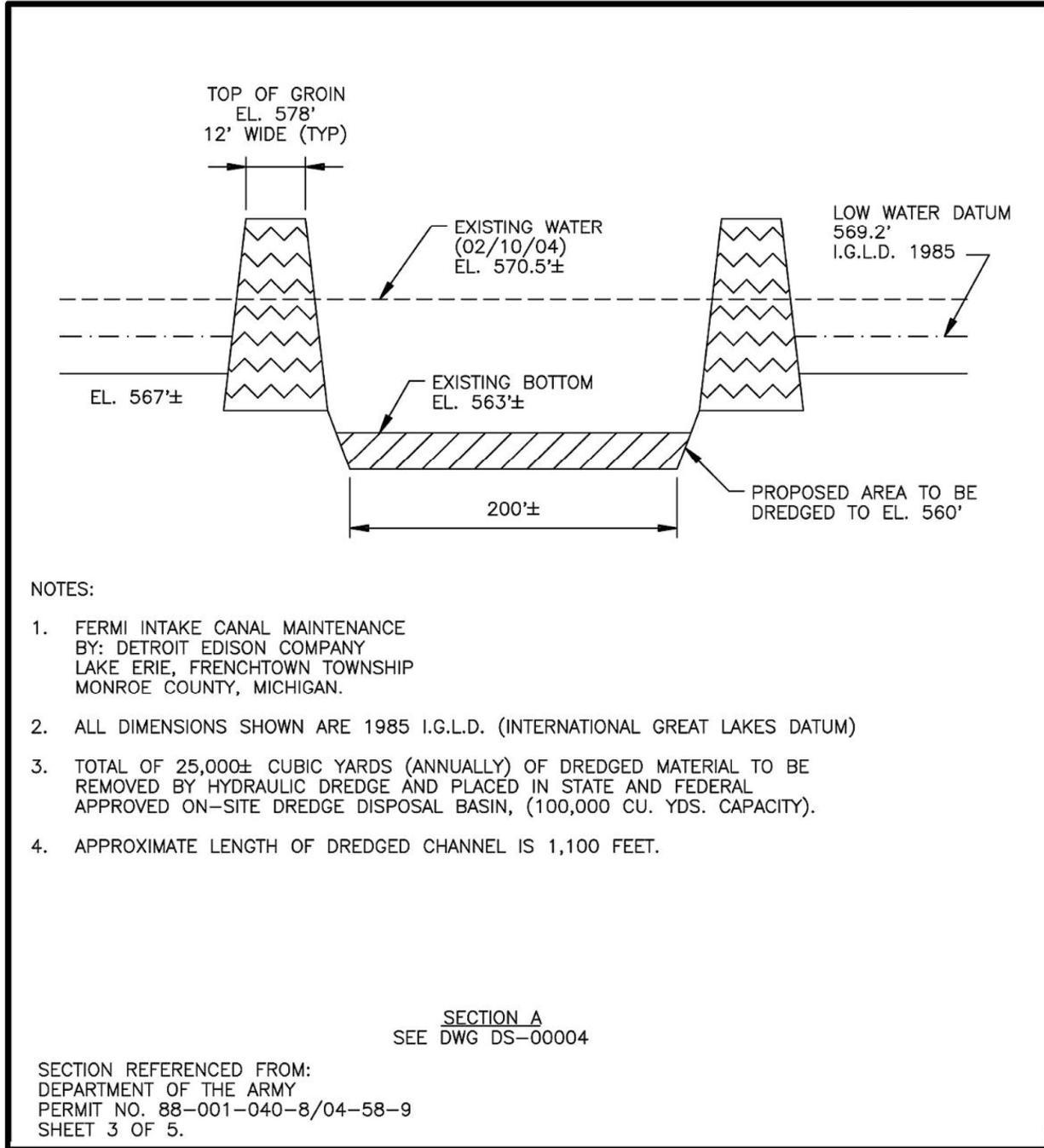


Figure 3.3-7. Fermi 3 Station Water Intake Structure (Plan View)

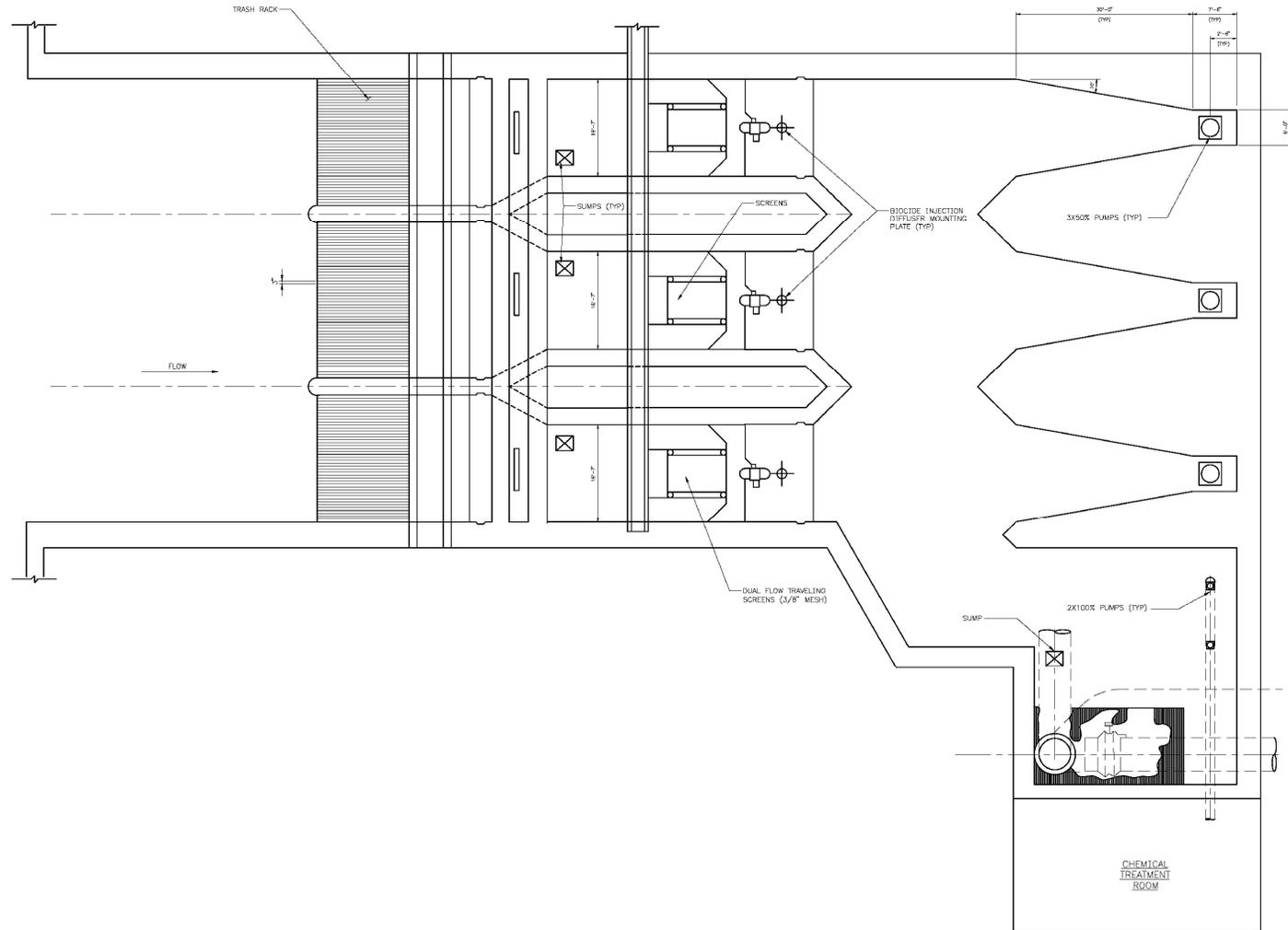


Figure 3.3-8. Fermi 3 Station Water Intake Structure (Elevation View)

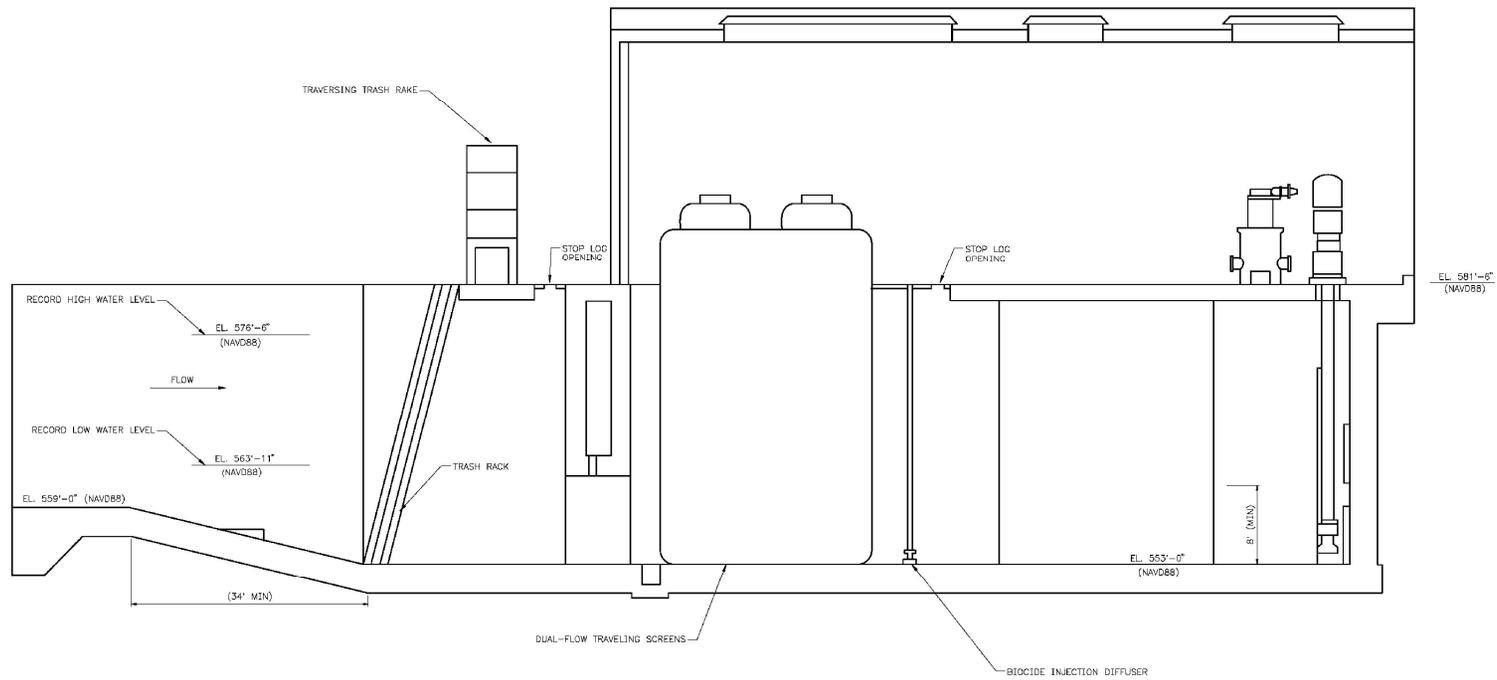


Figure 3.3-9. Construction Area 1 Impact

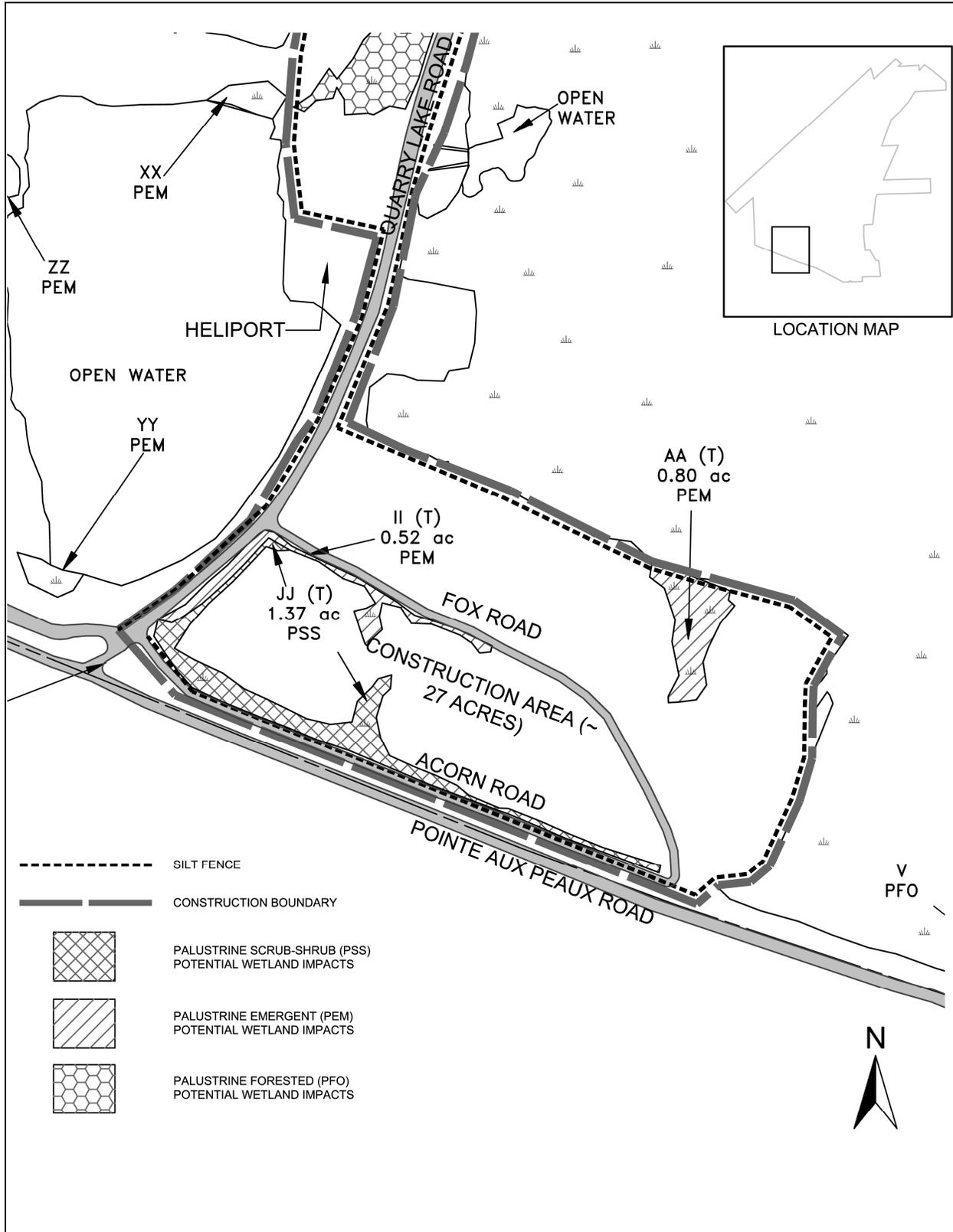


Figure 3.3-10. Construction Area 2 Impact

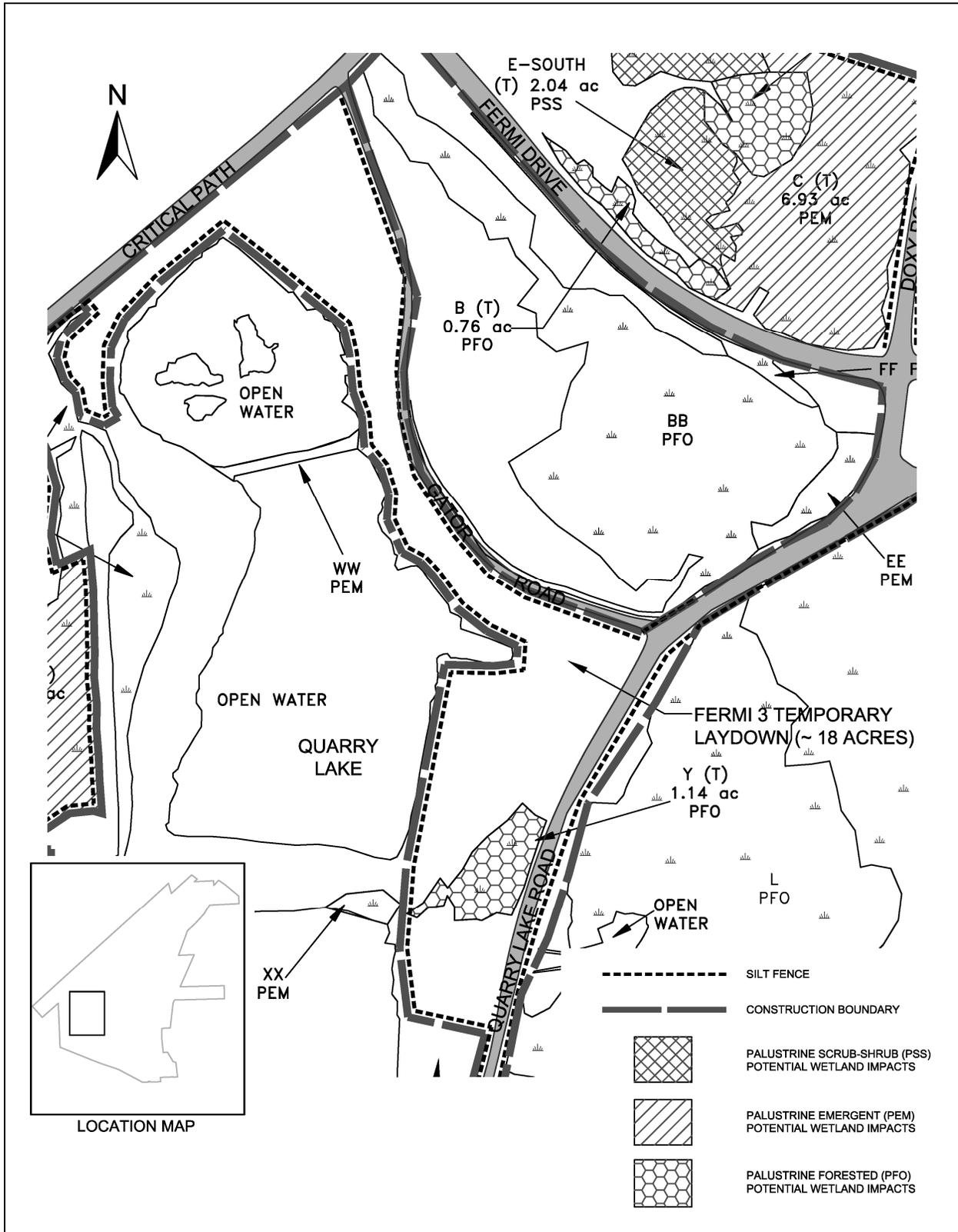


Figure 3.3-11. Construction Area 3 Impact

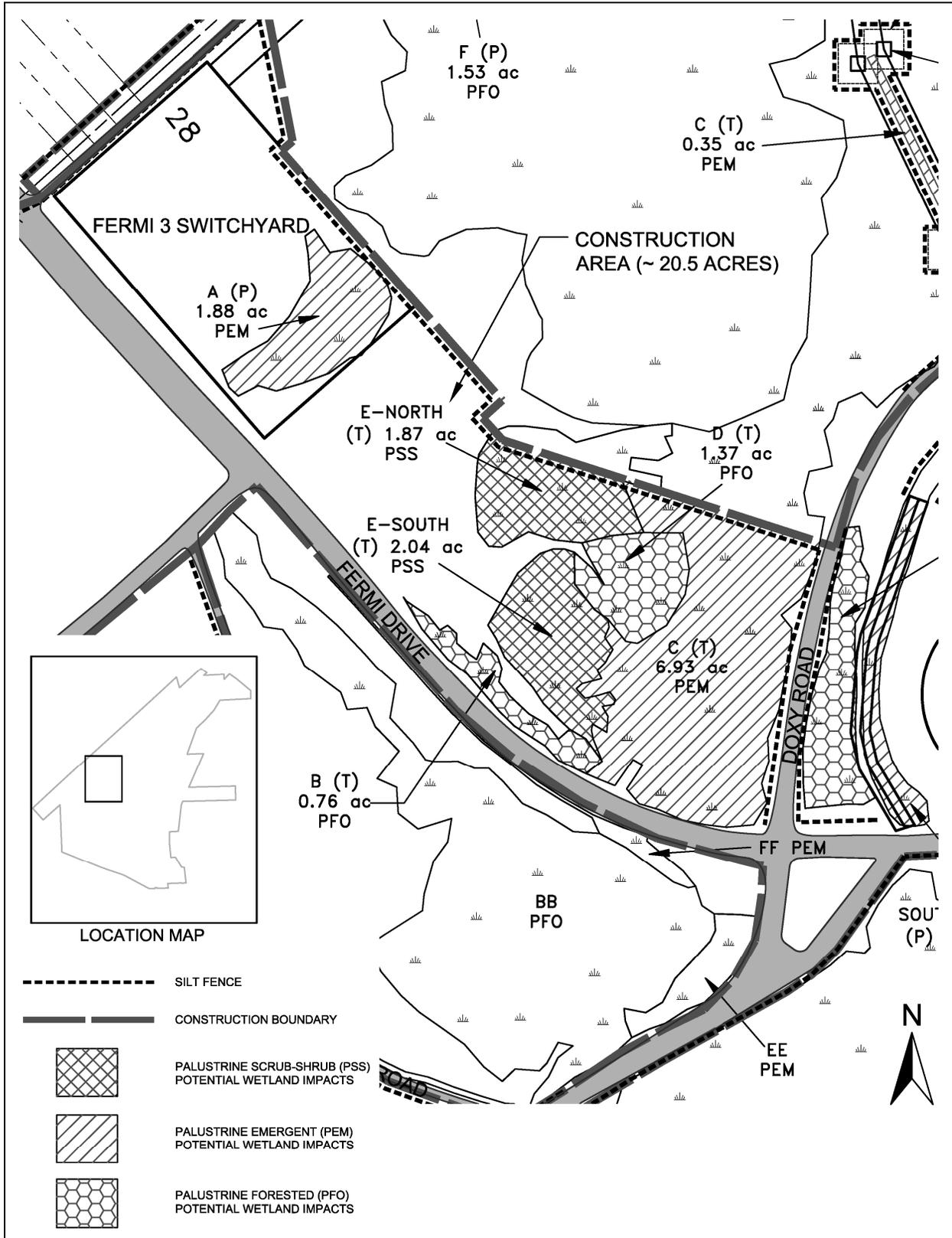


Figure 3.3-12. Construction Area 4 Impact

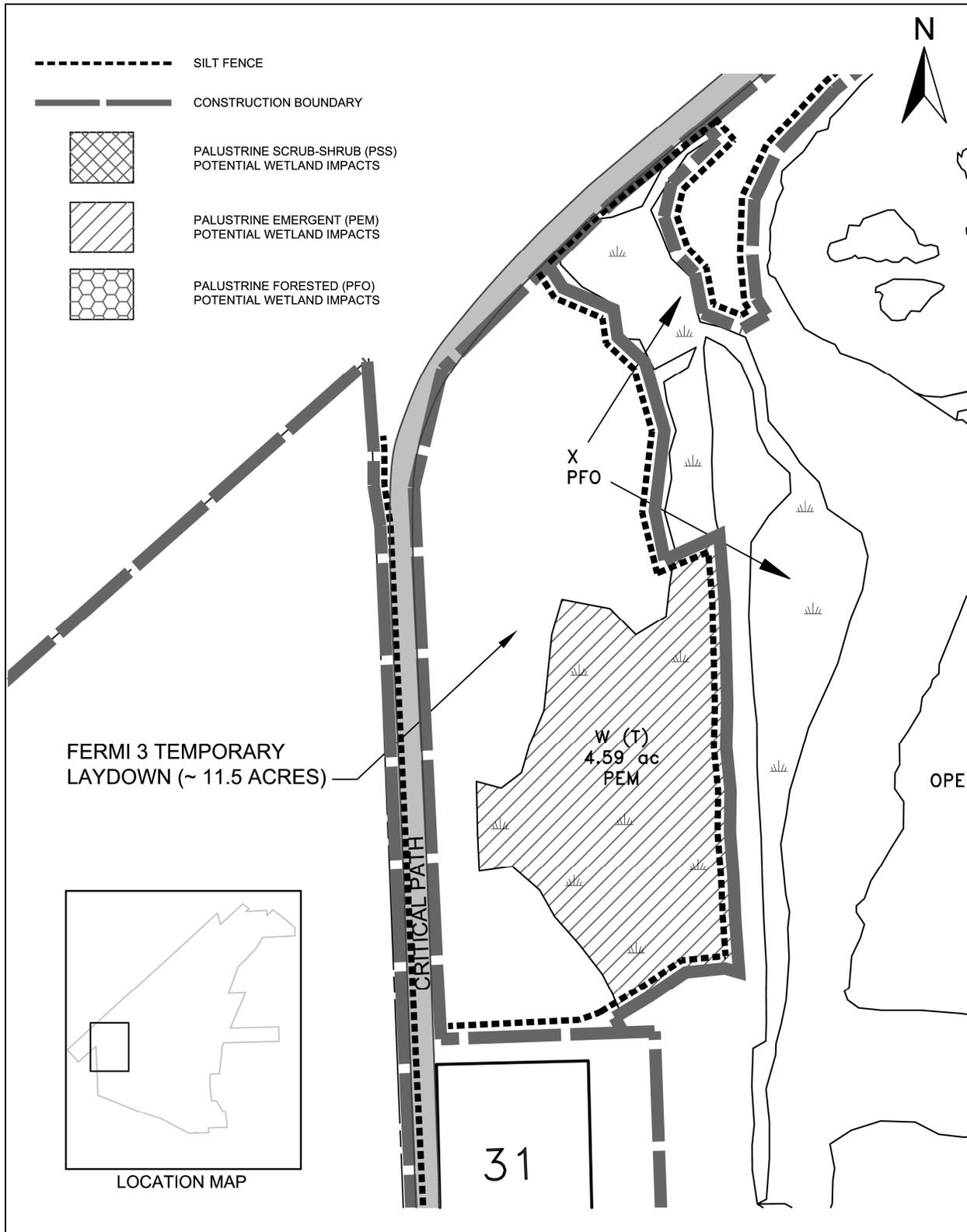


Figure 3.3-13. Warehouse, PAP/VIB and Parking Garage Impact

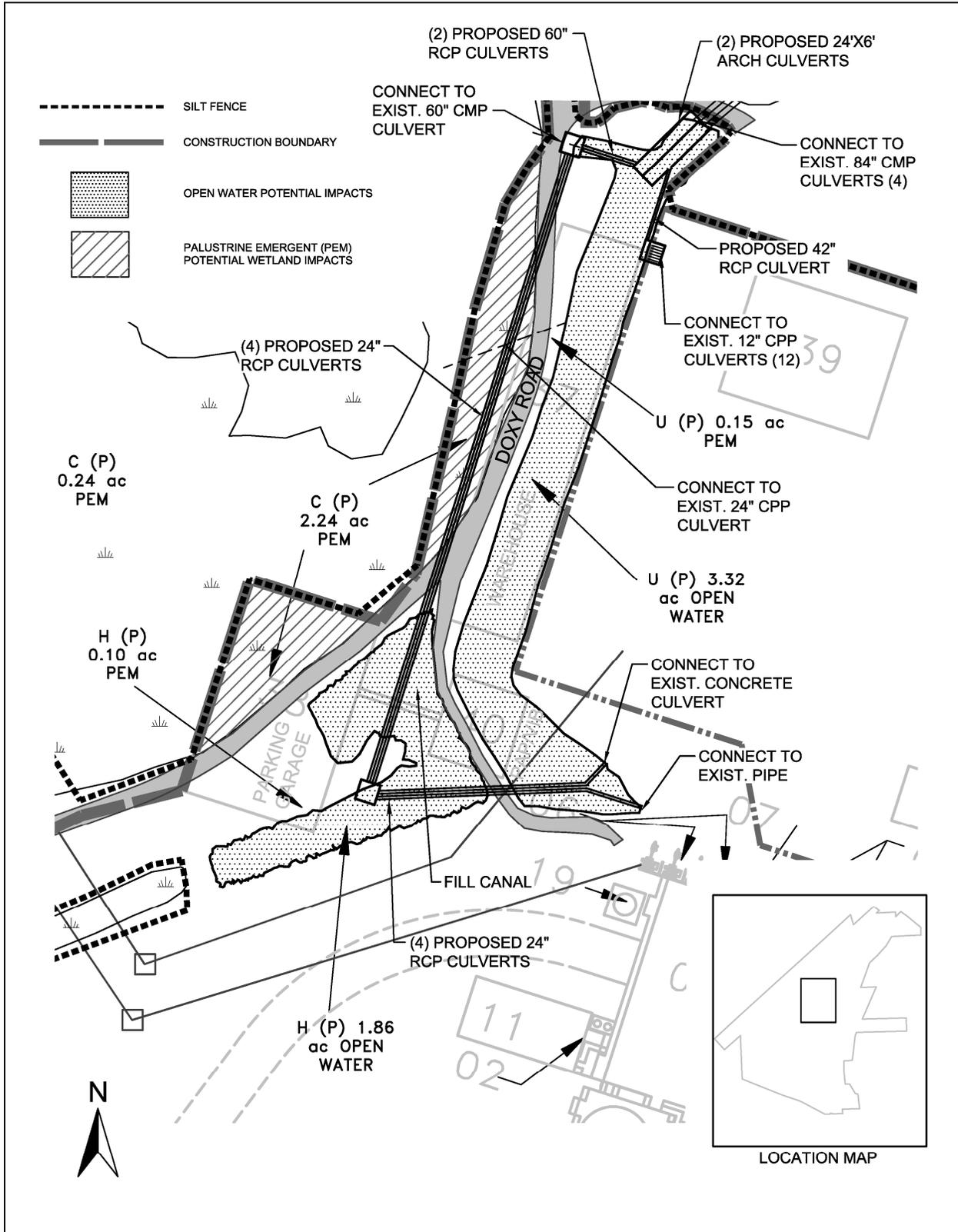


Figure 3.3-14. Cooling Tower Impact

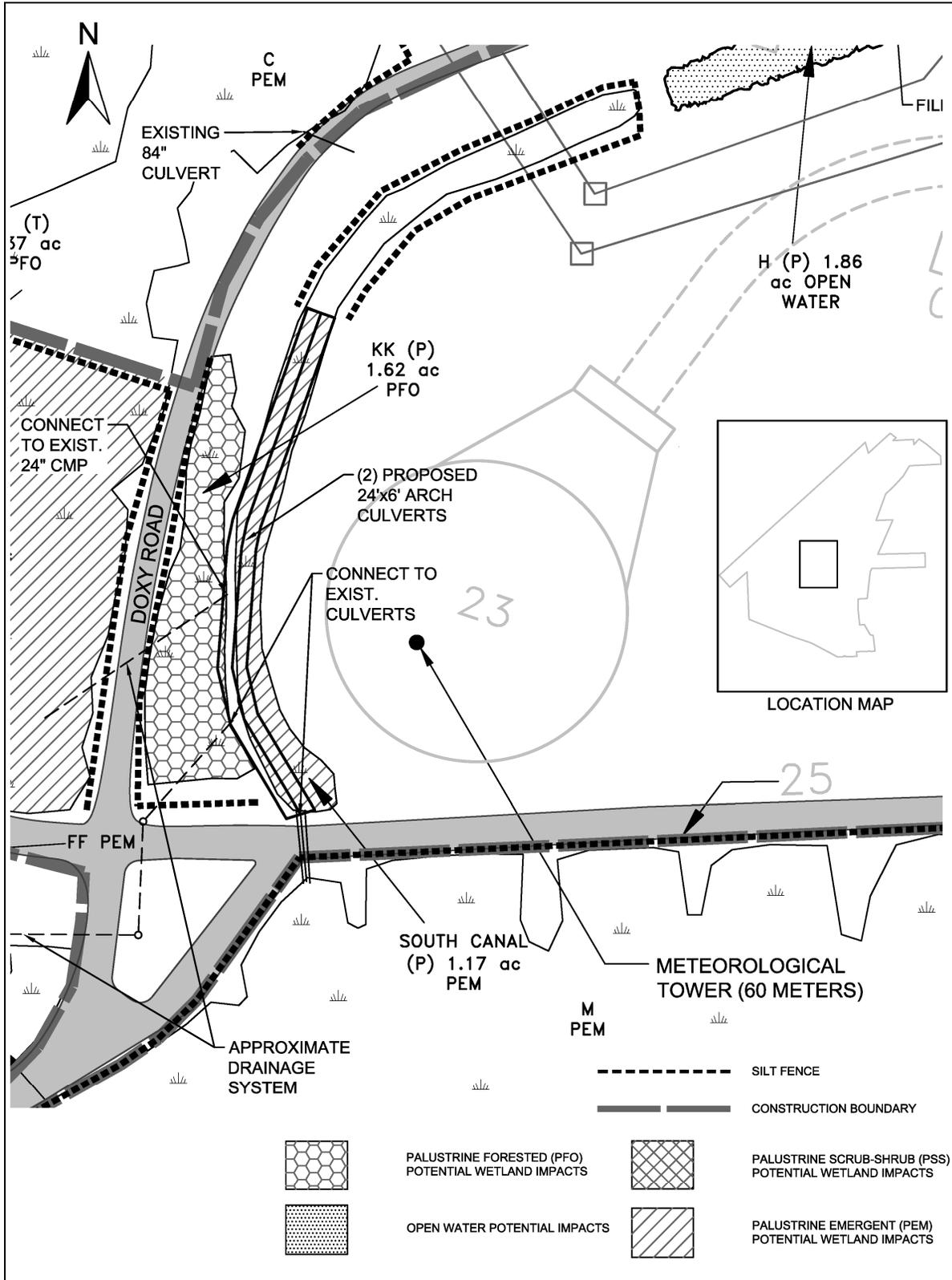


Figure 3.3-15. South Canal Culvert Cross Section

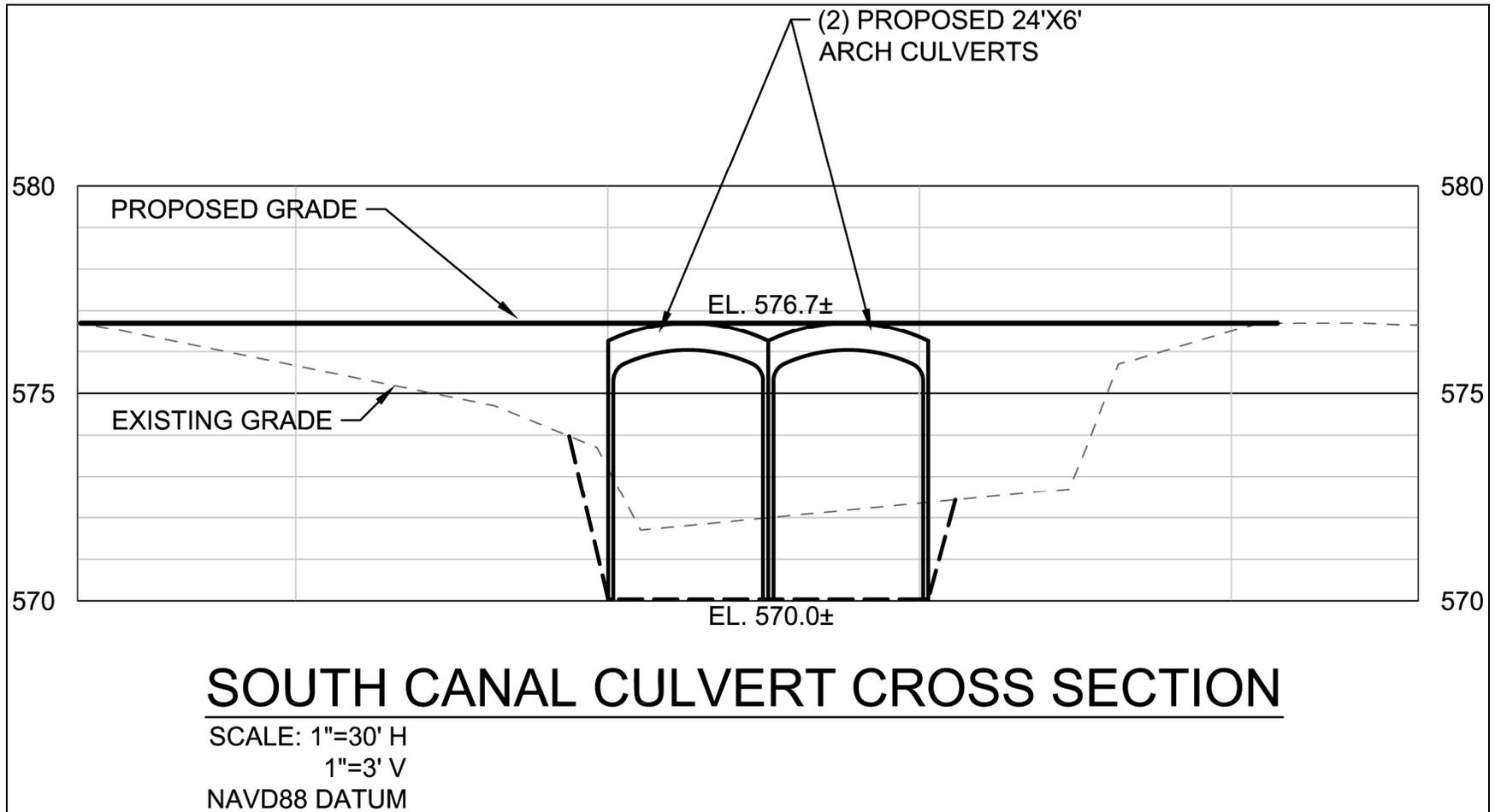


Figure 3.3-16. New Operations Access Road Design

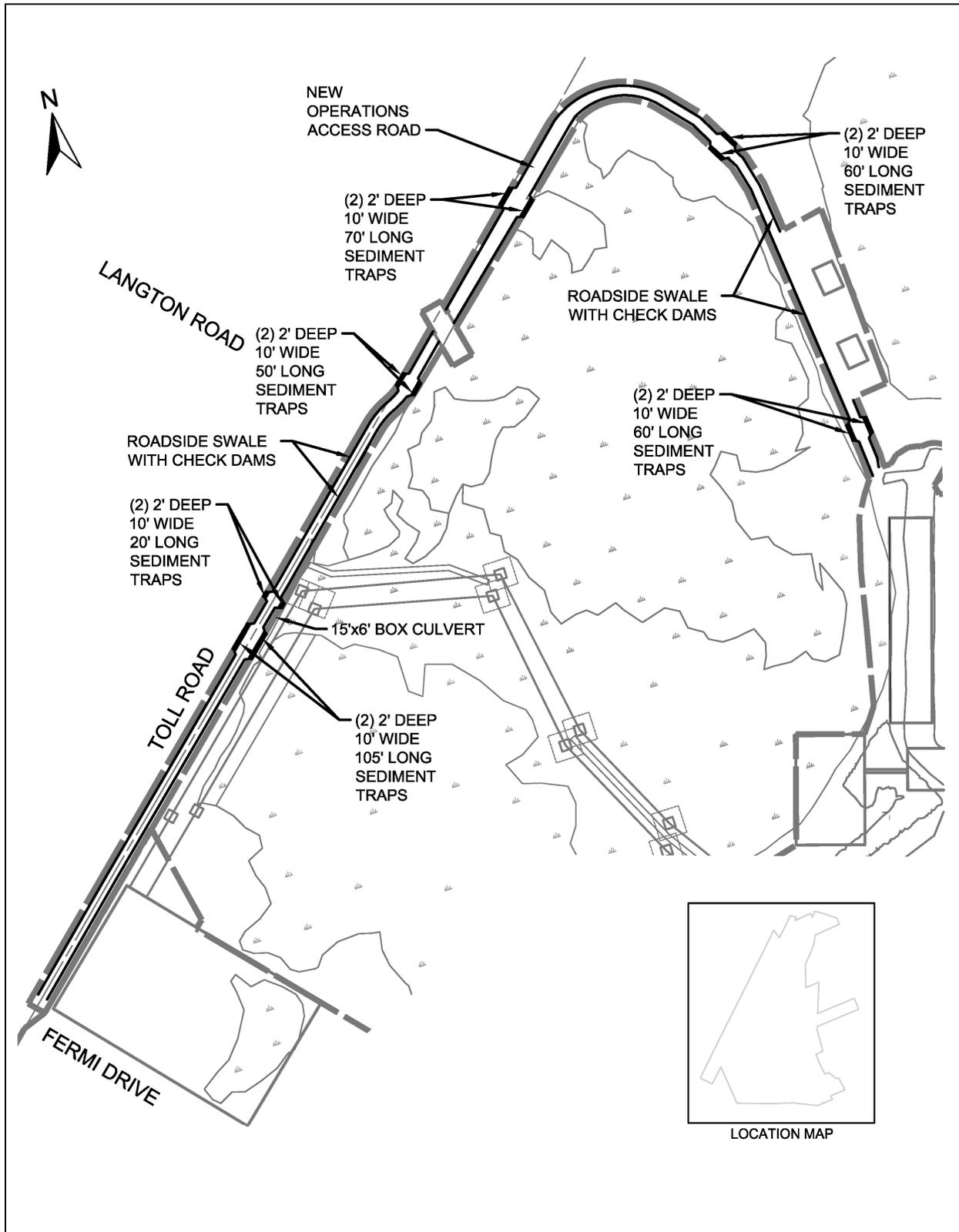


Figure 3.3-17. New Operations Access Road Impact

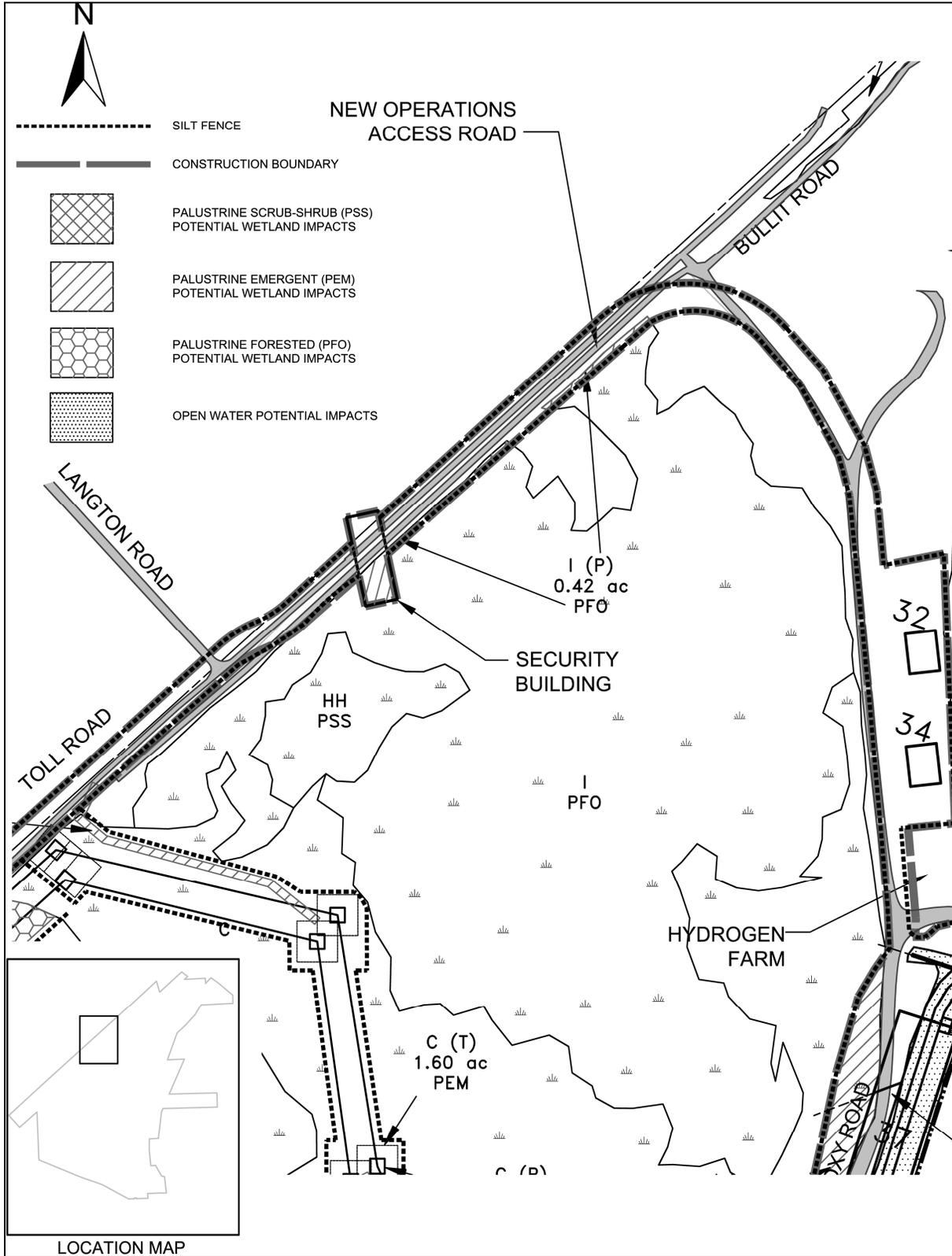
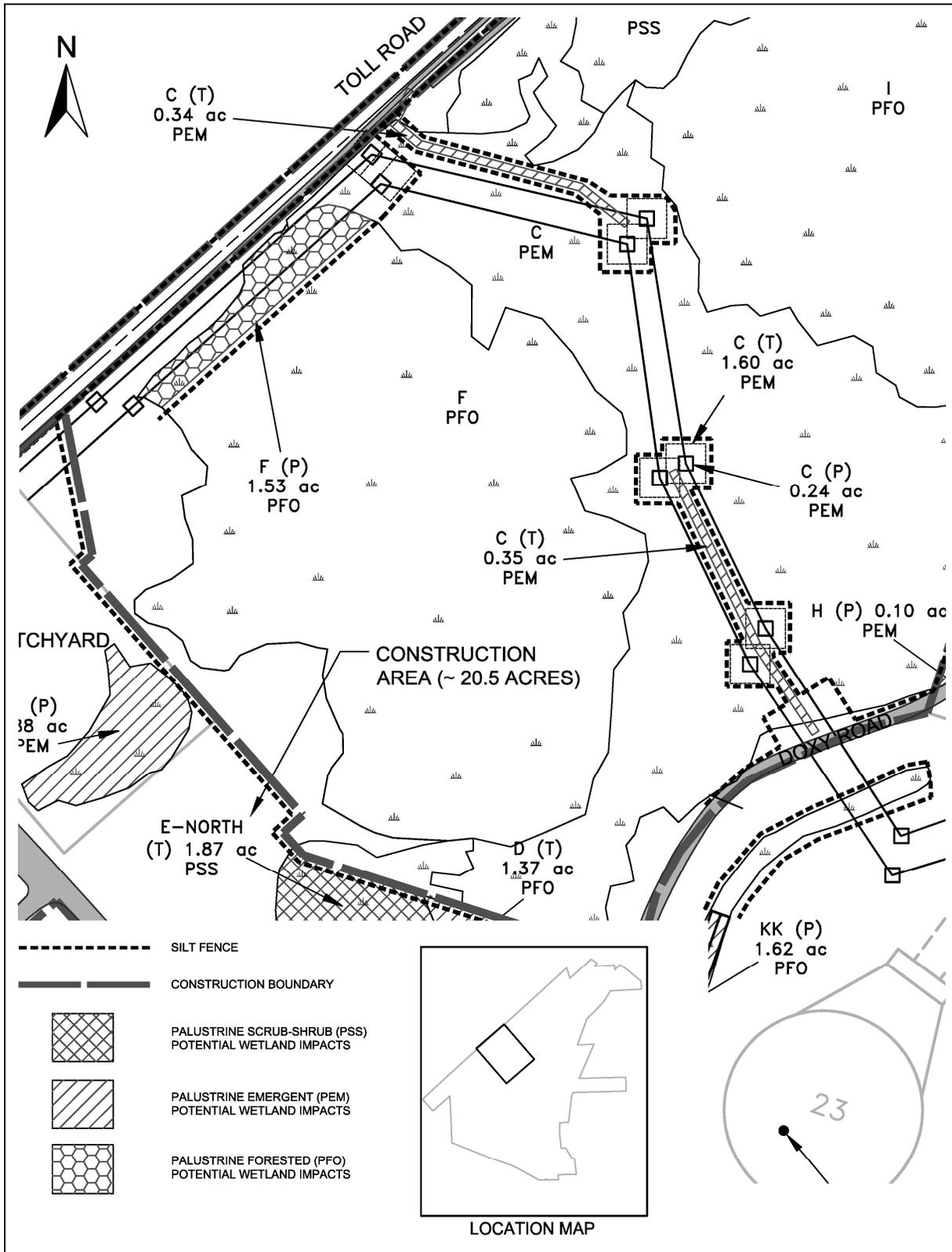


Figure 3.3-18. Onsite Transmission Impact



**Attachment 3-1**

Section 3:  
Applicant, Agent/Contractor, and Property Owner Information

Detroit River International Wildlife Refuge  
(following 1 page)

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

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

The Detroit River International Wildlife Refuge (DRIWR) Lagoon 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 Lagoon Beach Unit of the DRIWR on Fermi property. Detroit Edison has a 2003 Cooperative Agreement (see **Attachment 3-2**) 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 Lagoon 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.

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<sup>1</sup> See <http://www.fws.gov/midwest/planning/detroitriver/>

**Attachment 3-2**

Section 3:  
Applicant, Agent/Contractor, and Property Owner Information

DRIWR Cooperative Agreement  
(following 4 pages)

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;

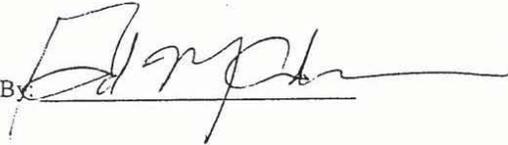
- A. By written mutual agreement of the parties hereto.
- B. At the option of either party upon 90 days written notice to the other.

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

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_  
Date \_\_\_\_\_

**DETROIT EDISON**

By:   
\_\_\_\_\_

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_  
Date \_\_\_\_\_

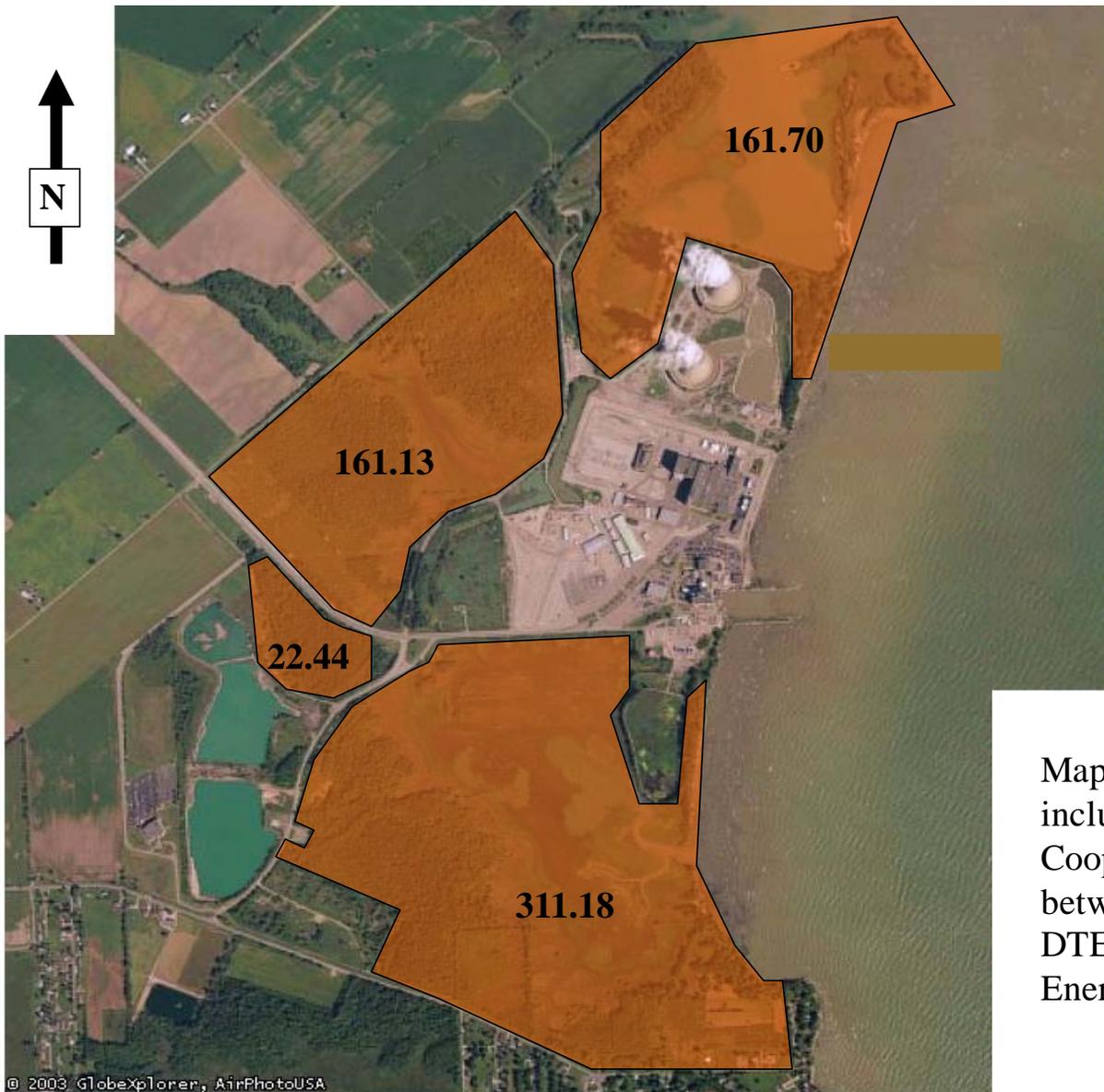
**UNITED STATES OF AMERICA**  
Acting by and through the  
Secretary of the Interior

By:   
\_\_\_\_\_  
Director  
U.S. Fish and Wildlife Service

**Attachment 3-3**

Section 3:  
Applicant, Agent/Contractor, and Property Owner Information

Attachment to DRIWR Cooperative Agreement  
(following 1 page)



 Proposed  
Refuge Area  
(total: ca. 656 acres)

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

21APR03 (bem)

**Attachment 4-1**

Section 4:  
Proposed Project Purpose, Intended Use, and Alternatives  
Considered  
(following 4 pages)

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

1) Purpose/Intended Use:

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:

1. 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.

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

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) Alternatives Considered:

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 details of that analysis are presented in **Attachment 4-2**. The candidate sites were evaluated for practicability to construct and operate a nuclear generating facility. The sites that were found to be practicable were 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. 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 4-1**. Based on the overall potential impacts to waters of the U.S., the Fermi site would be the LEDPA.

**Table 4-1. Potential Construction Impacts for the Alternative Sites**

Resource Type	Fermi site	Greenwood site
Wetlands	154 acres	300 acres
Streams	7,304 linear feet	34,700 linear feet
Open water (Lake Erie)	0.08 acre	NA <sup>a</sup>
Open water (inland)	5.2 acres	NA

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

b) Site Layout Alternatives

The site layout for the proposed Fermi 3 project was evaluated for potential environmental impacts to the Fermi site. The details of that analysis are presented in **Attachment 4-3**. The 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 site layout alternatives.

The existing Fermi 2 unit is in the northeast part of the Fermi 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. 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.

The preferred 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 jurisdictional waters and wetlands. 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. Three project layout alternative scenarios were evaluated. Those alternatives are referred to as Revision 0, Revision 1, and the Preferred Alternative (Revision 2). **Table 4-2** summarizes the potential wetland impacts for each alternative site layout. The design iterations reduced the potential wetland impacts from over 150 acres to approximately 33 acres. Detroit Edison has applied as much repositioning of Fermi 3 project components as possible within project practicability limits to avoid and minimize impacts to wetlands and other natural resources at the Fermi site.

Subsequent to the alternatives analysis presented in **Attachment 4-3**, 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.

**Table 4-2. Comparison of Impacts for Alternative Site Layouts**

Type	Revision 0	Revision 1	Revision 2	Preferred Alternative
<b>Wetland Impacts (acres) by Type</b>				
PEM wetland <sup>a</sup>	49.66	13.61	20.90	21.22
PFO wetland	96.66	18.97	6.84	8.03
PSS wetland	7.00	4.10	5.28	5.28
Total wetlands	153.31	36.68	33.01	34.53
Open water	14.05	12.58	5.26	5.26
<b>Wetland Impacts (acres) by Michigan Natural Community<sup>b</sup></b>				
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>	2.13	2.43	7.24	7.24
PFO wetland	4.47	4.89	4.89	4.89
PSS wetland	0	0.18	1.37	1.37
Open water	14.05	12.58	5.26	5.26

<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.

## **Attachment 4-2**

### Section 4: Proposed Project Purpose, Intended Use, and Alternatives Considered

USACE RAI Response – Appendix B Alternative Site Analysis  
(following 30 pages)

**Note:**

This attachment provides supplemental information regarding Detroit Edison's alternatives analysis. This document was prepared as part of the USACE Supplemental RAI Response. Figures presented in the Supplemental RAI Response have been superseded by the figures included in the Joint Permit Application. There may be differences in the dimensions and acreages between the Supplemental RAI Response and the information presented in the Joint Permit Application. The headers, footers and page numbers apply to the original document.

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Detroit Edison reviewed the eight candidate sites identified in Section 9.3 of the Fermi 3 Combined License Application (COLA) Environmental Report (Reference 1) within the context of the CWA Section 404 (b)(1) guidelines to identify a least environmentally damaging practicable alternative (LEDPA). First Detroit Edison performed a practicability assessment that considered various technical, economic, safety, and environmental criteria that reflect the overall purpose of the project. Sites that passed the practicability assessment were then evaluated for potential impacts on waters of the U.S. and adjacent wetlands to identify an environmentally preferable location. A detailed description of the review is provided below.

## **B.1 PRACTICABILITY ASSESSMENT**

Detroit Edison conducted an assessment of the eight candidate sites identified in Section 9.3 of the Environmental Report to determine the practicability of locating the proposed nuclear generating facility at each site. The criteria applied during the practicability assessment included the following:

- Land acquisition
- Proximity to 345-kV or greater transmission line
- Proximity to adequate water supply
- Proximity to hazardous land uses (e.g., airports, dams, transportation routes, chemical plants, refineries, mining operations, oil or gas pipelines/storage installations, military facilities)

Detroit Edison established threshold values for each criterion based on guidance provided in the Electric Power Research Institute (EPRI) *Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application*, March 2002 (Reference 2). Sites that did not meet the threshold value were judged to be impracticable. The remaining sites were retained for further evaluation.

The study involved reviewing existing data from the 2006 Detroit Edison preliminary siting study (Reference 3), the Fermi 3 Environmental Report (Reference 1), the Detroit Edison response to NRC RAI Question AL9.3-1 (Reference 4), and supplementing the dataset with additional Geographical Information System (GIS) information (Reference 5), to facilitate data collection and analysis.

The practicability evaluation criteria and the rationale used to establish their threshold values are described below. Table 1 provides a comparative summary of candidate site attributes relative to each of the evaluation criteria, and Detroit Edison's conclusions regarding the practicability of the site under that criterion. Site boundaries and attributes are shown in Figures 1 through 8.

### **B.1.1 Land Acquisition**

The costs and effects of land acquisition are important in siting a nuclear plant. In this assessment, sites that are owned by Detroit Edison, whole or in part, were considered practicable. For the purpose of this assessment, it was assumed that land not owned by Detroit Edison would be purchased from the land owner. The cost of acquiring the necessary land area for a proposed project and the potential for in-holdings and title restrictions increase with the number of parcels and land owners. When multiple parcels need to be assembled, the individual owners have an incentive to hold out for prices in excess of their true valuation of the property in hopes of capturing a share of the surplus from the project. Also, individual owners, especially those who have occupied their property for a long period of time may place a higher value on the land than the

assessed value, and that value could be substantial. In addition, the Michigan Farmlands and Open Spaces Preservation Act of 1974 provides for the formation of a development rights agreement between individual farm owners and the State that ensures the land is maintained in agricultural use for a minimum of 10 years in return for tax benefits. If the agreement is terminated or allowed to expire, repayment of tax credits received during the last 7 years under the agreement plus 6 percent interest is required (Reference 6).

The potential for displacement of individuals and businesses also increase with the number parcels and land owners. This could impact the availability of comparable replacement dwellings and sites in the local area, and has the potential for other social and economic impacts.

In the preliminary siting study (Reference 3), sites that required land acquisition from more than 30 owners were eliminated, while sites with 30 or fewer land owners or residences were retained. Therefore, sites with 30 or more individual owners or residences were identified as impracticable.

Four candidate sites (Sites A, W1, W2, and W3) have more than 30 owners and were considered to be impracticable.

#### **B.1.2 Proximity to 345-kV or Greater Transmission Line**

Access to an existing transmission system is an essential criterion in siting a nuclear plant. According to the preliminary siting study (Reference 3), the cost of construction for a single-circuit 345-kV transmission line is approximately \$980,000 per mile. Additional costs for land acquisition and permitting would also be incurred. Not only do costs increase with increasing transmission line construction to support the new plant, but impacts to the environment also increase. In addition, upgrades to the existing transmission grid, including substation improvements, the addition of new transmission lines in existing rights-of way (ROWs), and the addition of new ROWs, are potentially required. The need for such upgrades is determined through detailed analysis, but the need for additional upgrades typically increases with the distance. The distances in this assessment were estimated by measuring the straight-line distance from each candidate site to the nearest existing 345-kV transmission line.

Sites beyond a distance of 15 miles from existing 345-kV transmission lines were identified as impracticable.

Three candidate sites (Sites W1, W2, and W3) are more than 15 miles from the nearest 345-kV transmission line and were considered to be impracticable.

#### **B.1.3 Proximity to Adequate Water Source**

Access to an adequate water source is an essential criterion in siting a nuclear plant. According to the preliminary siting study (Reference 3), the cost of construction for a water supply pipeline is approximately \$1,100,000 per mile. Additional costs for land acquisition, construction of an intake structure and pumping facility, and permitting would also be incurred. Not only do costs increase with increasing distance to the water source, but impacts to the environment also increase. The distances in this assessment were estimated by measuring the straight-line distance from each candidate site to the identified water source.

Sites beyond a pumping distance of 15 miles were identified as impracticable.

Two candidate sites (Sites A, and C) are more than 15 miles from the nearest water source and were considered to be impracticable.

#### **B.1.4 Proximity to Railroad Access**

Access to railroad lines is an important criterion in siting a nuclear plant because sufficient access must be present in order to accommodate the transport of materials that will be used in reactor construction and the transport of fuel assemblies during reactor operation.

According to the preliminary siting study (Reference 3), the cost of construction for a railroad spur is approximately \$2,000,000 per mile. Additional costs for land acquisition and permitting would also be incurred. Not only do costs increase with increasing distance to the railroad access, but impacts to the environment also increase. In addition, upgrades to the existing railroad system, including rails, cross ties, other track material, sidings, road crossings, and bridges, are potentially required. The need for such upgrades is determined through detailed analysis, but the need for additional upgrades typically increases with the distance to the site. The distances in this assessment were estimated by measuring the straight-line distance from each candidate site to the identified railroad access.

Sites beyond a distance of 7 miles were identified as impracticable.

No sites were considered to be impracticable under this criterion. All eight candidate sites are located within 7 miles of an existing railroad line.

#### **B.1.5 Hazardous Land Uses**

The proximity of facilities that could present a hazard to the proposed facility is an essential criterion in siting a nuclear plant. As stated in the EPRI Siting Guide (Reference 2), "the purpose of this criterion is to incorporate NRC guidance on site suitability consideration regarding the nature and proximity of man-related hazards (e.g., airports, dams, transportation routes, and military and chemical facilities) into the site selection process." Data on the location of airports, dams, mining and quarrying operations, military bases, and petroleum/gas pipelines were used to evaluate criterion.

Detroit Edison established the following metrics for evaluation of hazardous land uses near a candidate site:

- Sites with high energy facilities located within a 1-mile radius were identified as impracticable.
- Sites with a high density of hazardous land uses were identified as impracticable.

Two candidate sites (Sites A and C) have multiple large-diameter natural gas pipelines traversing the site within ½-mile of the reactor location and were considered to be impracticable.

Site N has a high density of hazardous land uses within 5 miles of the site and was considered to be impracticable.

#### **B.1.6 Summary**

Eight sites within the Detroit Edison service area were evaluated for the practicability of locating the proposed nuclear generating facility at each site. 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 six sites and the reasons for excluding them are listed below.

- Site A (Petersburg) – Impracticable due to number of land owners, a large distance to the nearest water source, and proximity to sites with hazardous uses.
- Site C (South Britton) – Impracticable due to a large distance to the nearest water source and proximity to sites with hazardous uses.
- Site N (Belle River) – Impracticable due to proximity to sites with hazardous uses.
- Site W1 (Port Austin) – Impracticable due to number of land owners and a great distance to the transmission grid.
- Site W2 (Caseville) – Impracticable due to number of land owners and a great distance to the transmission grid and the nearest railroad.
- Site W3 (Bay Port) – Impracticable due to number of land owners and a great distance to the transmission grid.

The two remaining candidate sites, Site F (Greenwood) and Site M (Fermi) were evaluated for impacts on the waters of the U.S. and adjacent wetlands.

## **B.2 WETLAND IMPACT ANALYSIS**

Detroit Edison evaluated wetland and stream impacts associated with constructing a new nuclear generating plant at the Fermi site (Site M) and the Greenwood site (Site F). This review was conducted as a screening-level analysis to evaluate the general presence of wetlands and waters of the U. S., and potential impacts on these resources related to siting a nuclear power plant. Recent wetland delineations were available for both the Fermi site (Reference 7) and Greenwood site (Reference 8). The site-specific delineations were used to evaluate potential construction impacts within the property boundaries. Potential offsite wetland and stream impacts were evaluated using publically available GIS data from the National Wetlands Inventory (Reference 9) and ESRI (Reference 10).

### **B.2.1 Greenwood Site (Site F)**

The Greenwood site is an existing Detroit Edison-owned oil/gas-fired power plant site in Greenwood Township of St. Clair County, Michigan. In 1972, Detroit Edison submitted an application to the U.S. Atomic Energy Commission (USAEC)<sup>1</sup> for construction at the 1729-acre Greenwood site of a two-unit nuclear generating plant that used spray canals to cool the circulating water system. The permit application included an environmental report that evaluated the environmental impacts related to the construction of the proposed Greenwood Energy Center Units 2 and 3. In 1974, USAEC staff published an environmental statement (Reference 11) that evaluated the environmental impacts of the proposed nuclear generating plant; balanced the adverse environmental effects with the environmental, economic, technical, and other benefits of the facility; and concluded that the benefits associated with the proposed project were greater than its adverse environmental effects. After Reference 11 was published, Detroit Edison made several design changes to the proposed nuclear generating plant, including the use of natural draft cooling towers instead of spray canals, which necessitated a major revision to their environmental report. Detroit Edison submitted the revised environmental

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<sup>1</sup> The U.S. Atomic Energy Commission is the predecessor to the NRC.

report (Reference 12) to the USAEC in 1979. The revised environmental report and construction permit application were under review when the nuclear project was cancelled in 1980.

As shown in Figure 10, the project area for the new nuclear plant is located in the southwestern portion of the property. The potential configuration of the nuclear power plant within the Greenwood site was based on the Impact Minimization Layout presented in Figure AppC-5 of Reference 13. That plant configuration for the Greenwood site was derived by rotating the generic ESBWR plant layout 90 degrees and reconfiguring to avoid impacts on Engles Drain. The construction areas at the Greenwood site include approximately 70 acres.

Because nuclear development at the Greenwood site was previously proposed, decisions regarding the make-up water source, blowdown discharge location, likely routes for water supply and blowdown pipelines and transmission lines, ROW widths, and transmission system upgrades are based on information provided in the Greenwood Energy Center environmental report (Reference 12). The information provided in Reference 12 was the result of detailed engineering assessments and was reviewed by NRC and various State and Federal regulatory agencies.

Blowdown from the closed-cycle cooling system would be discharged through a 5.1-mile pipeline to the Black River. The ROW for the blowdown pipeline would extend southeast from the project area to the southeastern corner of the Greenwood site. The route would then extend east along Norman Road to a terminal diffuser in the Black River approximately 0.2 mile south of the point where Norman Road crosses the river. Detroit Edison estimated that the ROW for the blowdown pipeline would be 100-foot wide. The route for the blowdown pipeline is depicted on Figure 10.

Make-up water for the closed-cycle cooling system would be provided by a 17.5-mile water pipeline from Lake Huron. The ROW for the water supply pipeline would follow existing roadways, extending south from the project area along Kilgore Road to Metcalf Road, then east along Metcalf Road to an intake structure on the bottom of Lake Huron. As discussed in the Final Environmental Report for Greenwood Energy Center Units 2 & 3 (Reference 12), the intake structure needs to be located 3 to 4 miles out into Lake Huron at a minimum depth of 30 feet to avoid damage from surface ice, wave action, and low water levels; and to provide navigation clearance. Consistent with the discussion in Reference 12, Detroit Edison assumed the intake structure would be located approximately 4 miles from the lakeshore and approximately 40 feet below the surface. Detroit Edison estimated that the ROW for the water supply pipeline would be 125-foot wide. The route for the water supply pipeline is depicted on Figure 11.

Detroit Edison anticipates that two 345 kV transmission lines would be required to connect the new nuclear generating plant at the Greenwood site. As discussed above, the routes for the new transmission lines are based on information provided in the Greenwood Energy Center environmental report (Reference 12). Detroit Edison believes that the information in Reference 12 represents the most likely configuration because the transmission route proposed for the new nuclear unit at Fermi is the same as what was proposed for the Fermi site in the 1970's. The Greenwood-Millington line would extend west from the Greenwood site for 12.2 miles, then 19.3 miles north to the Bennett Substation. From the Bennett Substation the line would extend west for approximately 25 miles to a future substation in Millington Township of Lapeer County. The Greenwood-

Blackfoot line would extend west from the Greenwood site in the same ROW as the Greenwood-Millington line for 12.2 miles. The Greenwood-Blackfoot line would then extend south through St. Clair County for 7.2 miles, then west for 17.6 miles to the Hunters Creek Substation in Lapeer County. The Greenwood-Blackfoot line would follow existing transmission lines west through Lapeer County for 7.1 miles, then south for 4.8 miles to the Blackfoot Substation. The transmission line routes are depicted on Figure 12, sections A, B and C. Detroit Edison estimated that the ROWs for the transmission lines would be 200-foot wide. If a new nuclear generating plant was located at the Greenwood site, the actual tie-in locations, transmission line routes, ROW widths, and the need for substation improvements would be determined through a detailed analysis of the existing transmission grid that considers system impacts from the new nuclear plant as well as impacts from other planned facilities and facility retirements.

Wetlands and streams on the Greenwood site were delineated in 2005 (Reference 8). The 2005 delineation study identified a number of wetland areas on the property, some of which were determined to be high quality. The study also identified several water features (i.e., ditches and streams) that crossed the property. Detroit Edison used GIS to evaluate potential wetland and stream impacts on the Greenwood site. Maps of the delineated wetlands and water features from the 2005 delineation study were digitized onto a base map of the Greenwood site. Then the footprint for the proposed nuclear facility and associated pipeline and transmission line ROWs were overlaid on the map. Areas where the plant footprint and ROWs overlap wetlands and streams were identified as impacted areas. Detroit Edison then used GIS to calculate the acreage of impacted wetlands and linear feet of impacted streams. The delineation identified 386 acres of wetland and 30,303 linear feet of stream within the area of the wetland investigation (Reference 8). Impacts to approximately 39 acres of wetland habitat are anticipated within the construction areas of the Greenwood site.

Potential offsite wetland and stream impacts were evaluated using publicly available GIS data from the National Wetlands Inventory (Reference 9) and ESRI (Reference 10). Detroit Edison created a map of the wetlands and streams in the region surrounding the Greenwood site. Then pipeline and transmission line ROWs were overlaid on the map. Areas where the ROWs overlap wetlands and water features were identified as impacted areas. Detroit Edison then used GIS to calculate the acreage of impacted wetlands and linear feet of impacted streams. The transmission line corridors include 257 acres of wetlands and 29,648 linear feet of streams.

### **B.2.2 Fermi Site (Site M)**

Detroit Edison conducted a wetlands investigation to delineate wetland boundaries and assess functions and values of the wetlands present on 1106 acres of the Fermi property. The delineation identified 509 acres of wetland and 45 acres of open water within the area of the wetland investigation (Reference 7). The proposed layout of the nuclear power plant at the Fermi site is presented in Figure 5.2-3 of this RAI response. The construction areas at the Fermi site include approximately 190 acres. Impacts to approximately 33 acres of wetland and 5.3 acres of open water habitat are anticipated within the construction areas of the Fermi 3 project at the Fermi site.

The Fermi 3 offsite transmission system will consist of three 345 kV lines running from the Fermi site north, then west to the Milan Substation, located approximately 1.5 miles northwest of Milan, a distance of about 29.4 miles. The transmission line route is depicted on Figure 13. The three 345 kV lines for Fermi 3 will run in a common corridor, with transmission lines for Fermi 2, to a point just east of I-75. From the intersection of this Fermi site corridor and I-75, the three Fermi-Milan lines will run west and north for approximately 12 miles in a corridor shared with other non-Fermi lines within the assumed 300-foot wide ROW in which the vegetation has been managed to exclude tall woody vegetation. The western 10.8 miles of the corridor is currently undeveloped, and no transmission infrastructure exists. Where vegetation is present, the maintenance has been minimal, except to keep tall woody vegetation removed. The Milan Substation may expand to accommodate the new transmission lines to Fermi 3. There are no other offsite areas associated with Fermi 3 construction.

Construction impacts in the existing eastern 18.6 miles of transmission corridor are expected to be minimal, because the reconfiguration of existing conductors would largely allow for the use of existing infrastructure to create the new lines, access for installing additional lines is good, and the ROW is maintained. Impacts from construction are primarily limited to the western 10.8 miles of the corridor where both tower and steel pole installation could occur and some clearing would be required. The 10.8-mile tract of existing undeveloped corridor along the route to the Milan Substation is shown on Figure 14 and includes 121 acres of wetlands and 7,304 linear feet of streams.

### **B.2.3 Summary**

The acreage of impacted wetlands or open water and linear feet of impacted streams associated with nuclear development at the Fermi and Greenwood sites are provided in Table 2. The plant configuration analyzed at the Greenwood site is generic and included approximately 70 acres. A site layout based on more detailed design considerations, similar to the process described in Section 5 for the Fermi site, is expected to result in a total acreage requirement comparable to the 190 acres proposed for the Fermi site. The potential for wetland impacts increases with a larger construction footprint. Review of Table 2 indicates that based on overall impacts to waters of the U.S., the Fermi site would be the LEDPA site.

### **REFERENCES**

1. Fermi 3 Combined License Application Environmental Report.
2. Electric Power Research Institute Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application, March 2002.
3. Detroit Edison Preliminary Siting Study Report, August 2006.
4. Detroit Edison Company Response to NRC RAIs Related to the Environmental Review, Letter NRC3-09-0013, RAI Question AL9.3-1, August 25, 2009.
5. Environmental Protection Agency 2010 EPA Geospatial Data Access Project, Featured Environmental Interests. November 30. Available at [http://www.epa.gov/enviro/geo\\_data.html](http://www.epa.gov/enviro/geo_data.html), last accessed December 22, 2010.

6. Michigan Department of Agriculture “The Farmland & Open Space Preservation Program (PA 116), Farmland Agreements Transferring, Dividing & Releasing.” Available online at [www.michigan.gov/farmland](http://www.michigan.gov/farmland).
7. Detroit Edison Fermi Property 2010 Wetland Report. Detroit Edison. December 2010.
8. Greenwood Energy Center Wetland Delineation and Determination of Jurisdiction. Brooks Williamson and Associates, Inc. December 2005.
9. U.S. Fish and Wildlife Service National Wetlands Inventory. Available online at <http://www.mcgi.state.mi.us/mgdl/?rel=thext&action=thmname&cid=3&cat=National+Wetlands+Inventory>, last accessed December 23, 2010.
10. ESRI U.S. Rivers and Streams Data compiled from U.S. Geological Survey and U.S. Environmental Protection Agency, 2006.
11. Final Environmental Statement Related to the Proposed Greenwood Energy Center Units 2 and 3, Docket Nos. 50-452 and 50-453. U.S. Atomic Energy Commission Directorate of Licensing, November 1974.
12. Greenwood Energy Center Units 2 & 3 Applicant’s Environmental Report Construction Permit Stage, Supplement 5. Detroit Edison, February 27, 1979.
13. Detroit Edison Fermi 3 U.S. Corps of Engineers Response to Requests for Additional Information. Revision 0, December 2009.

**Table 1. Candidate Site Practicability Review (Sheet 1 of 2)**

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

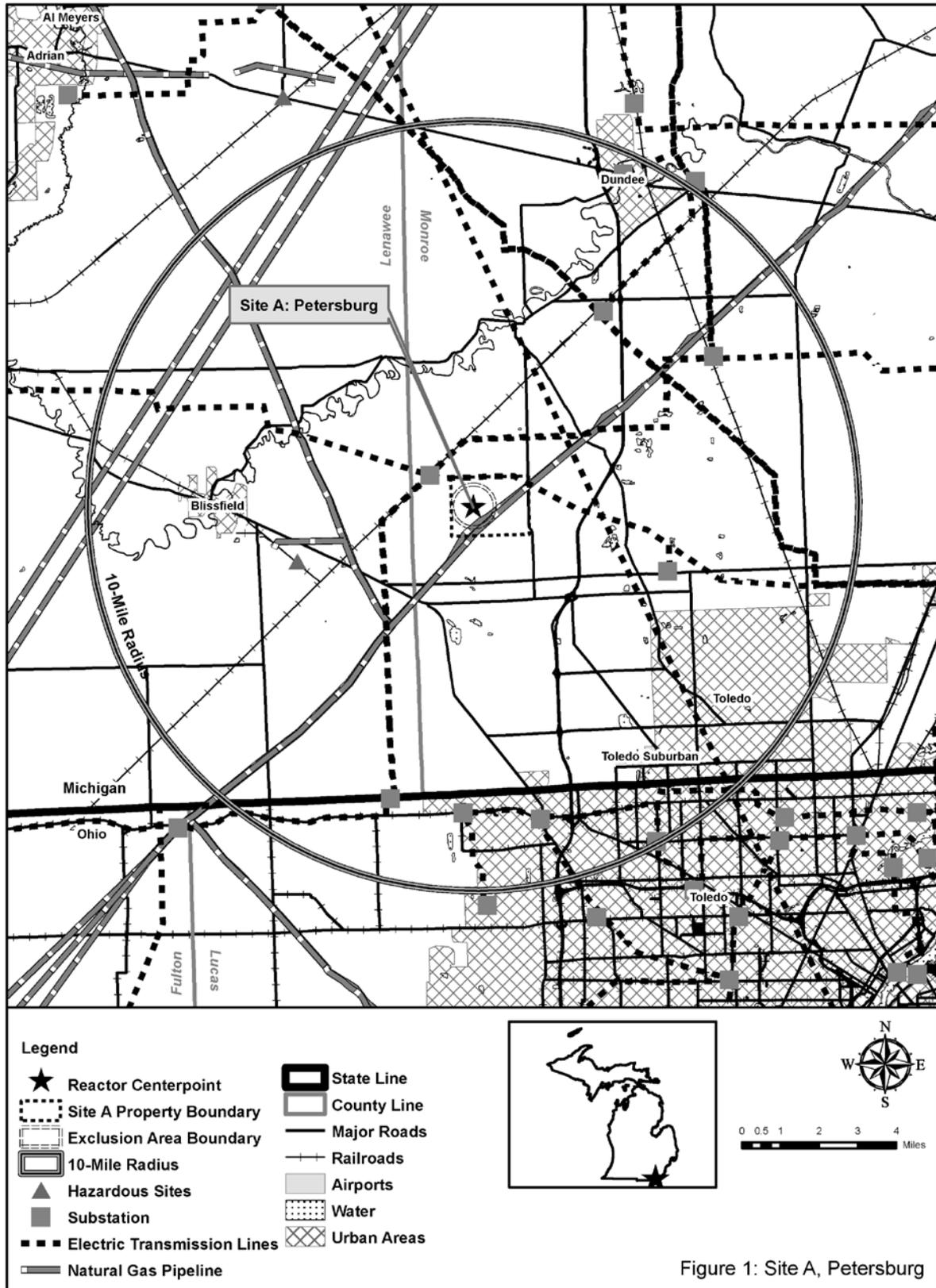
**Table 1. Candidate Site Practicability Review (Sheet 2 of 2)**

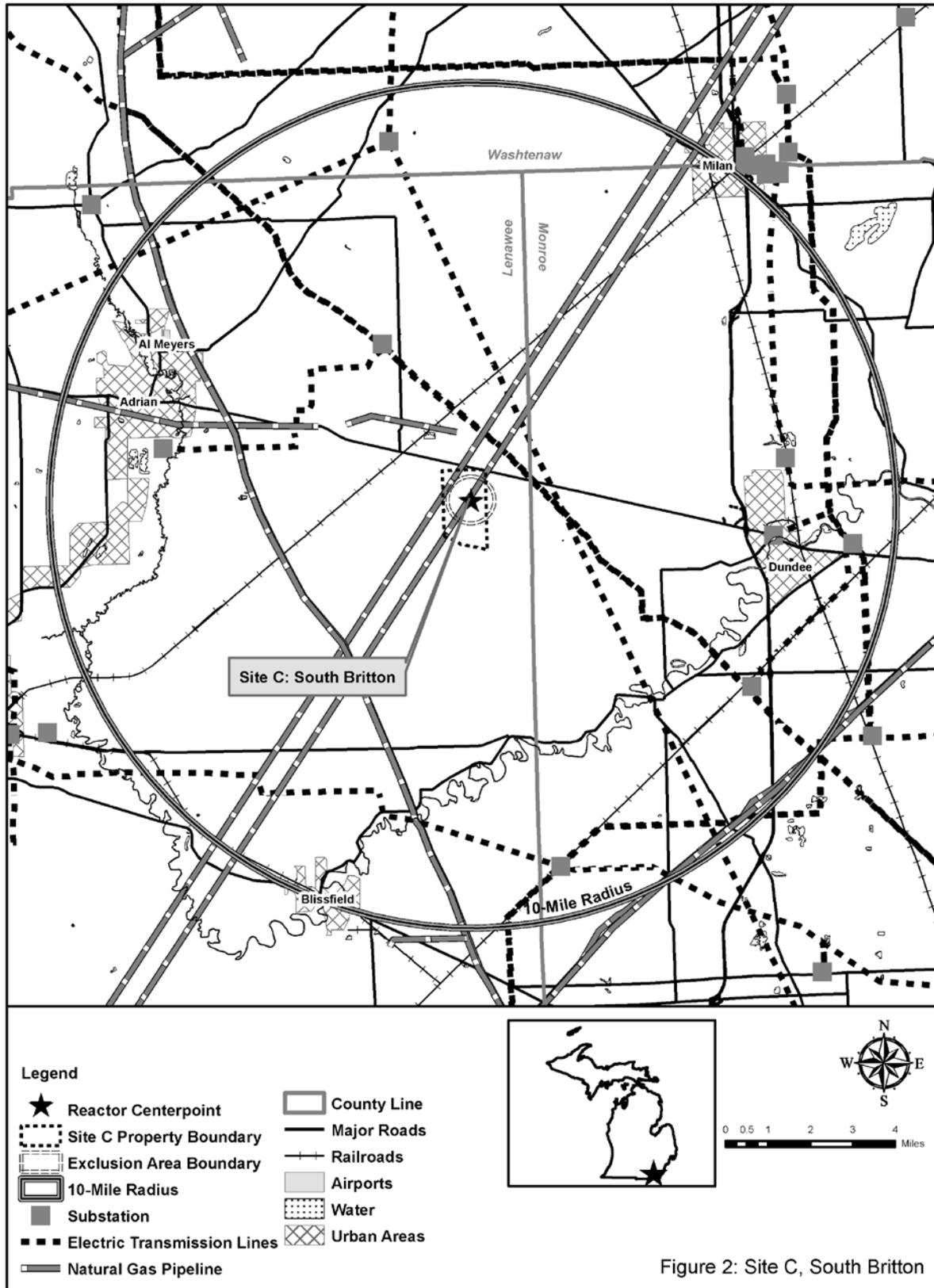
	<b>Site A – Petersburg</b>	<b>Site C – South Britton</b>	<b>Site F – Greenwood</b>	<b>Site M – Fermi</b>	<b>Site N – Belle River</b>	<b>Site W1 – Port Austin</b>	<b>Site W2 – Caseville</b>	<b>Site W3 – Bay Port</b>
<b>Hazardous Land Uses</b>	<b>Impracticable</b>  Petroleum product pipeline 2 miles south.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

**Table 2. Comparison of Wetland/Water Impacts from Alternative Sites**

	Proposed Site		Alternative Site	
Onsite Wetlands/Waters	Fermi		Greenwood	
Delineated Property Acreage	1106		1729	
Wetlands Acreage	509		386	
Open Water Acreage	45		NA	
Streams Linear Feet (LF)	0		30,303	
Wetlands Affected Acreage	33		39	
Streams Affected LF	0		401	
Open Water (Lake Erie) Affected Acreage	0.08		NA	
Open Water (inland) Affected Acreage	5.2		NA	
Offsite Wetlands/Waters	Wetlands (acreage)	Streams (LF)	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	-	-	0	273
Total Wetlands/Waters Affected				
Wetlands Affected Acreage	154		300	
Streams Affected LF	7304		34,701	
Open Water (Lake Erie) Affected Acreage	0.08		NA	
Open Water (inland) Affected Acreage	5.2		NA	

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





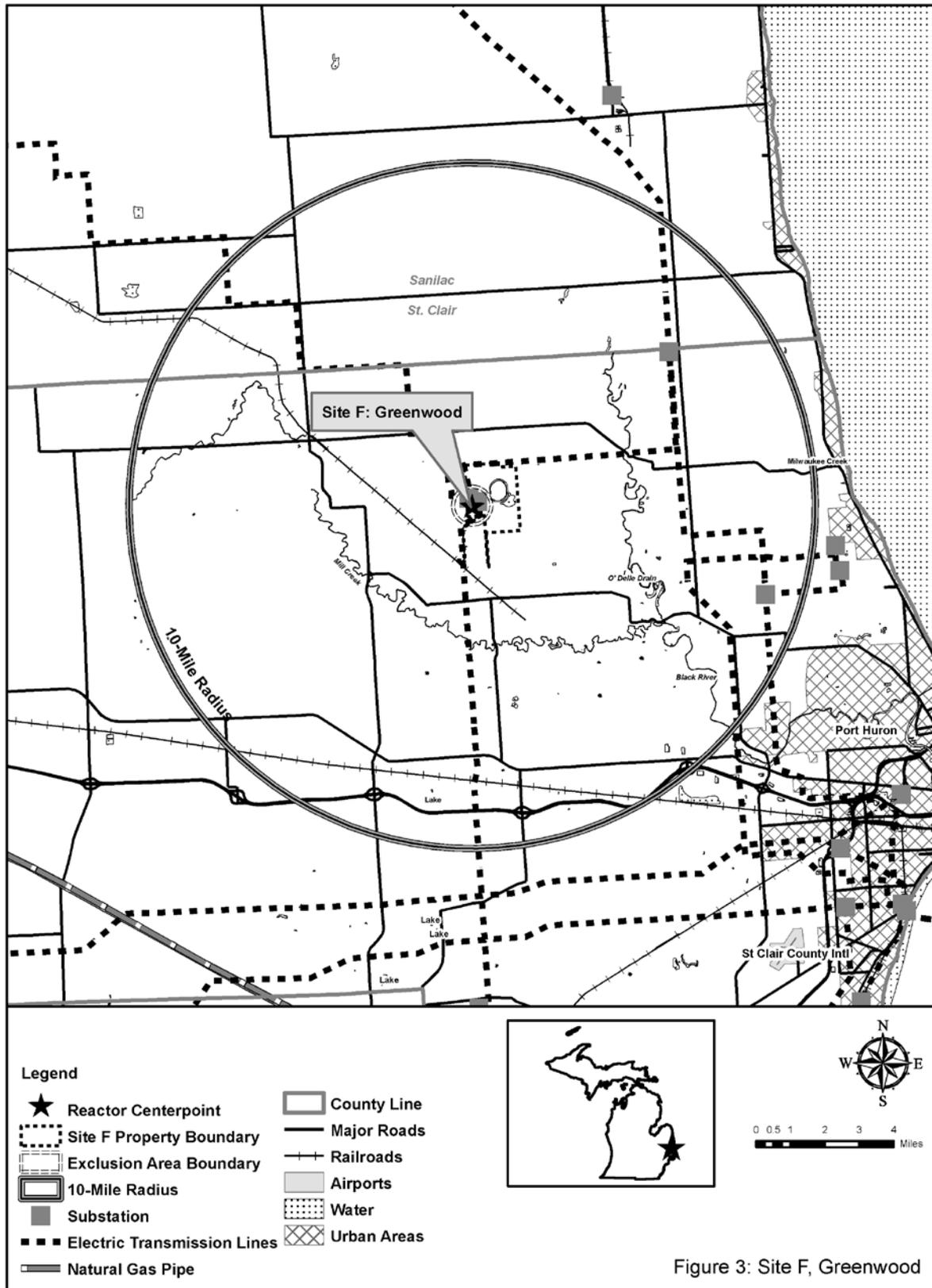


Figure 3: Site F, Greenwood

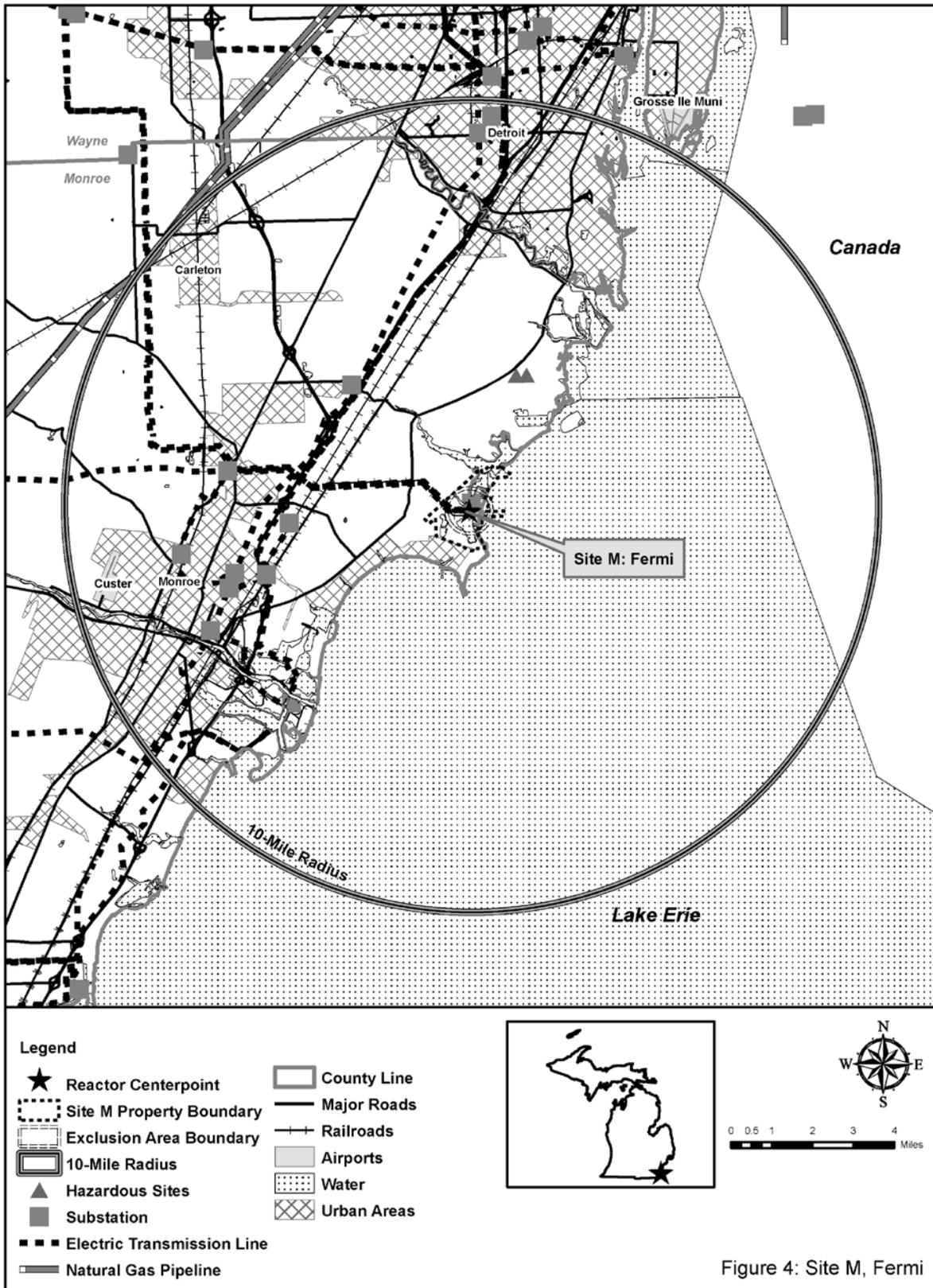
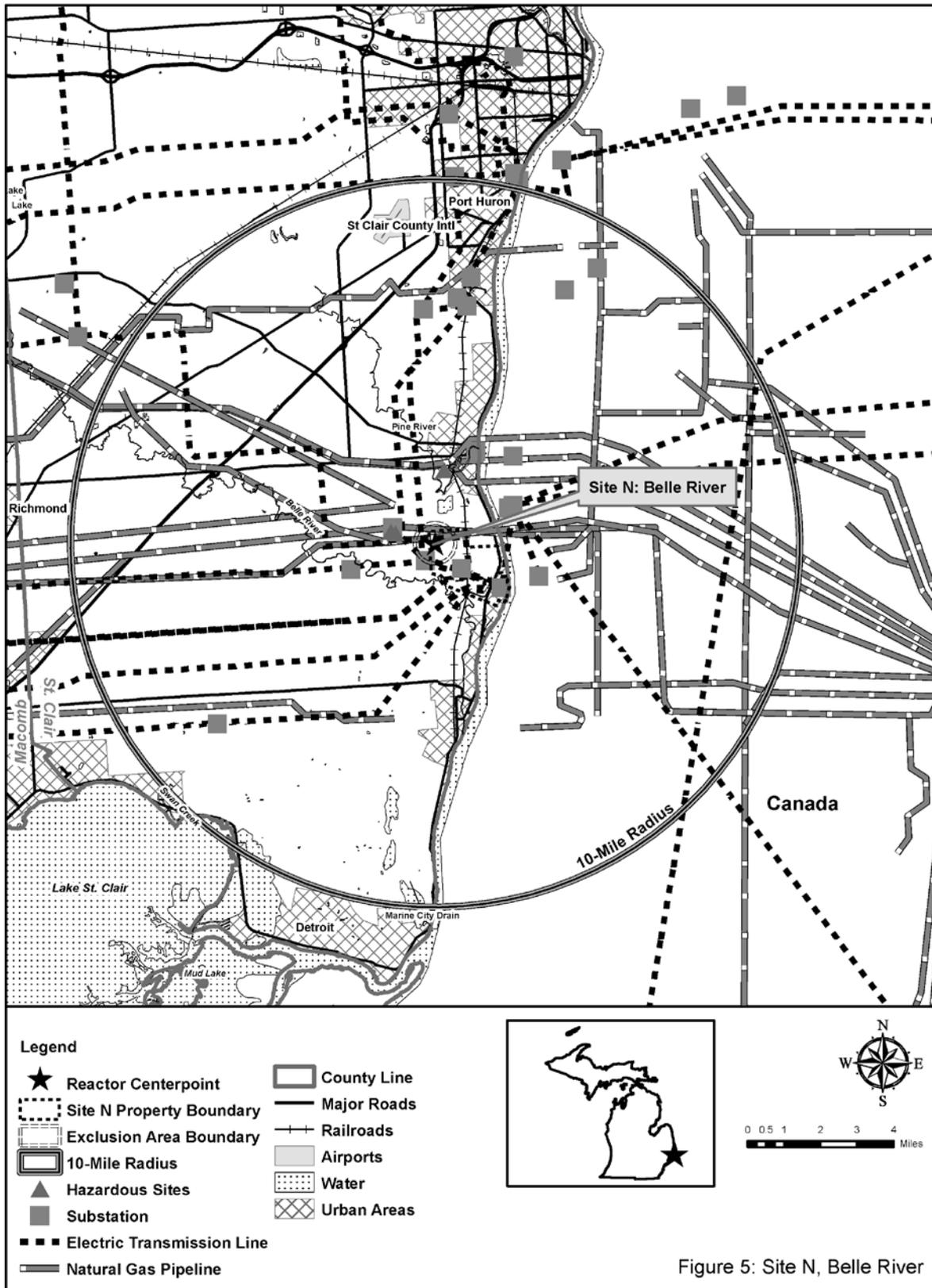
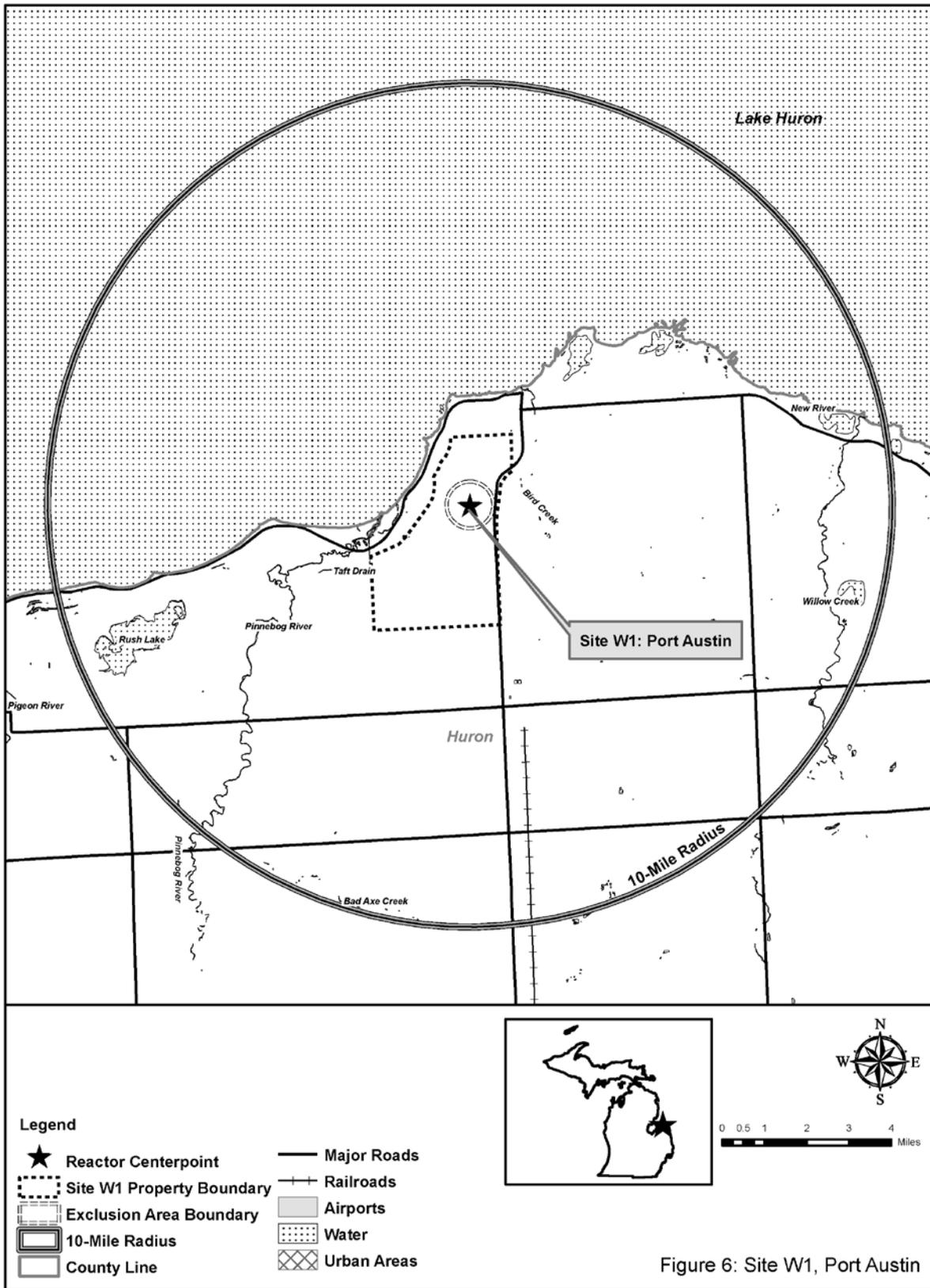


Figure 4: Site M, Fermi





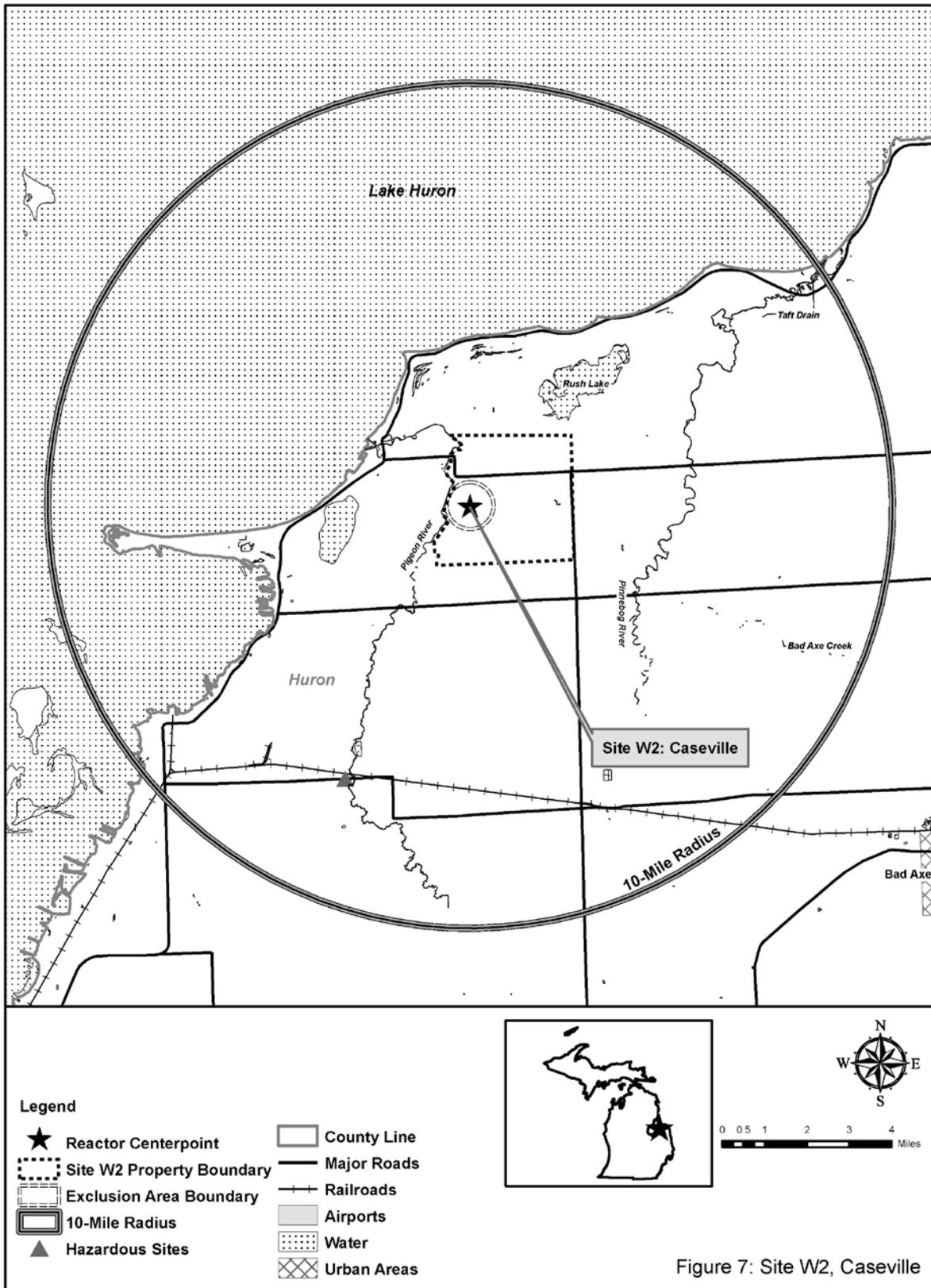


Figure 7: Site W2, Caseville

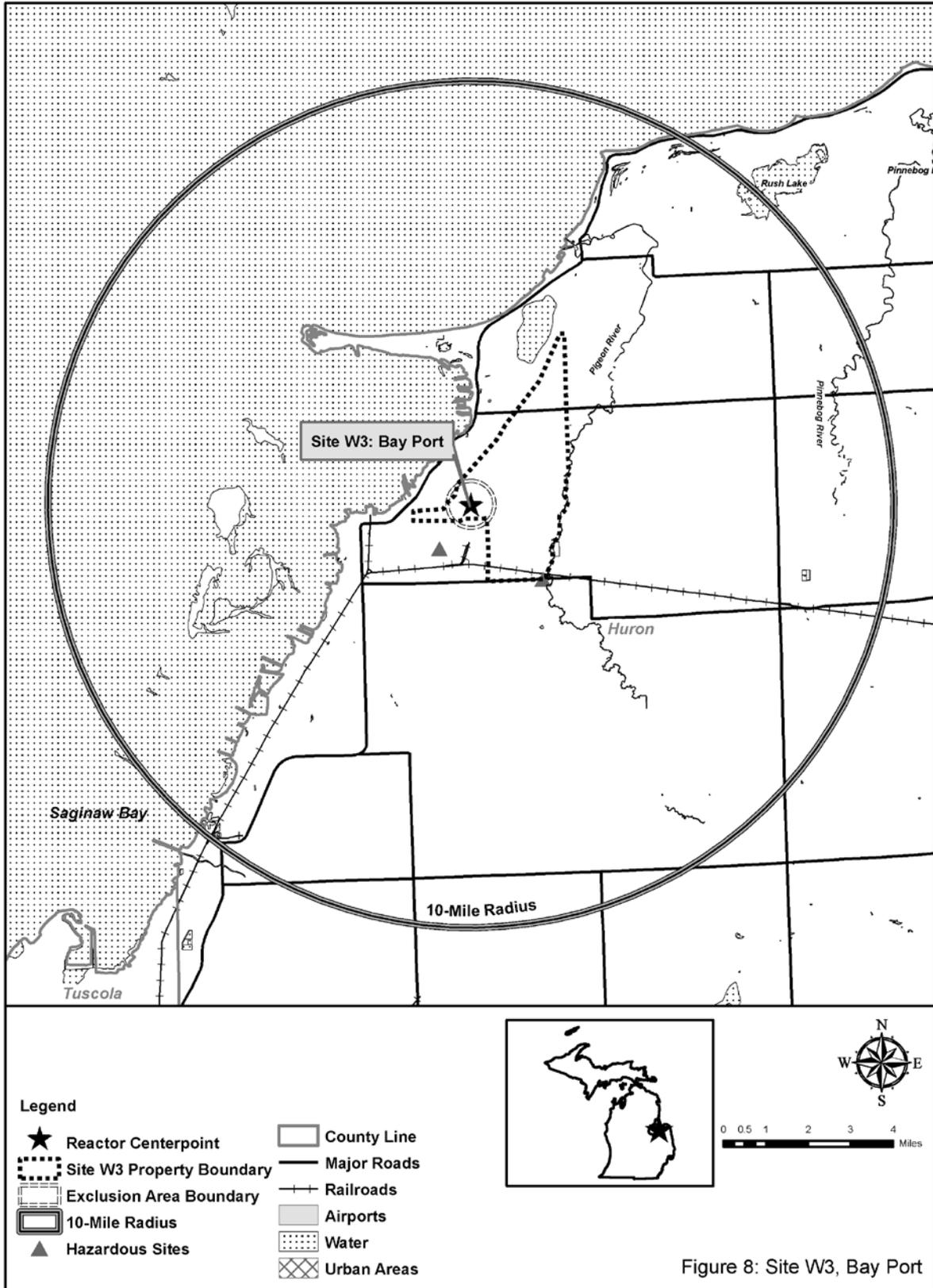
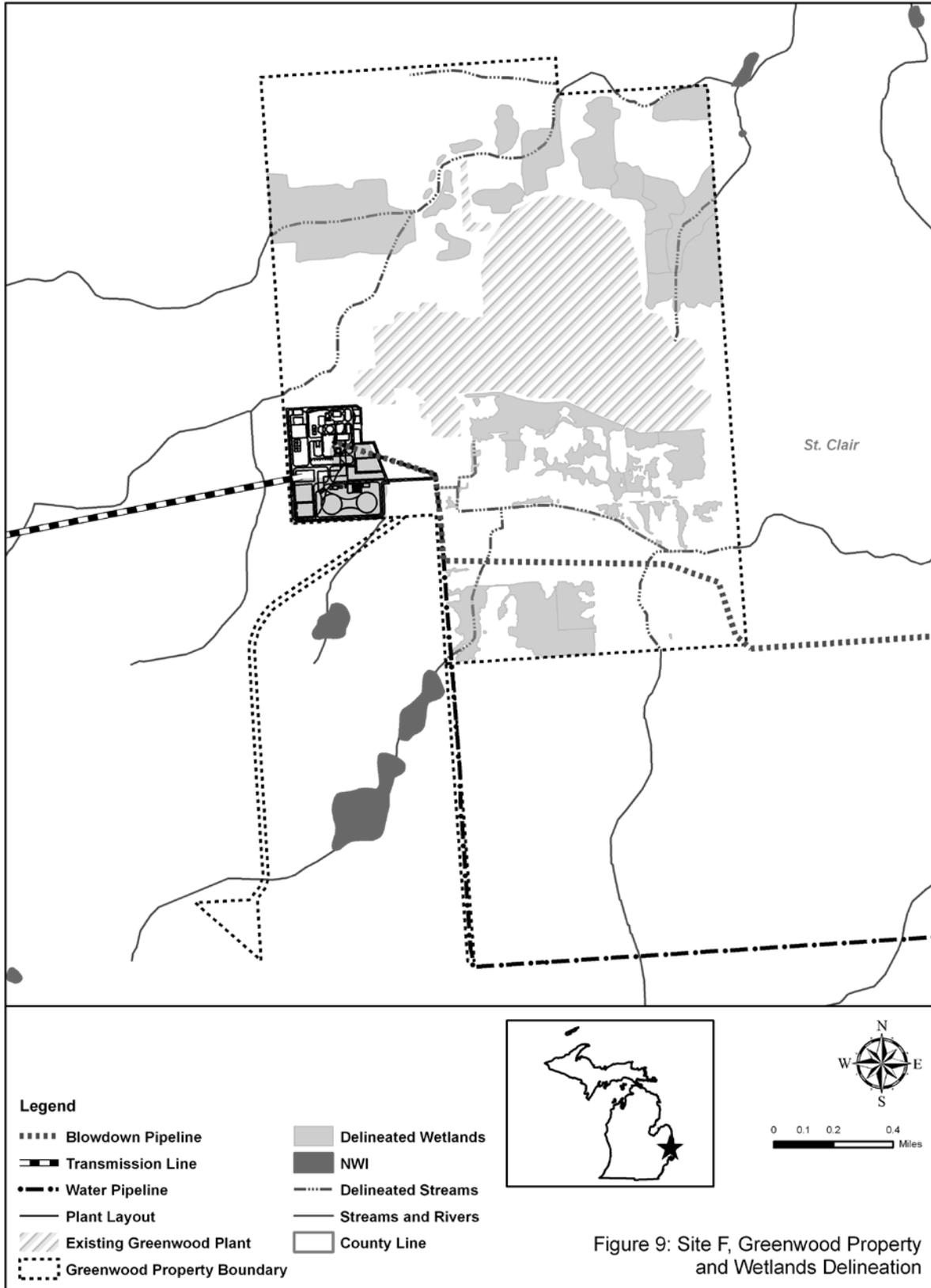


Figure 8: Site W3, Bay Port



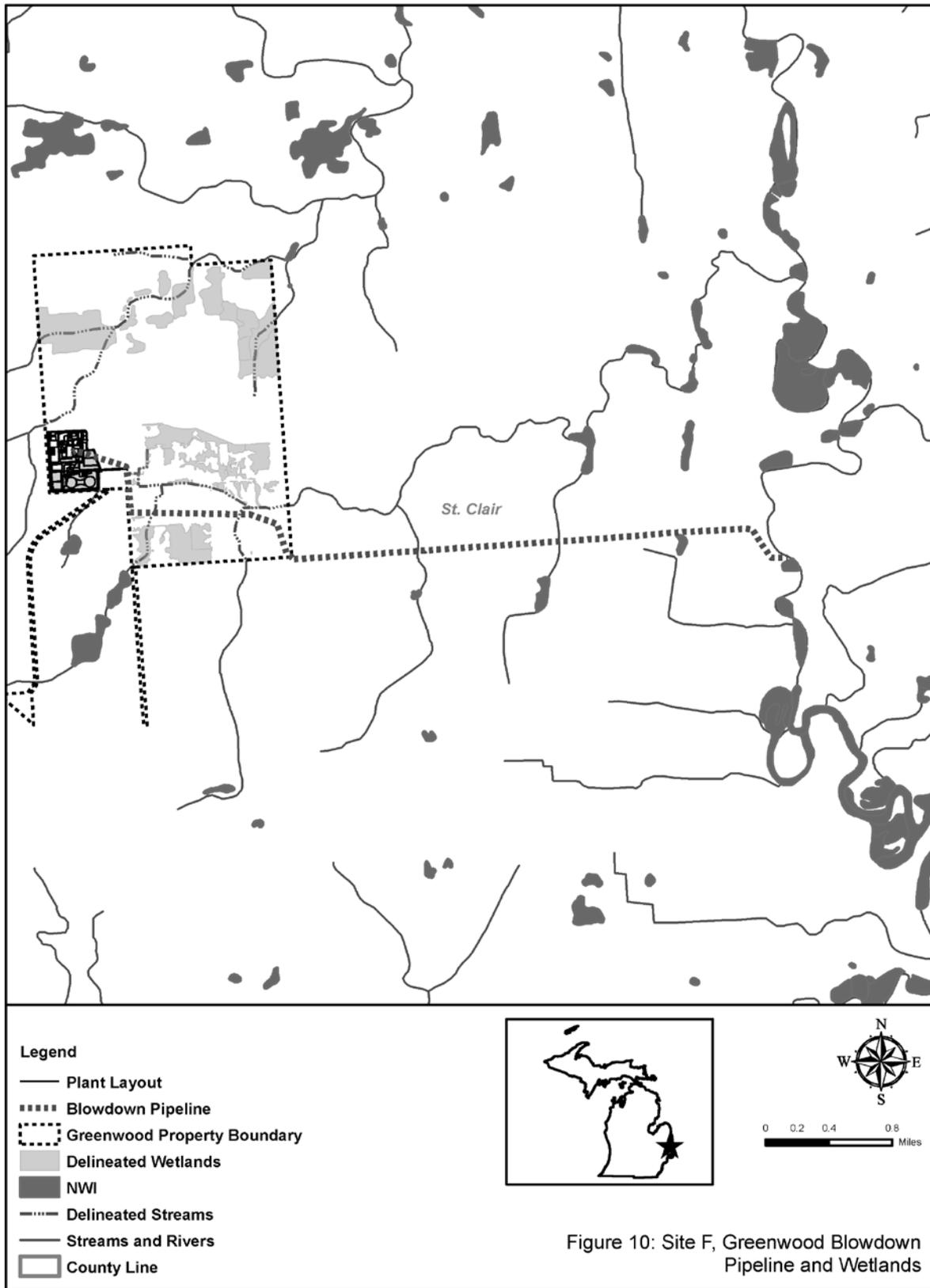


Figure 10: Site F, Greenwood Blowdown Pipeline and Wetlands

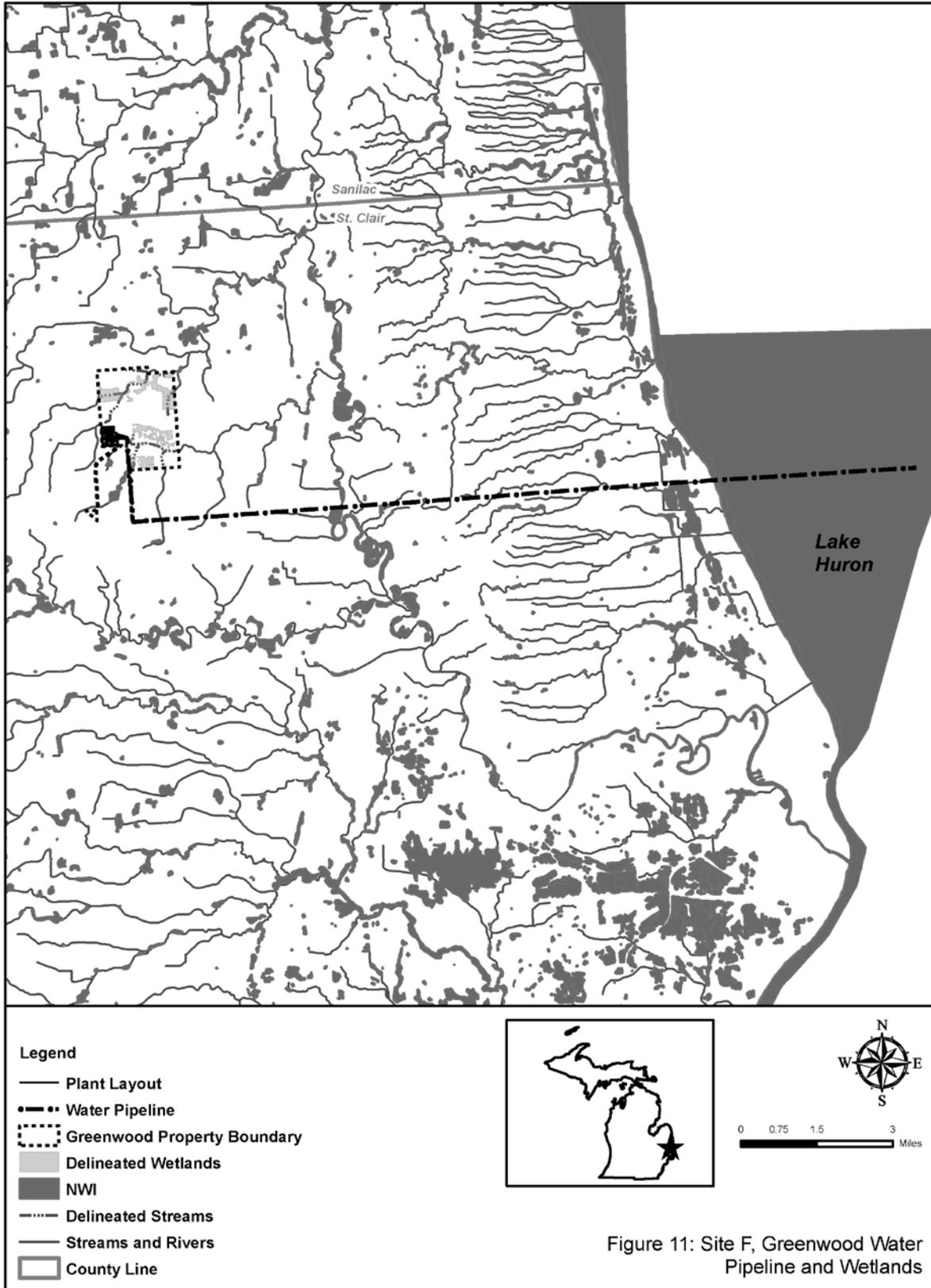


Figure 11: Site F, Greenwood Water Pipeline and Wetlands

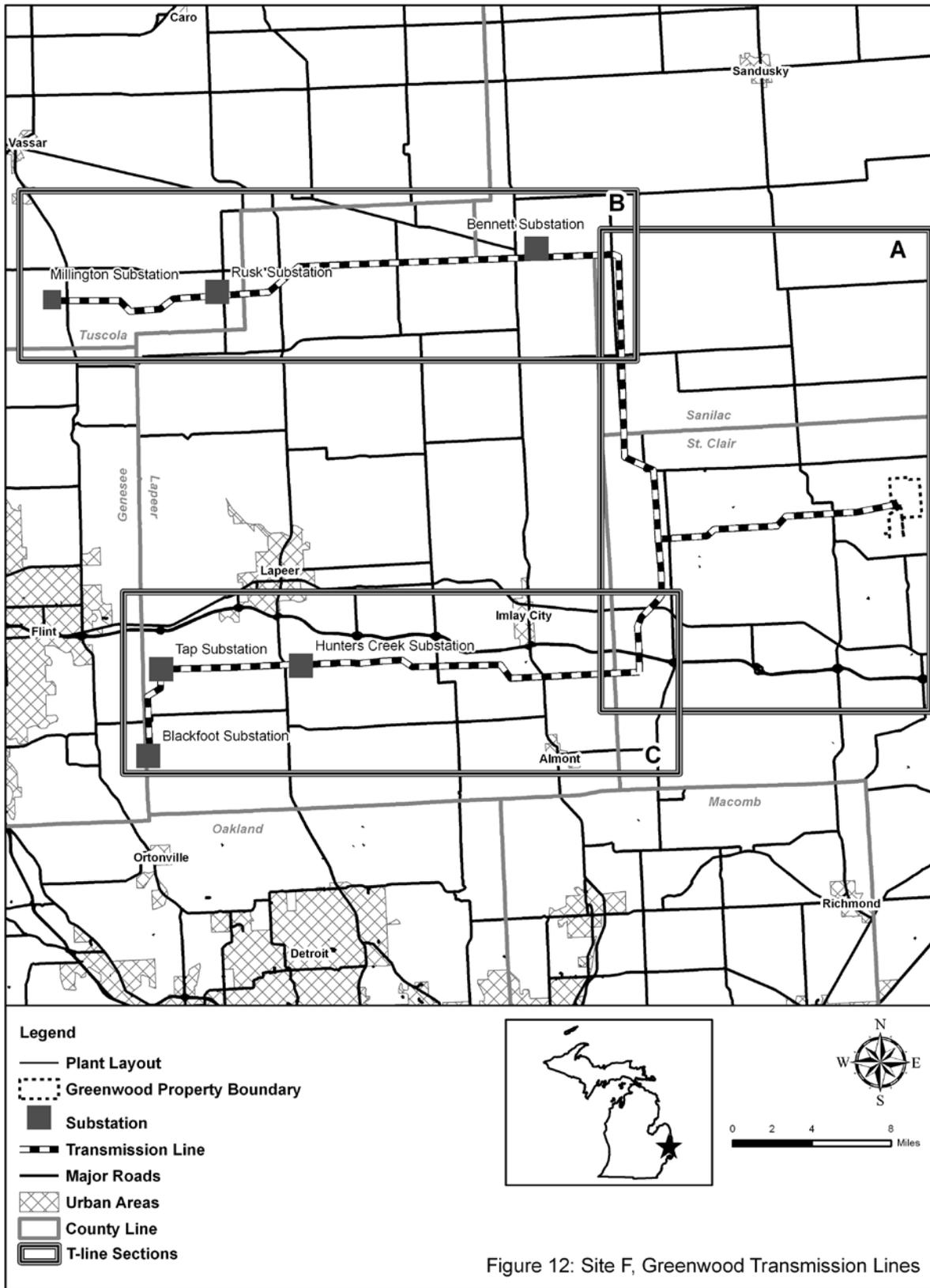
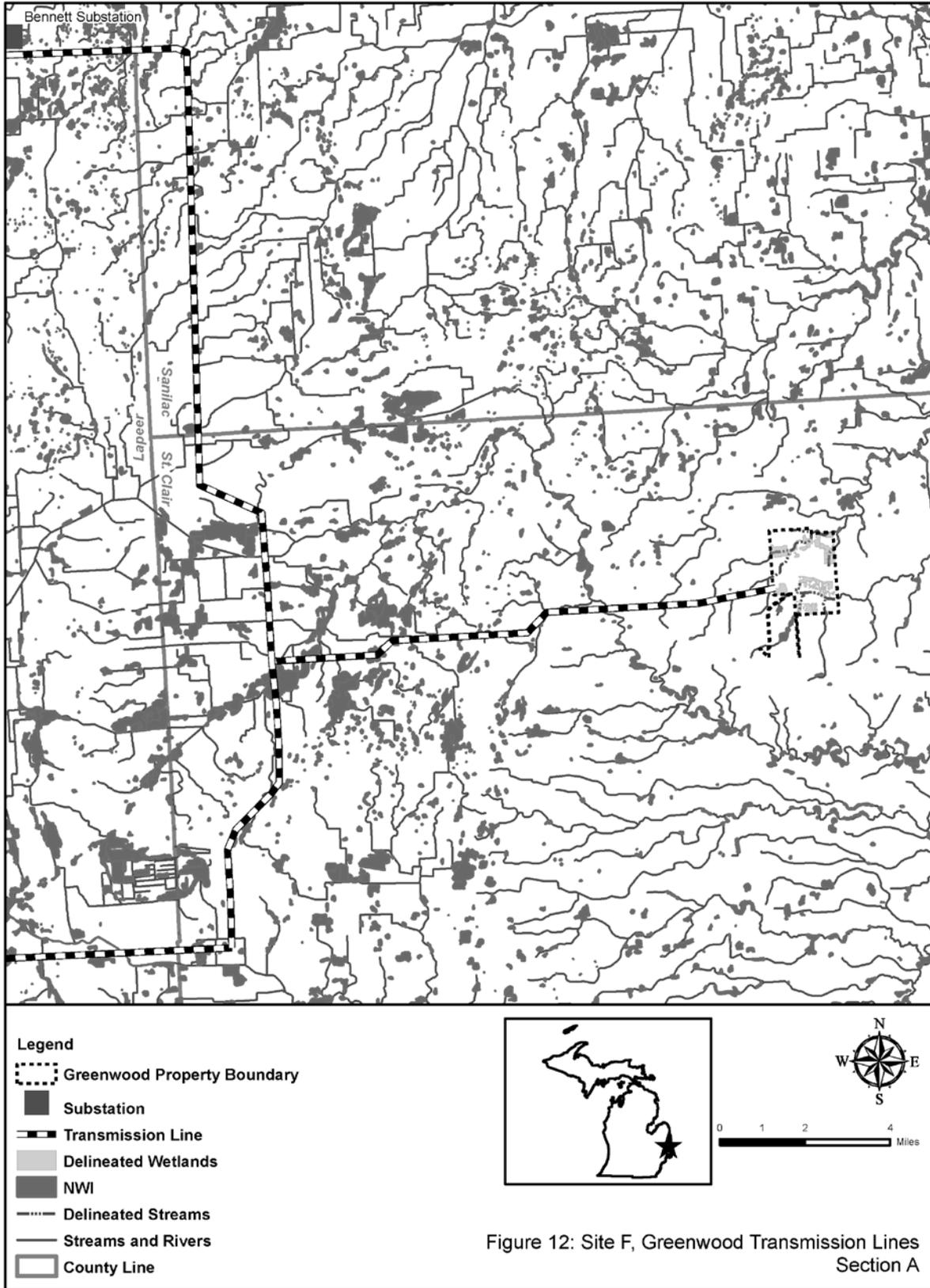


Figure 12: Site F, Greenwood Transmission Lines





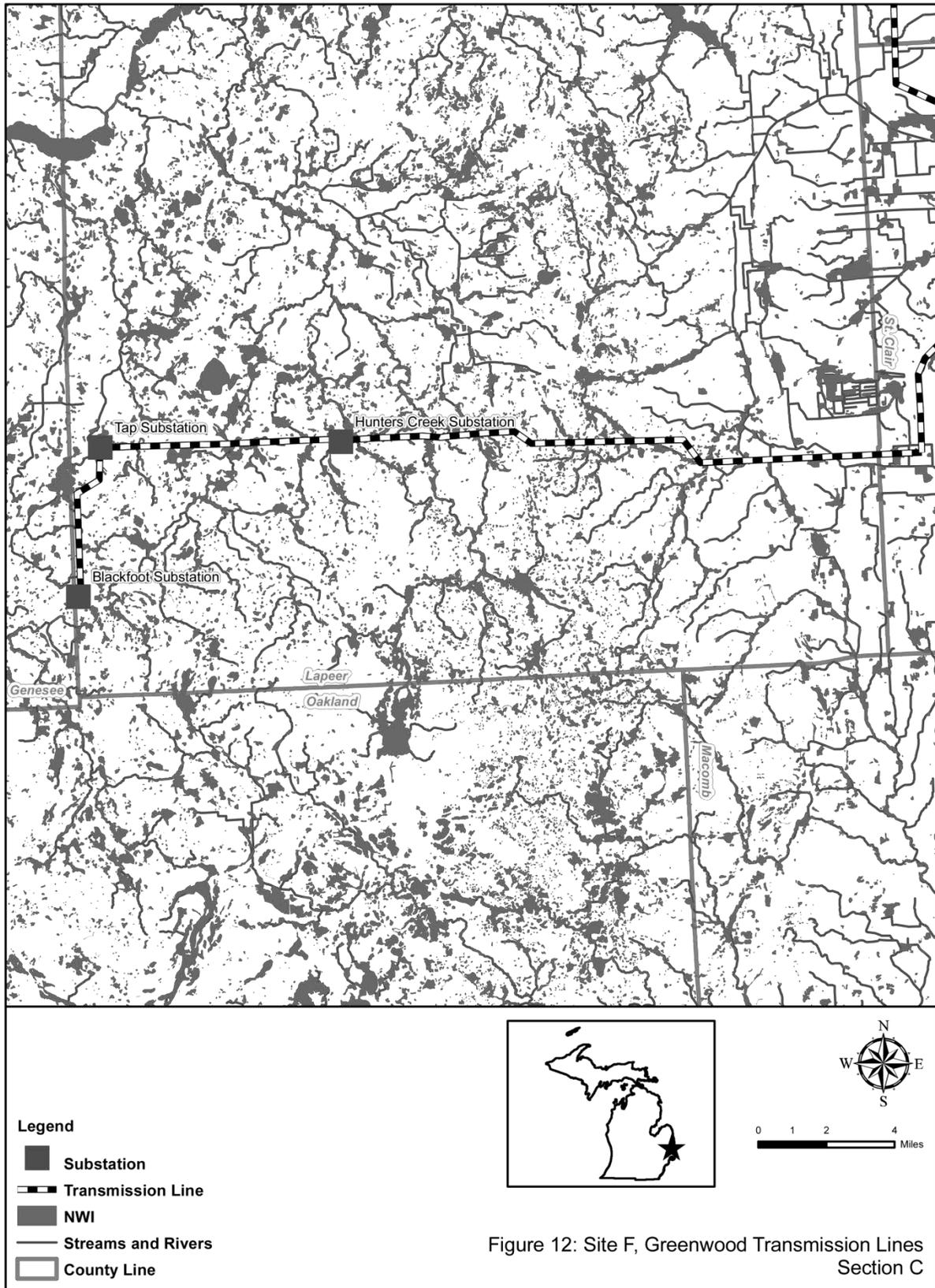
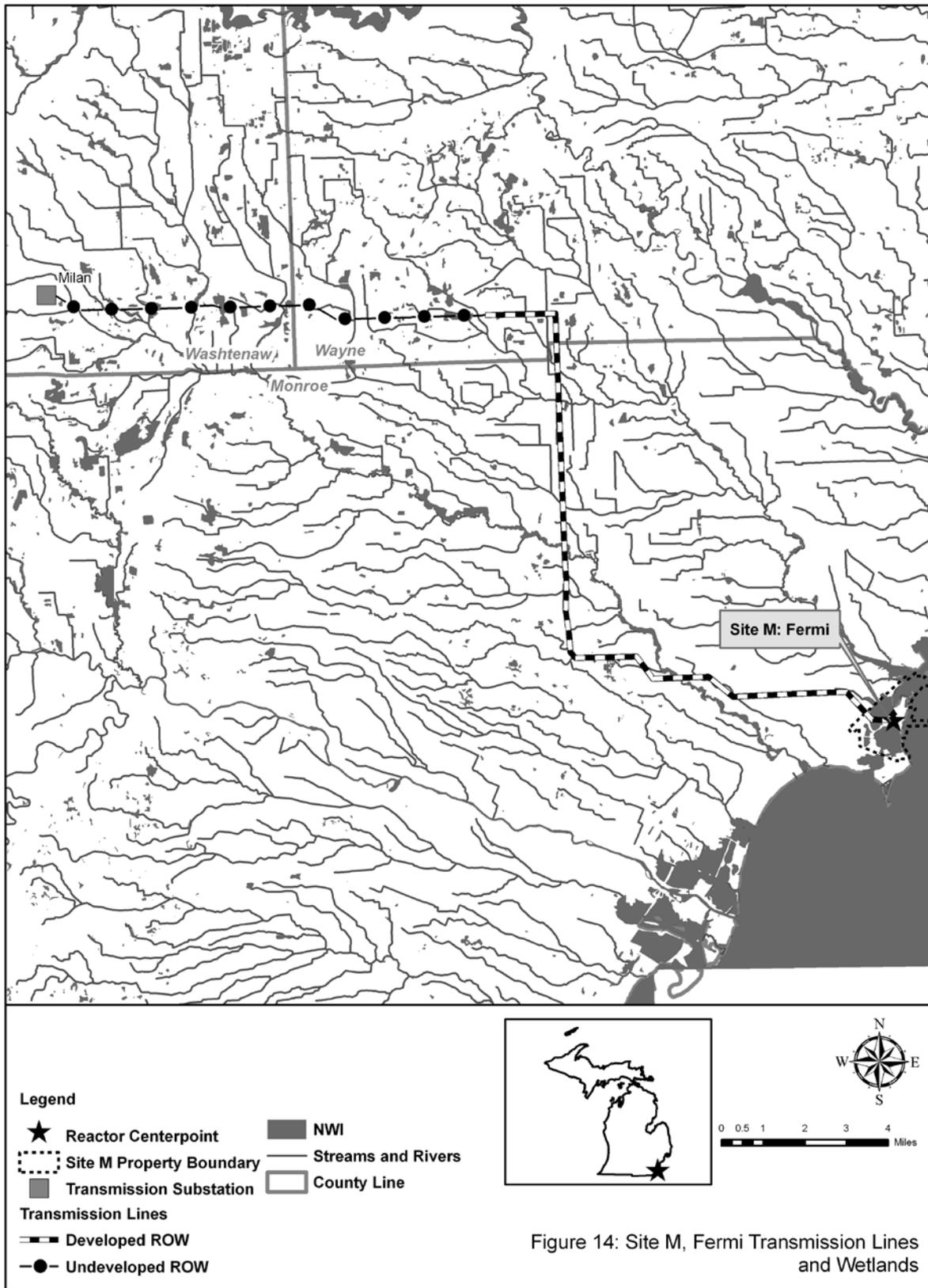


Figure 12: Site F, Greenwood Transmission Lines  
Section C



Figure 13: Site M, Fermi Transmission Lines



## **Attachment 4-3**

### **Section 4: Proposed Project Purpose, Intended Use, and Alternatives Considered**

**USACE RAI Response – Section 5 Alternatives Analysis  
(following 21 pages)**

**Note:**

This attachment provides supplemental information regarding Detroit Edison's alternatives analysis. This document was prepared as part of the USACE Supplemental RAI Response. Figures presented in the Supplemental RAI Response have been superseded by the figures included in the Joint Permit Application. There may be differences in the dimensions and acreages between the Supplemental RAI Response and the information presented in the Joint Permit Application. The headers, footers and page numbers apply to the original document.

**5.0 ALTERNATIVES ANALYSIS**

Detroit Edison sought to avoid, minimize, and then mitigate unavoidable impacts to waters of the United States, including wetlands, associated with the proposed Fermi 3 project by evaluating the practicable alternatives. Detroit Edison's alternatives analysis illustrates that use of the Fermi site is the least environmentally damaging practicable alternative (LEDPA) that fulfills the project's purpose and need.

**5.1 Alternative Sites**

Detroit Edison reviewed the eight candidate sites identified in Section 9.3 of the Fermi 3 Combined License Application (COLA) Environmental Report within the context of the CWA Section 404(b)(1) guidelines to identify a LEDPA site. The details of that analysis are presented in Appendix B.

First Detroit Edison performed a practicability assessment that considered various technical, economic, safety, and environmental criteria that reflect the overall purpose of the project. Sites that passed the practicability assessment 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. 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 provided in Table 5.1-1. Based on the overall potential impacts to waters of the U.S., the Fermi site would be the LEDPA.

**Table 5.1-1. Potential Construction Impacts for the Alternative Sites**

<b>Resource Type</b>	<b>Fermi site</b>	<b>Greenwood site</b>
Wetlands	154 acres 6.709E06 sq. feet	300 acres 1.306E07 sq. feet
Streams	7304 linear feet	3.470E04 linear feet
Open water (Lake Erie)	0.08 acre 3600 sq. feet	NA <sup>a</sup>
Open water (inland)	5.2 acres 2.256E05 sq. feet	NA

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

## **5.2 Facility 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. Three project layout alternative scenarios were evaluated. These alternative layouts are identified as Revision 0, Revision 1, and the Preferred Alternative (Revision 2) (Figures 5.2-1, 5.2-2, and 5.2-3, respectively).

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 three 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 (see Figure 5.2-4). 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 (preferred) site layouts presented in the Fermi 3 Environmental Report, were evaluated using the updated Fermi site wetland delineation provided in this current analysis. Therefore, the acres of impact presented here differ slightly from those presented in Revision 0 and Revision 1 of the Environmental Report. A description of the wetland delineation updates is provided in Section 2.7.1.

#### **5.2.1 Revision 0 Site Layout (Figure 5.2-1)**

Revision 0 is the site layout presented in the original 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 blow-down 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 blow-down 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 blow-down 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 blow-down 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 0 Site Layout Impact Summary**

The total construction area anticipated to be disturbed in the Revision 0 site layout is approximately 260 acres. The Revision 0 site layout and associated wetland and open water impacts are presented in Figure 5.2-1. The Revision 0 site layout results in a total of 151.43 acres of wetland impacts, 1.88 acres of nonjurisdictional wetland impacts, and 14.05 acres of open water impacts. Based on the proposed construction activities, these impacts include:

- 62.05 acres of wetland and 0.55 acre of open water impacts due to cooling tower construction,
- 30.56 acres of wetland and 1.88 acres of nonjurisdictional wetland impacts due to Fermi 3 parking,
- 43.61 acres of wetland impacts due to Fermi 2 parking and warehouse,
- 14.48 acres of wetland and 1.03 acre of open water impacts associated with the dredged spoils disposal activities,
- 0.74 acre of wetland and 5.18 acres of open water impacts associated with access road and power block construction, and
- 7.3 acres of open water impacts due to intake structure, barge docking facility, and discharge pipe construction.

Table 5.2-1 summarizes the impacts that would result from the construction of the Revision 0 site layout.

**Table 5.2-1. Potential Fermi 3 Construction Impacts for Revision 0**

Wetland Type <sup>a</sup>	Impacts (acres)	Impacts (square feet)
PEM wetland <sup>b</sup>	49.66	2.163E06
PFO wetland	96.66	4.210E06
PSS wetland	7.00	3.048E05
Open water	14.05	6.122E05
Total	167.37	7.291E06

<sup>a</sup> Wetland types present on the Fermi site include palustrine emergent marsh (PEM), palustrine forested (PFO), and palustrine scrub-shrub (PSS).

<sup>b</sup> Includes 1.88 acres (8.188E04 sq. feet) of nonjurisdictional PEM wetland impacts.

### **5.2.2 Revision 1 Site Layout (Figure 5.2-2)**

Based on completion of the Ducks Unlimited wetland study in July 2008 (Reference 1), 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 NRC environmental audit in February 2009, Detroit Edison informed the NRC, Michigan Department of Environmental Quality (MDEQ, now Michigan Department of Natural Resources and Environment [MDNRE]), 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 Primary Access Portal [PAP], parking, office buildings, warehousing, and shops). The Revision 1 site layout was submitted to the NRC in December of 2009 (Reference 2).

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 NOC/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 *ITCTransmission* (owner and operator of the switchyard).

### ***Revision 1 Site Layout Impact Summary***

The total construction area anticipated to be disturbed is approximately 190 acres. The Revision 1 site layout and associated wetland and open water impacts are presented in Figure 5.2-2. Construction of the Revision 1 site layout would result in a total of 36.68 acres of wetland impacts and 12.58 acres of open water impacts. Of these total impacts, 11.22 acres would be permanent and 38.03 acres would be temporary. Based on the proposed construction activities, these impacts include:

- 2.79 acres of wetland impacts due to cooling tower construction,
- 0.51 acres of wetland impacts due to access road development,
- 1.88 acres of wetland impacts (nonjurisdictional) associated with construction laydown areas,
- 2.49 acres of wetland and 5.18 acres of open water impacts associated with the Fermi 2 and Fermi 3 common warehouse, parking, VIB and PAP,
- 0.26 acre of wetland conversion impacts due to vegetation clearance in forested wetland areas within the zone of influence for the meteorological tower,
- 26.75 acres of wetland impacts due to construction laydown areas,
- 0.72 acre of wetland impacts associated with the dredged spoils disposal activities,
- 1.28 acres of wetland impacts due to spoils disposal, and
- 7.40 acres of open water impacts due to intake structure, barge docking facility, and discharge pipeline construction.

Table 5.2-2 summarizes the impacts that would result from the construction of the Revision 1 site layout.

**Table 5.2-2. Potential Fermi 3 Construction Impacts for Revision 1**

<b>Wetland Type</b>	<b>Temporary Impacts</b>	<b>Permanent Impacts</b>
PEM wetland	9.96 acres 4.338E05 sq. ft	3.65 acres <sup>a</sup> 1.591E05 sq. ft
PFO wetland	16.58 acres 7.220E05 sq. ft	2.39 acres 1.042E05 sq. ft
PSS wetland	4.10 acres 1.786E05 sq. ft	0
Open water	7.40 acres 3.222E05 sq. ft	5.18 acres 2.257E05 sq. ft
Total	36.68 acres 1.598E06 sq. ft	11.22 acres 4.889E05 sq. ft

<sup>a</sup> Includes 1.88 acres (8.188E04 sq. feet) of nonjurisdictional PEM wetland impacts.

### 5.2.3 Preferred Site Layout (Revision 2 - Figure 5.2-3)

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 MDNRE 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 MDNRE 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 (0.60 acres of forested and 0.05 acre of emergent wetland impacts) and the Dredged Spoils Disposal Basin (0.72 acre of forested wetland impacts).
- 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 (Revision 2) Impact Summary***

The total construction area anticipated to be disturbed is approximately 190 acres. The Preferred Alternative site layout and associated wetland and open water impacts are presented in Figure 5.2-3. Construction of the preferred site layout would result in a total of 31.13 acres of jurisdictional wetland impacts, 1.88 acres of nonjurisdictional wetland impacts, and 5.26 acres of open water impacts. Of these

total impacts, 14.52 acres would be permanent and 23.75 acres would be temporary. Based on the proposed construction activities, these impacts include:

- 2.79 acres of wetland impacts due to cooling tower construction,
- 0.42 acres of wetland impacts due to access road development,
- 1.88 acres of wetland impacts (nonjurisdictional) associated with Fermi 3 switchyard construction
- 2.49 acres of wetland and 5.18 acres of open water impacts associated with the Fermi 2 and Fermi 3 common warehouse, parking, VIB and PAP,
- 4.06 acres of wetland impacts due to Fermi 2 and Fermi 3 transmission construction,
- 18.70 acres of wetland impacts due to construction laydown areas,
- 2.69 acres of wetland impacts due to spoils disposal, and
- 0.08 acre of open water impacts<sup>1</sup> due to discharge pipeline construction.

Table 5.2-3 summarizes the impacts that would result from the construction of the Preferred Alternative site layout.

**Table 5.2-3. Potential Fermi 3 Construction Impacts of the Preferred Alternative**

Wetland Type	Temporary Impacts	Permanent Impacts
PEM wetland	15.13 acres 6.589E05 sq. ft	5.77 acres <sup>a</sup> 2.513E05 sq. ft
PFO wetland	3.27 acres 1.423E05 sq. ft	3.57 acres 1.556E05 sq. ft
PSS wetland	5.28 acres 2.299E05 sq. ft	0
Open water	0.08 acres 3600 sq. ft	5.18 acres 2.257E05 sq. ft
Total	23.75 acres 1.035E06 sq. ft	14.52 acres 6.325E05 sq. ft

<sup>a</sup> Includes 1.88 acres (8.,88E04 sq. feet) of nonjurisdictional PEM wetland impacts.

### 5.3 Summary of Project Alternatives and LEDPA Analysis

Table 5.3-1 compares potential impacts to wetlands on the Fermi site to the three 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

<sup>1</sup> These open water impacts include the area of dredging in Lake Erie associated with installation of the discharge pipeline beyond the operations and maintenance dredging activity currently authorized by USACE Permit Number 88-001-040-8 and MDEQ Permit Number 04-58-0009-P.

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 is the only Fermi 3 component 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.

Overall impacts to wetlands were reduced in the Preferred Alternative (Revision 2) from those in Revisions 0 and 1. There would be an approximately 120-acre decrease in wetland impacts from Revision 0 and an approximately 4-acre decrease in impacts from Revision 1. Open water impacts were also reduced in the Preferred Alternative from Revisions 0 and 1. The Preferred Alternative also presents less total impact to those Michigan Natural Communities that are considered rare and imperiled. These include Great Lakes marsh and southern swamp (southern hardwood swamp). For the rare and

imperiled wetland types, there was an approximately 125-acre decrease in impacts from Revision 0 to the Preferred Alternative and an approximately 10-acre decrease in impacts from Revision 1 to the Preferred Alternative. All the permanent and temporary wetland impacts in the Revision 2 site layout were unavoidable given the ten constraints previously outlined. 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.

### **References**

1. Ducks Unlimited, DTE Fermi II Site, Monroe County, Wetland Investigation Report, July 2008
2. Letter from Peter W. Smith (Detroit Edison) to USNRC, "Detroit Edison Company Response to NRC Requests for Additional Information Related to the Environmental Review," NRC3-09-0017, dated December 23, 2009..

**Table 5.3-1 Comparison of Impacts for Alternative Site Layouts**

Type	Revision 0	Revision 1	Preferred Alternative
<b>Wetland Impacts by Type</b>			
PEM wetland <sup>a</sup>	49.66 acres 2.163E06 sq. ft	13.61 acres 5.929E05 sq. ft	20.90 acres 9.102E05 sq. ft
PFO wetland	96.66 acres 4.210E06 sq. ft	18.97 acres 8.262E05 sq. ft	6.84 acres 2.979E05 sq. ft
PSS wetland	7.00 acres 3.048E05 sq. ft	4.10 acres 1.786E05 sq. ft	5.28 acres 2.29E059 sq. ft
Total wetlands	153.31 acres 6.678E06 sq. ft	36.68 acres 1.598E06 sq. ft	33.01 acres 1.438E06 sq. ft
Open water	14.05 acres 6.122E05 sq. ft	12.58 acres 5.479E05 sq. ft	5.26 acres 2.293E05 sq. ft
<b>Wetland Impacts by Michigan Natural Community<sup>b</sup></b>			
Rare and imperiled: Great Lakes marsh	47.53 acres 2.071E06 sq. ft	10.38 acres 4.524E05 sq. ft	12.86 acres 5.603E05 sq. ft
Rare and imperiled: southern hardwood swamp	92.19 acres 4.016E06 sq. ft	14.08 acres 6.131E05 sq. ft	1.95 acres 8.493E04 sq. ft
Southern shrub carr	7.00 acres 3.048E05 sq. ft	3.92 acres 1.709E05 sq. ft	3.91 acres 1.703E05 sq. ft
PEM wetland – coastal	0	0.80 acres 3.469E04 sq. ft	0.80 acres 3.469E04 sq. ft
PEM wetland <sup>a</sup>	2.13 acres 9.258E04 sq. ft	2.43 acres 1.058E05 sq. ft	7.24 acres 3.153E05 sq. ft
PFO wetland	4.47 acres 1.948E05 sq. ft	4.89 acres 2.131E05 sq. ft	4.89 acres 2.129E05 sq. ft
PSS wetland	0	0.18 acres 7698 sq. ft	1.37 acres 5.956E04 sq. ft
Open water	14.05 acres 6.122E05 sq. ft	12.58 acres 5.479E05 sq. ft	5.26 acres 2.293E05 sq. ft

<sup>a</sup> Includes 1.88 acres (8.188E047 sq. feet) 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). At Fermi, these communities include Wetlands C, M and the South Canal (Great Lakes marsh) and I, F, BB/EE/FF and L (southern swamp) because they are relatively intact systems with vegetation communities typical of Great Lakes marshes and southern swamps. Wetland E is a combination of emergent marsh/wet meadow and southern shrub carr with direct surface water connection to Lake Erie. The other Fermi site wetlands do not readily fall into a natural community category due to fragmentation and disturbance factors. 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.





Figure 5.2-3 Preferred Site Layout and Wetland Impacts



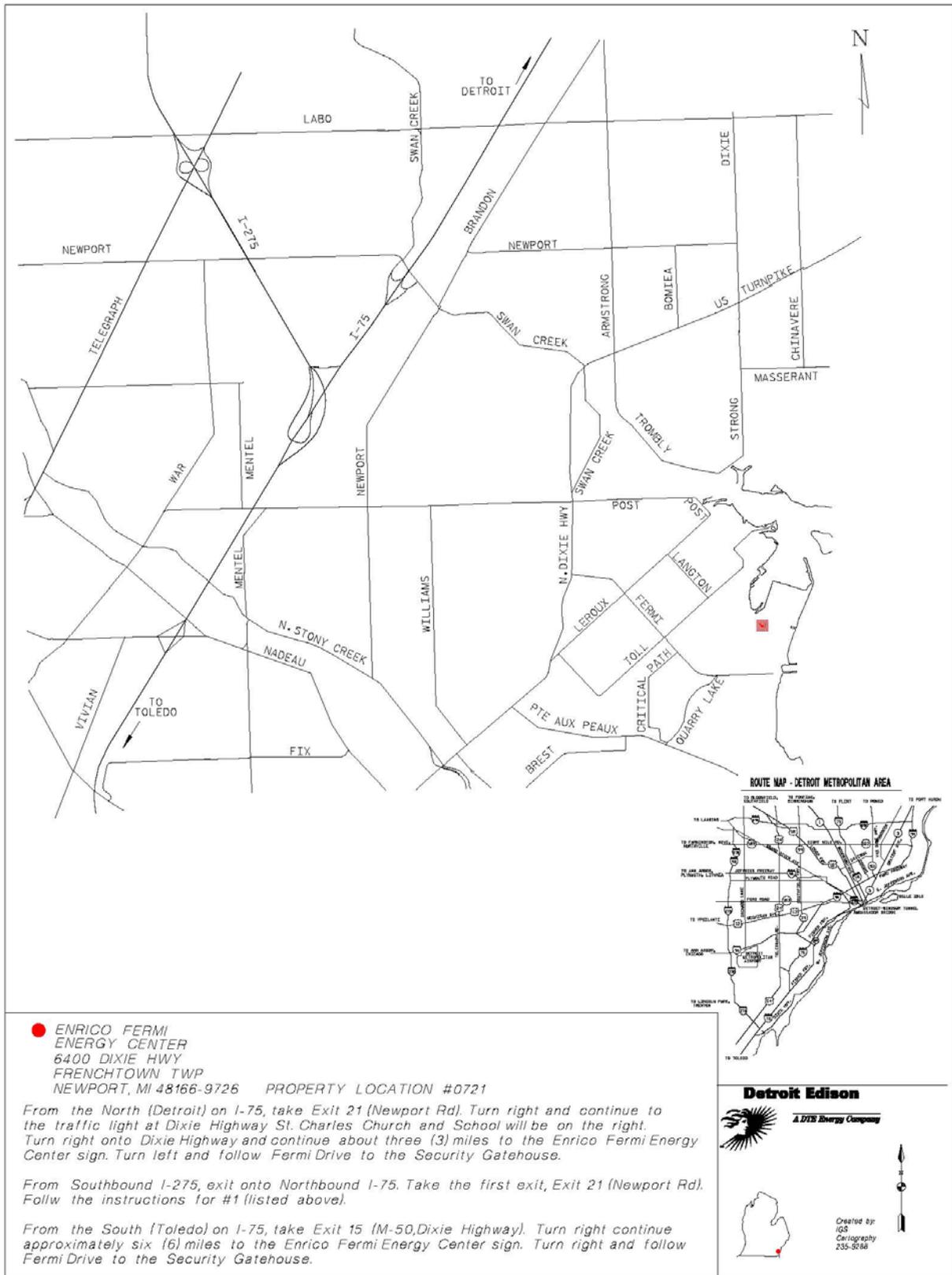
Figure 5.2-4 Separation of Fermi 2 from Fermi 3 Construction Activities



**Attachment 5-1**

Section 5:  
Locating Your Property Site

Project Location Map  
(following 1 page)



**Attachment 6-1**

Section 6:  
All Other Agency Authorizations Required for the Proposed Activity  
(following 10 pages)

SECTION 6: AUTHORIZATIONS REQUIRED FOR THE PROPOSED ACTIVITY

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

**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
<b>FEDERAL AUTHORIZATIONS</b>							
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**

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.
<b>STATE AUTHORIZATIONS</b>							
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.

**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 - 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 R336.1201	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) MCL R336.1210 - R336.1218 40 CFR 70	Air Permit					Operation of a source of air pollutants.
MDEQ - Environmental Science and Services Division	Coastal Zone Management Act 16 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 - Land and Water Management Division	MCL 324.30306 et seq. 33 U.S.C. 1344, Federal Water Pollution Control Act, Section 404	Wetland Protection Permit	Included in Joint Permit Application	June 2011			Any projects on or in wetlands regulated by the State of Michigan.

**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 - Land and Water Management Division	MCL 324.32501 et seq.	Great Lakes Bottomlands Permit	Included in Joint Permit Application	June 2011			Dredging, filling, modifying, constructing, enlarging, or extending 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 Bureau	MCL 324.32723	Water Withdrawal Permit					Withdrawals from the Great Lakes and connecting waterways of over 5,000,000 gallons per day.
MDEQ - Water Bureau	MCL 324.32705	Water Withdrawal Registration					Development of the withdrawal capacity on the property of an additional 100,000gallons of water per day from the waters of the state.
MDEQ - Water Bureau	MCL 324.4101 et seq.	Wastewater Facilities Construction Permit/Part 41 Construction Permit					Construction or modification of sewers pumping stations, force mains, and treatment plants.
MDEQ - Water Bureau	33 U.S.C. 1251 et seq. MCL 324.3101 et seq. MCL 324.3301 et seq.	National Pollutant Discharge Elimination System (NPDES) Permit		May 13, 2011			Discharge of waste, waste effluent and certain categories of storm water runoff into the surface waters of Michigan during operation of the facility.
MDEQ - Water Bureau	MCL R323.2190	NPDES Permits, Stormwater Construction Permit					A Permit by Rule may be obtained to authorize storm water discharges 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 Bureau	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 Bureau	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 Bureau	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	If 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.
<b>LOCAL AUTHORIZATIONS</b>							
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	If 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.

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.

**Attachment 8-1**

Section 8:  
Adjacent/Riparian and Impacted Owners  
(following 5 pages)

**Table 8-1. Fermi Site Adjacent Property Owners**

MAP ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
1	07 529 018 10	MICHIGAN NATURE ASSOCIATION		326 E GRAND RIVER AVE	WILLIAMSTON	MI	48895
2	07 529 018 00	UNITED STATES FISH & WILDLIFE SERVICE BISHOP HENRY WHIPPLE FEDERAL BLDG		1 FEDERAL DRIVE	FORT SNELLING	MN	55111-4056
3	07 529 015 20	NEWPORT BEACH MARINA 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 TRANSMISSION 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 NATURAL 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	KAY	2682 NADEAU RD	MONROE	MI	48162

**Table 8-1. Fermi Site Adjacent Property Owners**

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
26	07 789 124 00	RORKE HORNEY	CHASITY & DON III ROS	5908 POINTE AUX PEAUX RD	NEWPORT	MI	48166
27	07 789 125 00	GONZALEZ	MARIA & SHIRLEY	3276 CHIPPEWA	MONROE	MI	48162
28	07 789 126 00	MANOR BROOKS	GAYLE & THELMA 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	MI	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**

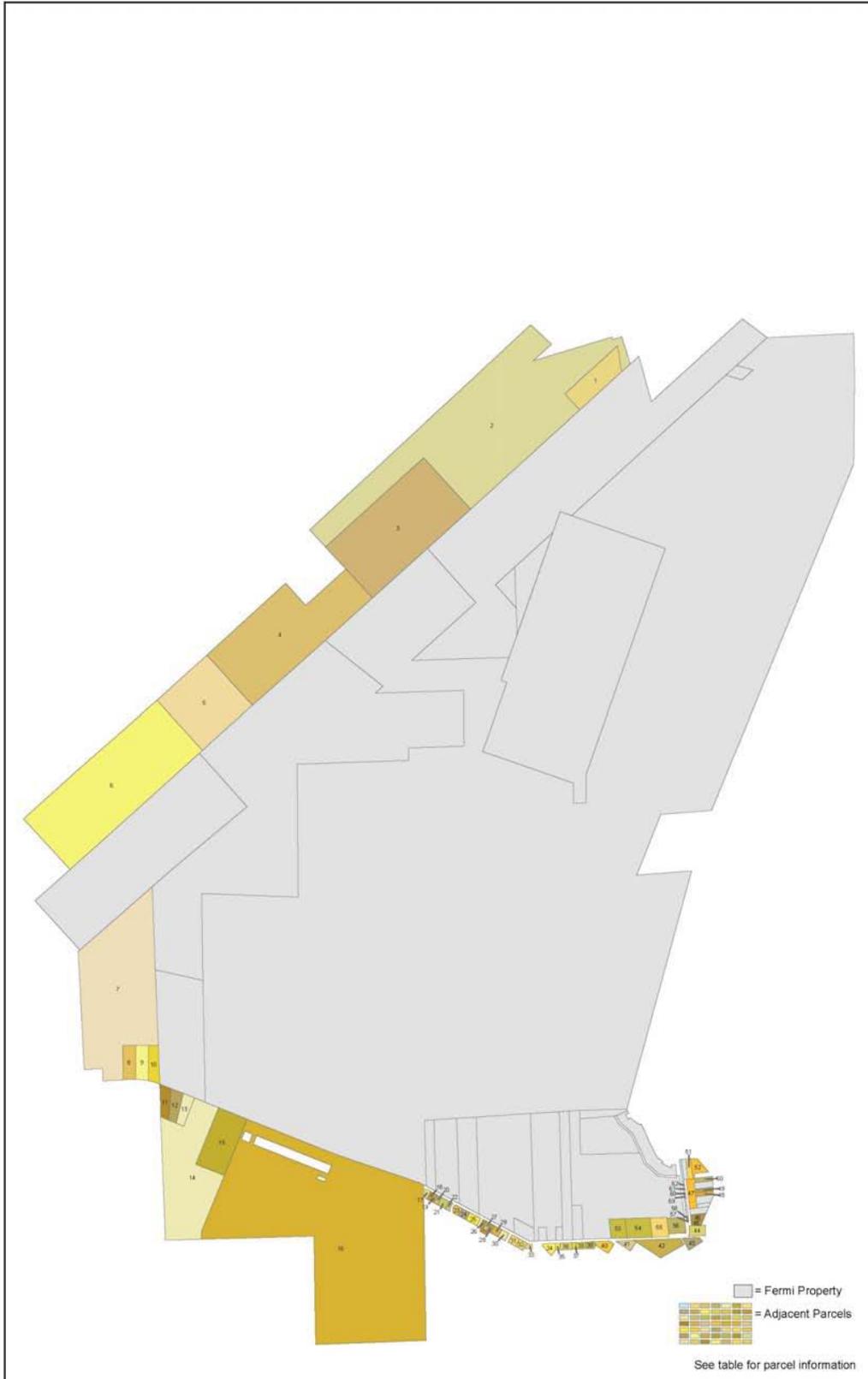
MAP ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
46	07 852 002 00	KENNEDY BAKER QUALEY	DEBRA K MARILYN A & JOHN J	4507 GODDARD	NEWPORT	MI	48166
47	07 852 018 00	LONG EST SUMMER RESORT ASSOC		4802 LONG	NEWPORT	MI	48166
48	07 852 008 00	DIEHL	JOHN H & DEBORAH L	4772 LONG	NEWPORT	MI	48166
49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

**Table 8-1. Fermi Site Adjacent Property Owners**

MAP ID	PARCEL ID	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
NA	NA	MONROE COUNTY ROAD COMMISSION COUNTY HIGHWAY ENGINEER 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**

Section 10:  
Projects Impacting Wetlands or Floodplains or Located on an Inland  
Lake or Stream or a Great Lake

Warehouse, PAP/VIB, and Parking Garage  
(following 6 pages)

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

## OPEN WATER H AND U

Water Level Elevation       On a Great Lake use IGLD 85

### A. PROJECTS REQUIRING FILL

Check all that apply:

Floodplain fill     Wetland fill     riprap     seawall     culvert     other

Activity Area	FILL DIMENSIONS				
	Length (FT)	Width (FT)	Max Depth (FT)	Total Fill Volume (CY)	Max Water Depth in fill area (FT)
<b>Open Water U</b>	1,263	105	8	15,329	3
<b>Open Water H</b>	506	353	7	27,286	3

Refer to Figure 10-1A

Type of clean fill       pea stone     sand     gravel     wood chips     other

Mostly in situ material.

Refer to Attachment 12-7 for information specific to wetland fill.

Will filter fabric be used under proposed fill?       No     Yes

Source of fill       on-site     commercial     other

In situ materials with commercial sand and gravel used for construction of roads and other facilities.

Refer to Figure 2-1 for location of proposed on-site in situ source of fill material.

Fill will extend across water.

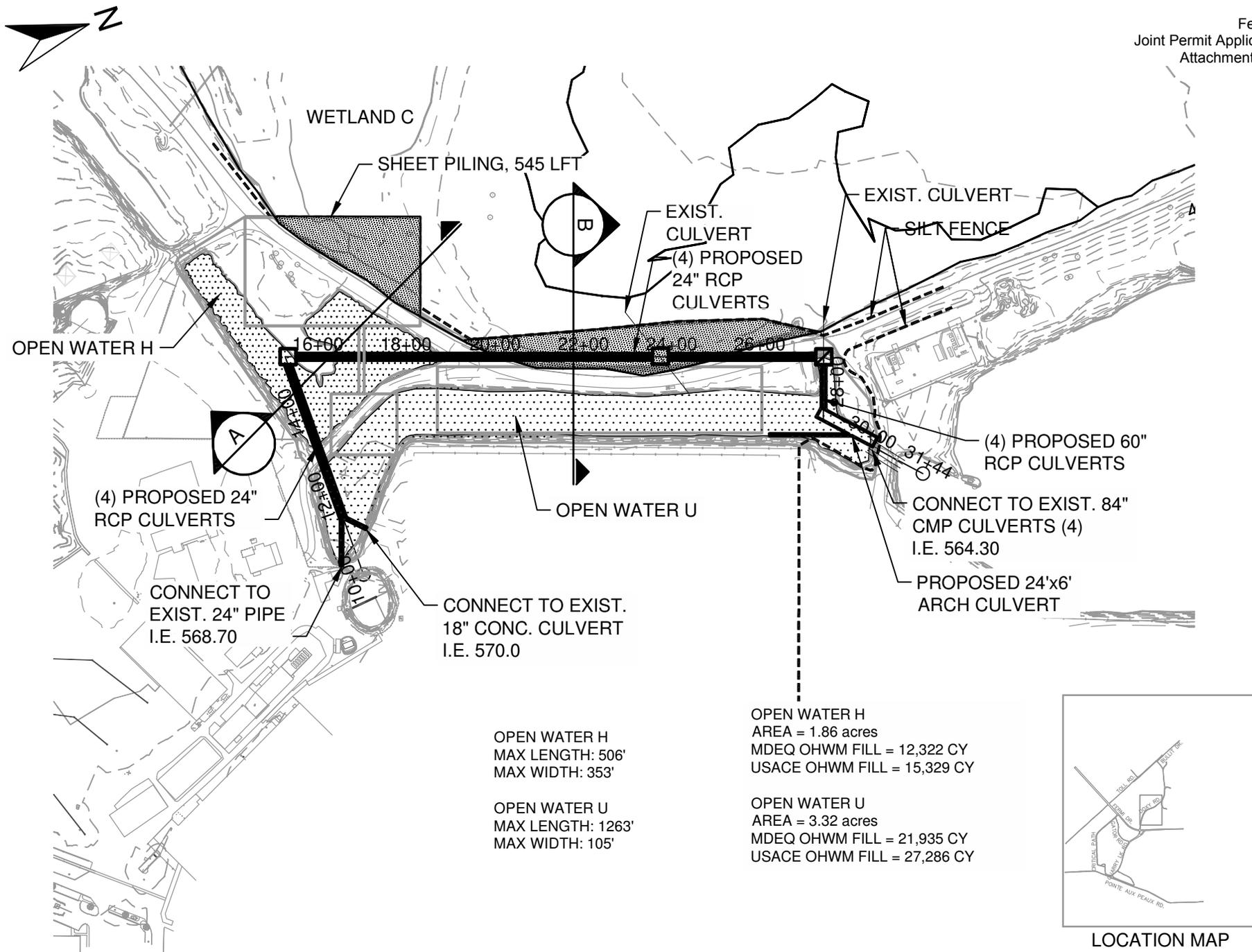
Fill Volume below OHWM

- 12,322 CY – Open Water H MDEQ OHWM
- 15,329 CY – Open Water H USACE OHWM
- 21,935 CY – Open Water U MDEQ OHWM
- 27,286 CY – Open Water U USACE OHWM

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

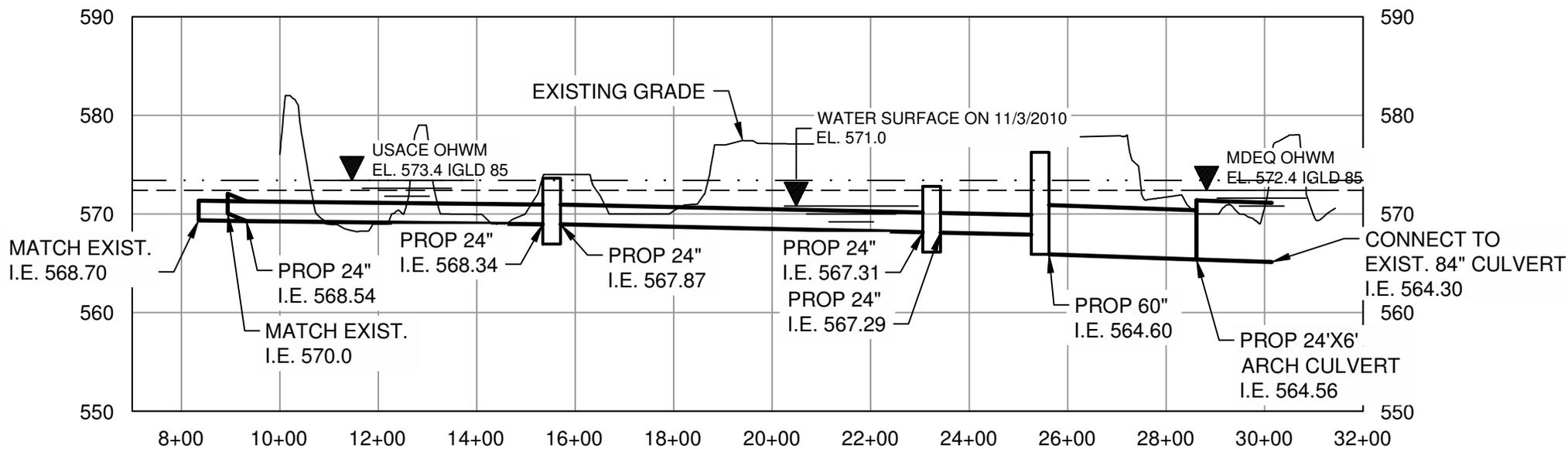
Mitigation is not proposed for Open Waters H and U. Open Water H is an isolated pond with no hydraulic connection to canal system. The hydraulic connection will be maintained in Open Water U via the proposed culverts. The culvert as proposed will be installed partially within Open Waters H and U. (Figure 10-1A).

- B. PROJECTS REQUIRING DREDGING AND EXCAVATION – N/A
- C. PROJECTS REQUIRING RIPRAP – N/A
- D. SHORE PROTECTION PROJECTS – N/A
- E. DOCK-PIER – N/A
- F. BOAT WELL – N/A
- G. BOAT LAUNCH – N/A
- H. BOAT HOIST – N/A
- I. BOARDWALKS AND DECKS – N/A
- J. INTAKE PIPES/OUTFALL PIPES – N/A
- K. MOORING AND NAVIGATION BUOYS – N/A
- L. FENCES IN WETLANDS, STREAMS OR FLOODPLAINS – N/A
- M. Other – N/A



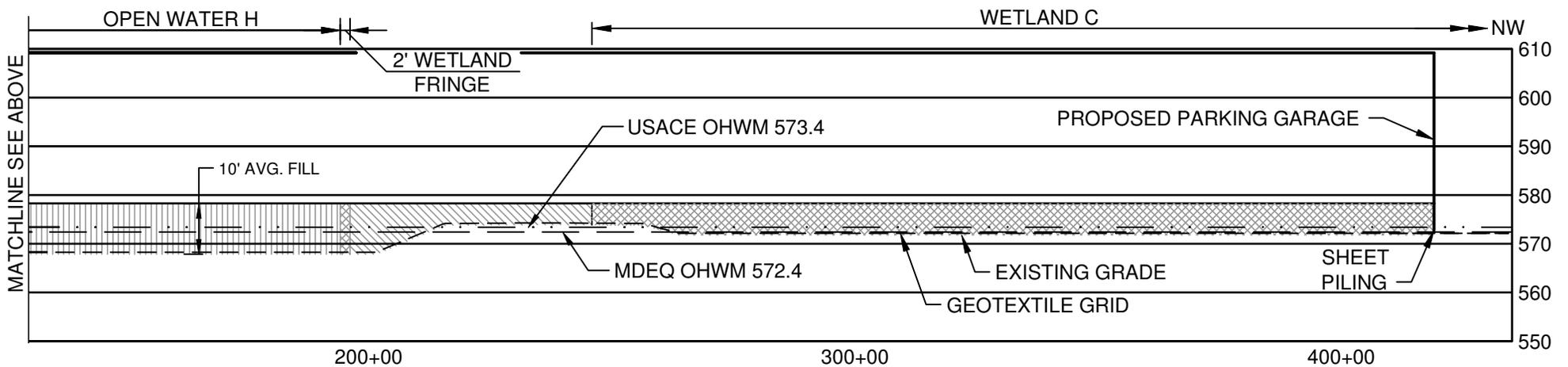
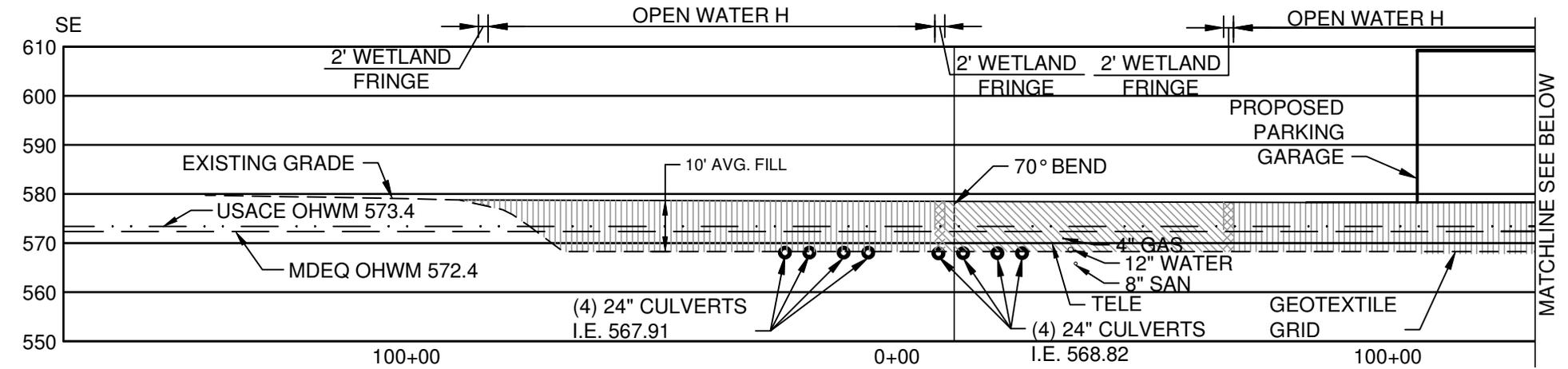
**FIGURE 10-1A**  
**WAREHOUSE, PAP/VIB PARKING GARAGE PLAN VIEW OF CULVERTS AT DOXY ROAD**

SCALE: 1"=300'  
 Revision 0



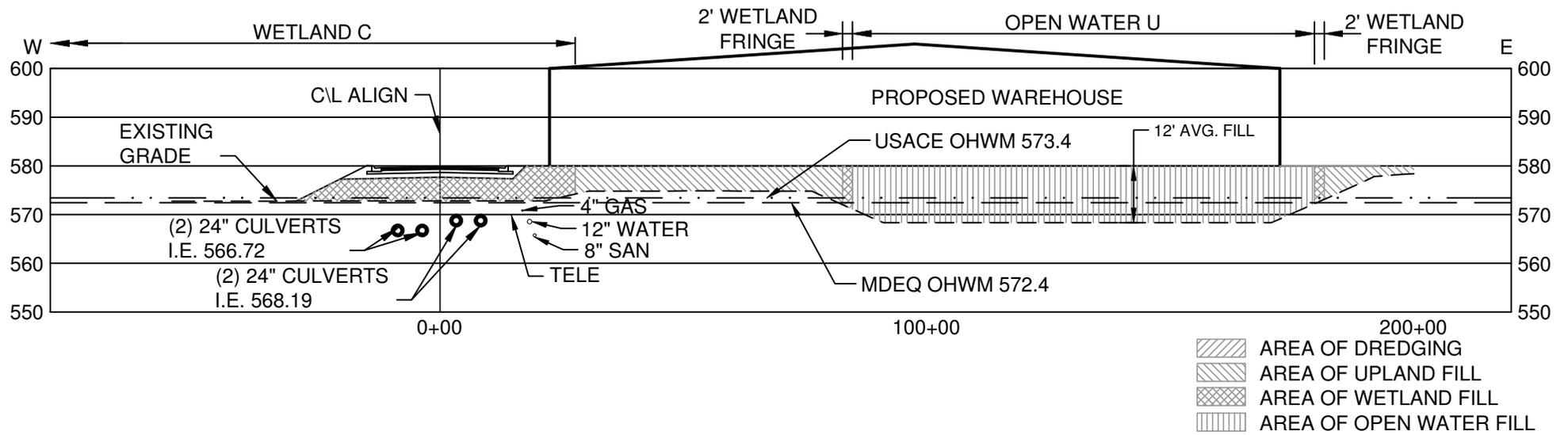
**FIGURE 10-1B**  
**WAREHOUSE, PAP/VIB PARKING GARAGE PROFILE OF PROPOSED CULVERTS AT DOXY ROAD**

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



**A** CROSS SECTION OF PROPOSED (4) 24" CULVERTS AT DOXY ROAD STA 14+97.87  
 SCALE: 1"=30' (IGLD 85 DATUM)

**FIGURE 10-1C WAREHOUSE, PAP/VIB PARKING GARAGE SECTION 'A' DETAILS**



**CROSS SECTION OF PROPOSED (4) 24" CULVERTS AT DOXY ROAD STA 22+00**  
 SCALE: 1"=30' (IGLD 85 DATUM)

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

**Attachment 10-2**

Section 10:  
Projects Impacting Wetlands or Floodplains or Located on an Inland  
Lake or Stream or a Great Lake

Lake Erie Construction Area  
(following 11 pages)

## Attachment 10-2 Lake Erie Construction Area

Water Level Elevation       On a Great Lake use IGLD 85

### A. PROJECTS REQUIRING FILL

Check all that apply: N/A

Floodplain fill     Wetland fill     riprap     seawall     culvert     other (pipe construction)

Activity Area	FILL DIMENSIONS				
	Length (FT)	Width (FT)	Max Depth (FT)	Total Fill Volume (CY)	Max Water Depth in fill area (FT)
<b>Discharge Pipe</b>	1,340	17	6	970	16
<b>Intake Structure</b>	160	80	12	5,600	5

Refer to Figures 10-2A, 10-2B, 10-2E

Type of clean fill       pea stone     sand     gravel     wood chips     other

Will filter fabric be used under proposed fill?       No     Yes

Source of fill       on-site     commercial     other

Fill will extend – N/A      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

# Attachment 10-2 Lake Erie Construction Area

## B. PROJECTS REQUIRING DREDGING AND EXCAVATION

Check all that apply:

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

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

Refer to Figures 10-2A, 10-2B, 10-2C, 10-2E

### 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?  No    Yes

Dredged or excavated spoils will be placed  on-site    off-site

Has this same area been previously dredged?    No    Yes

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

# Attachment 10-2 Lake Erie Construction Area

C. PROJECTS REQUIRING RIPRAP – Waterward of the shoreline

Activity Area	DIMENSIONS			Total fill Volume (CY)
	Length (FT)	Width (FT)	Max Depth (FT)	
<b>Discharge Pipe</b>	1,340	17	2	1,690
<b>Fish Return</b>	120	10	2	40

Refer to Figures 10-2A, 10-2B, 10-2C

Type of Riprap –  field stone  angular rock  other

Will filter fabric be used under proposed fill?  No  Yes

D. SHORE PROTECTION PROJECTS

Check all that apply

seawall/bulkhead Length 620 FT; Distance from property line – over 1,000 feet

E. DOCK-PIER – N/A

F. BOAT WELL – N/A

G. BOAT LAUNCH – N/A

H. BOAT HOIST – N/A

I. BOARDWALKS AND DECKS – N/A

## Attachment 10-2 Lake Erie Construction Area

### 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)

Dimensions of Headwall – No headwall

Number of Pipes – One

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

### K. MOORING AND NAVIGATION BUOYS – N/A

### L. FENCES IN WETLANDS, STREAMS OR FLOODPLAINS – N/A

### M. Other

Details for an intake structure along the shoreline are provided.

# Attachment 10-2 Lake Erie Construction Area

## Included Photos



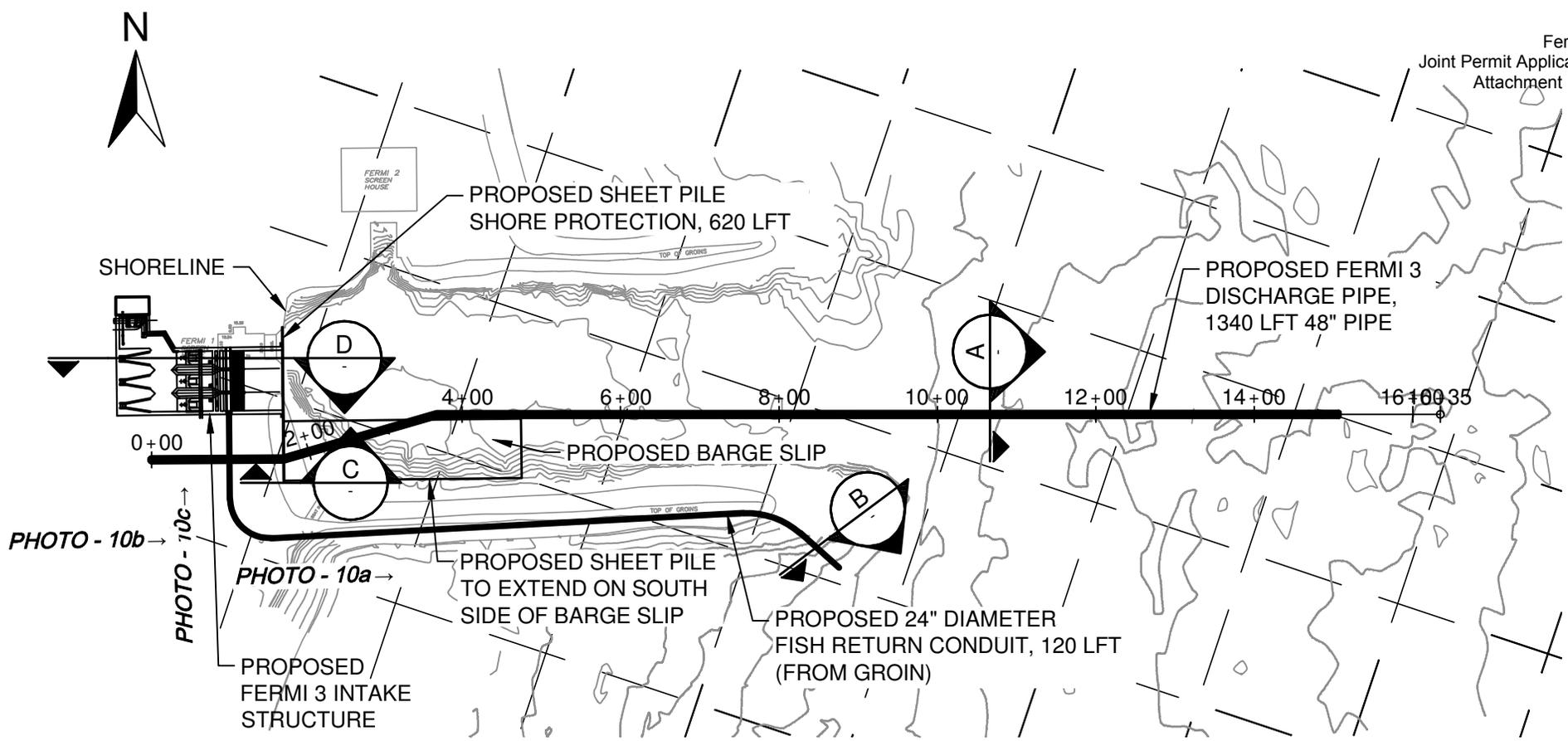
Photo – 10a: Looking East along South Groin



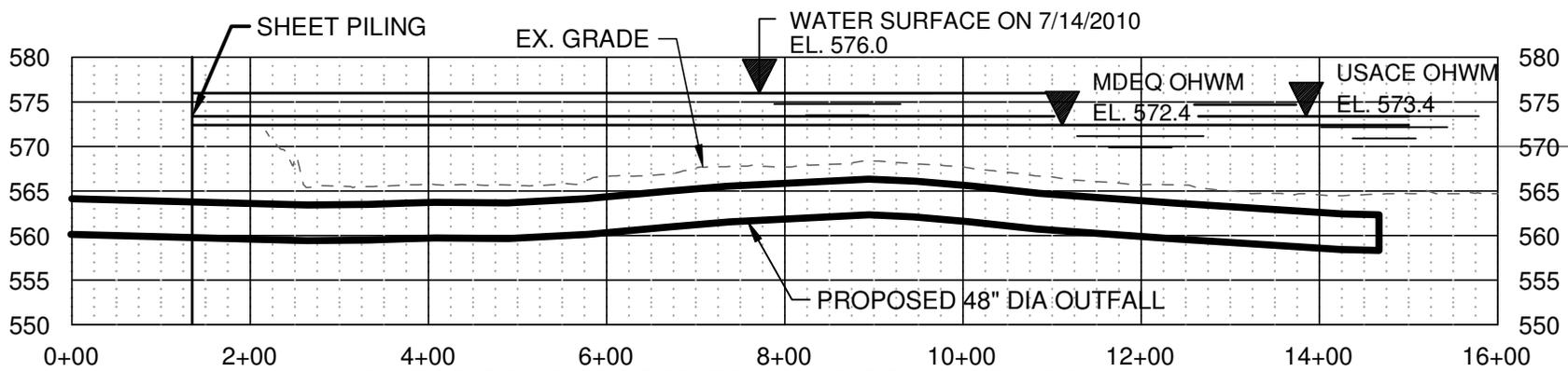
Photo – 10b: Looking East along South Groin



Photo – 10c: Looking North along shore line between groins

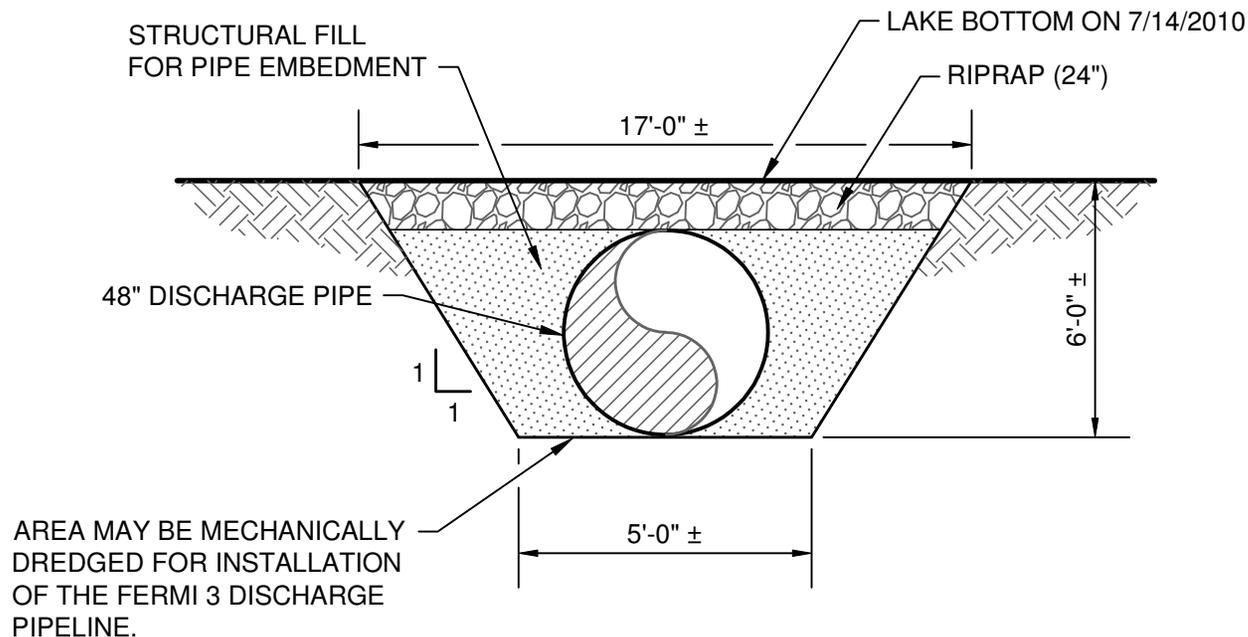


**PLAN OF PROPOSED FERMI 3 DISCHARGE PIPE**  
SCALE: 1"=200'



**PROFILE OF PROPOSED FERMI 3 DISCHARGE PIPE**  
SCALE: 1"=200' HORZ.; 1"=4' VERT. (IGLD 85 DATUM)

**FIGURE 10-2A LAKE ERIE CONSTRUCTION AREA  
PLAN AND PROFILE OF PROPOSED FERMI 3 DISCHARGE PIPE**



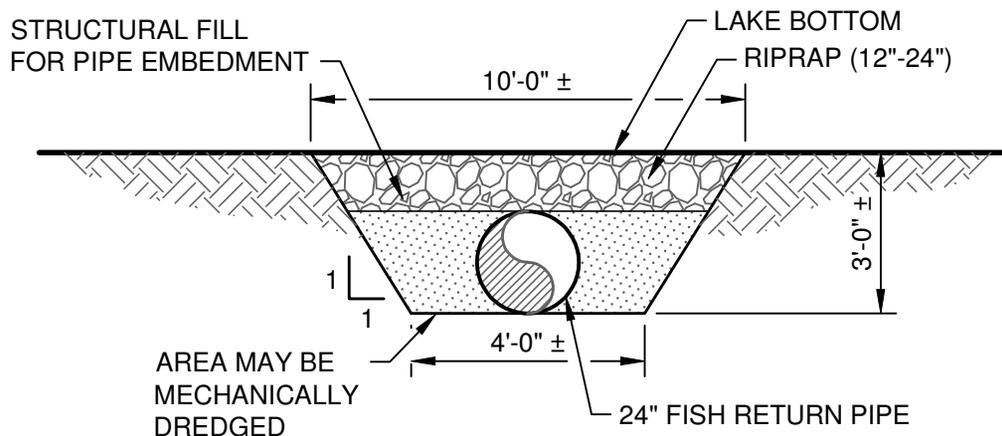
DREDGE VOLUME:	3,300 CY
SIDECAST VOLUME:	3,300 CY
STONE BACKFILL VOLUME:	970 CY
RIPRAP VOLUME:	1,690 CY
PIPE LENGTH:	1,340 LFT

NOTE:

1. ONLY OUTSIDE MATERIALS WILL BE THE PIPE, RIPRAP AND STONE.
2. ALL WORK BELOW MDEQ AND USACE OHWM.

**DISCHARGE PIPE DREDGING  
 CROSS SECTION**  
 SCALE: NONE

**FIGURE 10-2B LAKE ERIE CONSTRUCTION AREA DISCHARGE PIPE DREDGING  
 SECTION 'A' DETAILS**



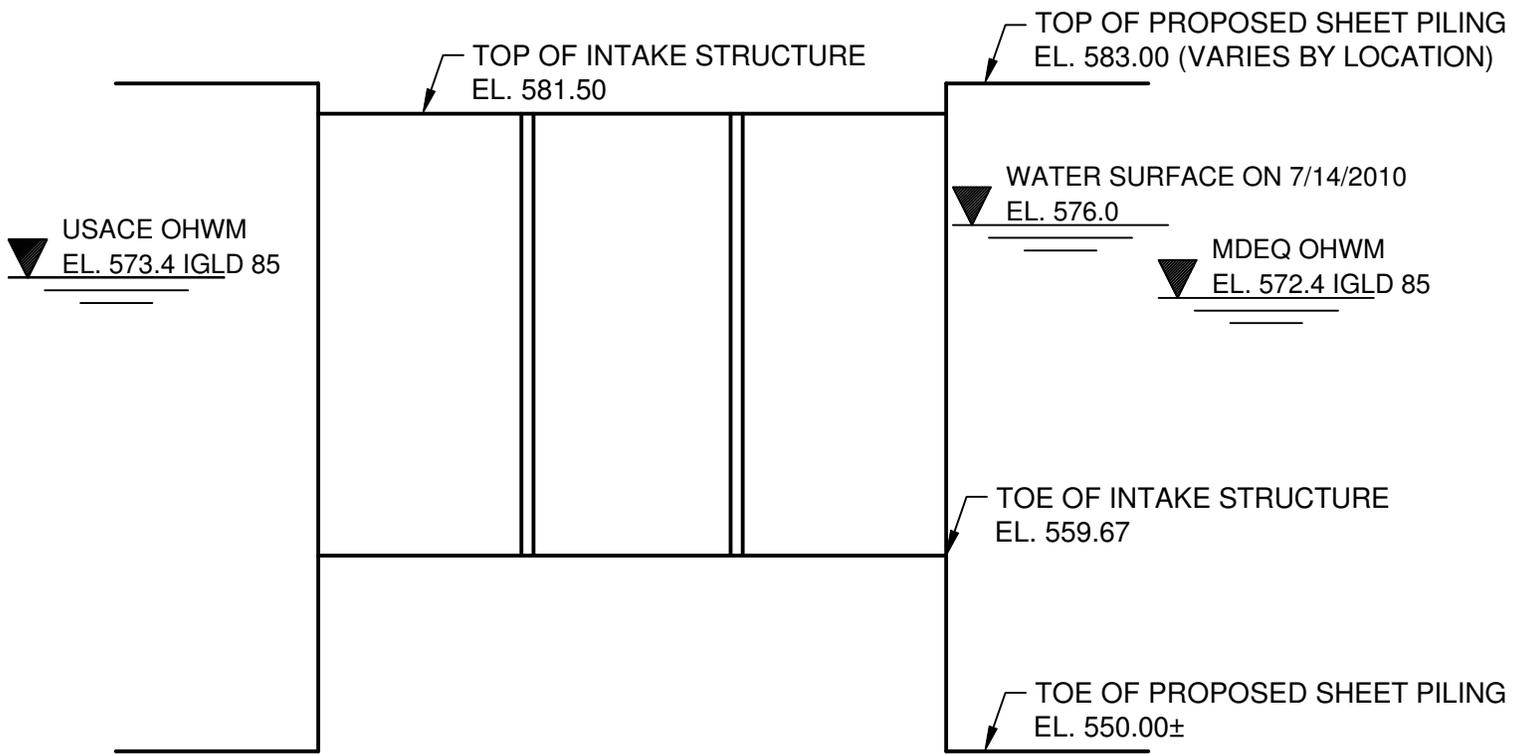
DREDGE VOLUME: 93 CY  
 SIDECAST VOLUME: 93 CY (39 CY TO BE USED TO BACKFILL TRENCH)  
 RIPRAP VOLUME: 40 CY  
 PIPE LENGTH: 120 LFT

NOTE:

1. ONLY OUTSIDE MATERIALS WILL BE THE PIPE AND RIPRAP.
2. ALL WORK BELOW MDEQ AND USACE OHWM.

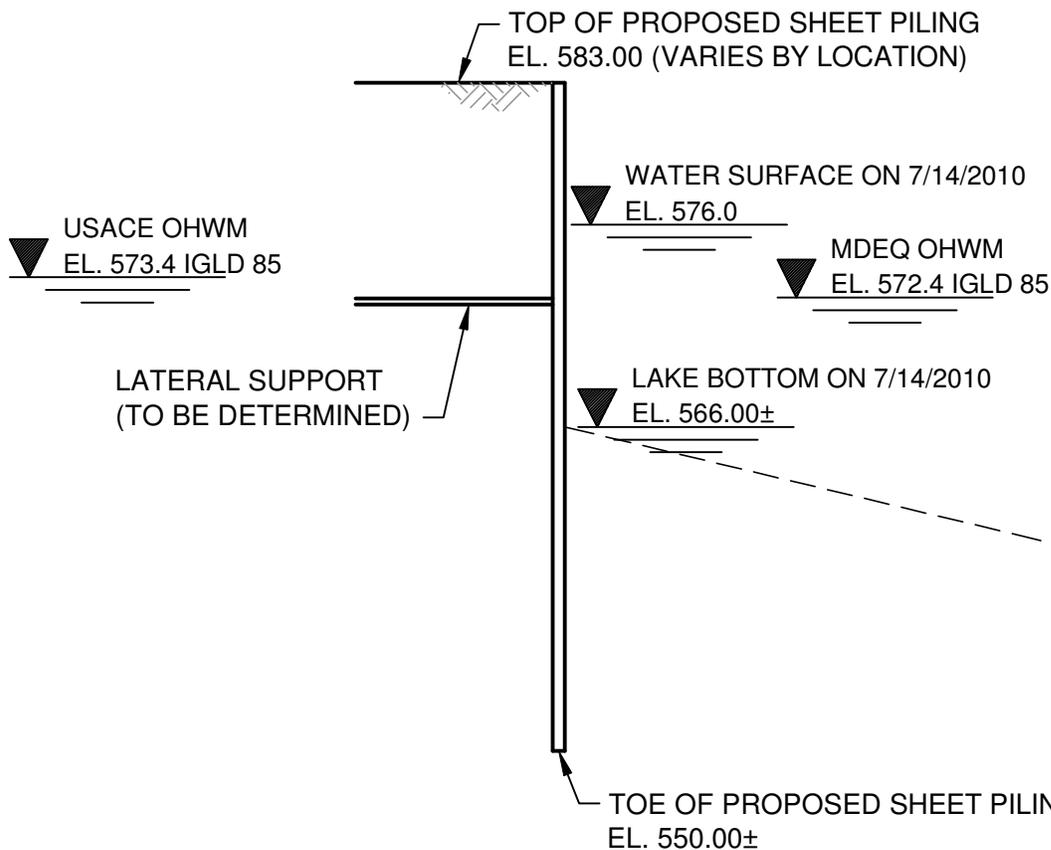
**PIPE DREDGING CROSS SECTION  
 (AT FISH RETURN LOCATION)**  
 SCALE: NONE

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



**INTAKE CROSS SECTION ALONG SHORELINE**

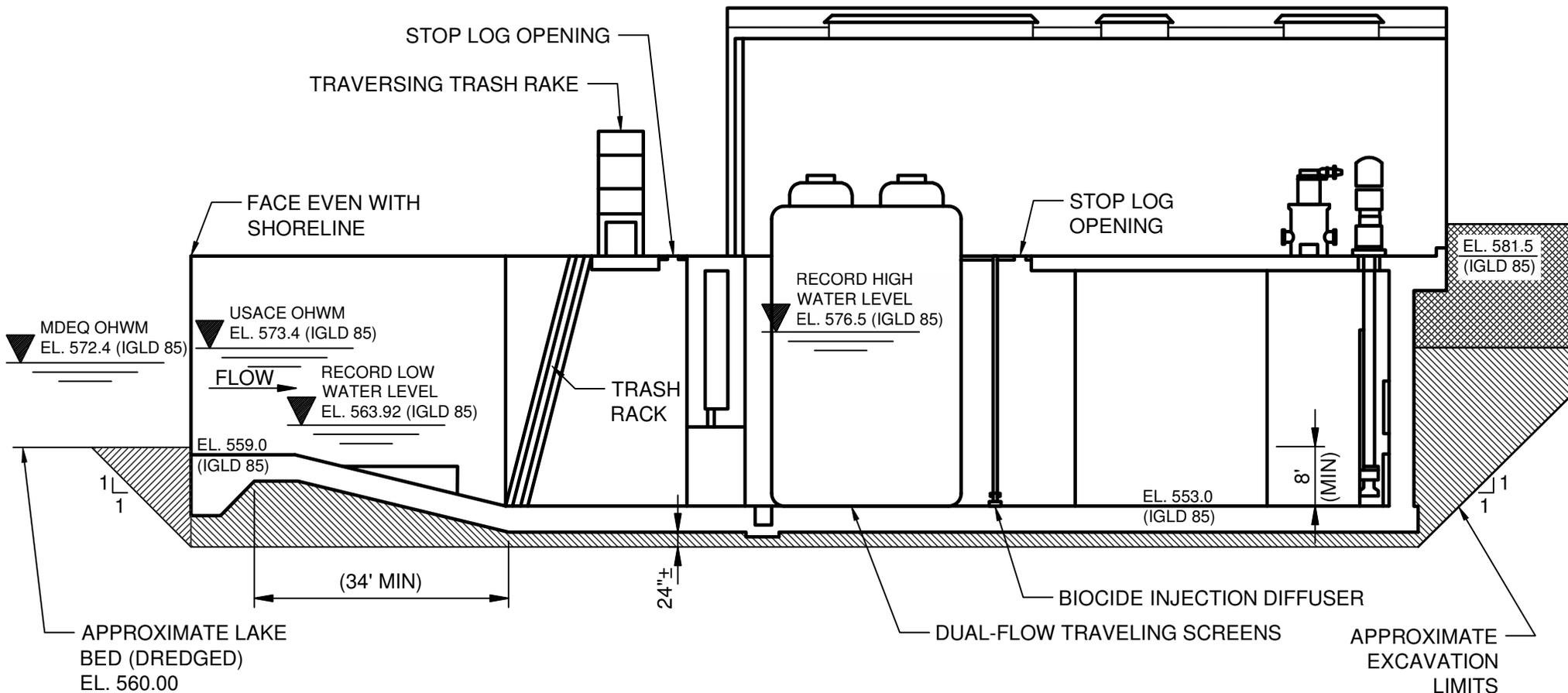
SCALE: 1"=200' HORZ.; 1"=20' VERT. (IGLD 85 DATUM)

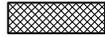


**C CROSS SECTION OF PROPOSED SHEET PILING**

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

**FIGURE 10-2D LAKE ERIE CONSTRUCTION AREA  
INTAKE AND PROPOSED SHEET PILING SECTION DETAILS**



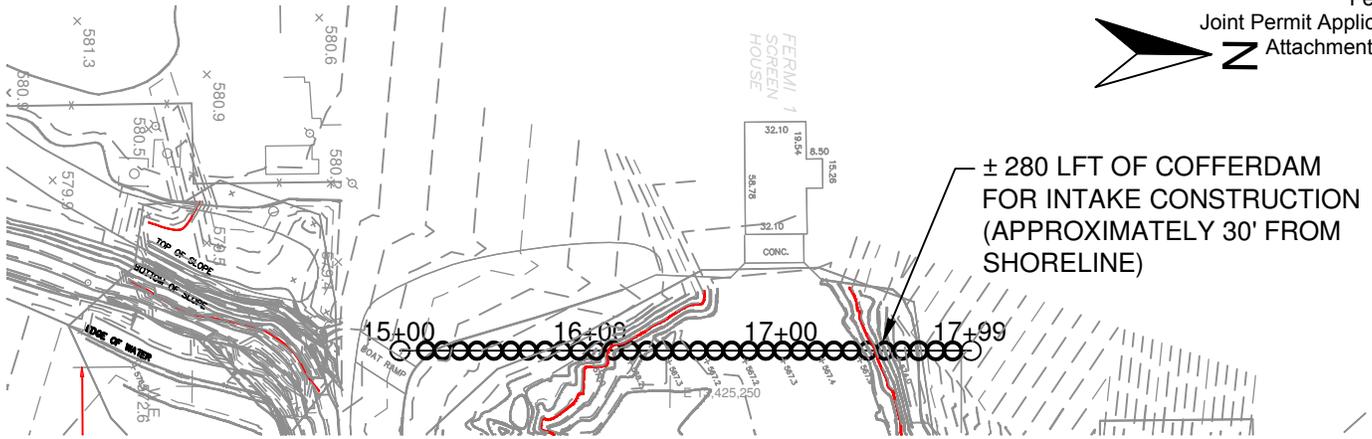
-  LAKE AREA DREDGE
-  DREDGE
-  UPLAND BACKFILL

**PROPOSED FERMI 3 INTAKE STRUCTURE  
 (LOOKING SOUTH)**  
 SCALE: 1"=20' (IGLD 85 DATUM)

VOLUMES BELOW MDEQ OHWM	
DREDGE VOLUME:	16,100 CY
LAKE AREA DREDGE VOLUME:	300 CY
STRUCTURE VOLUME:	10,900 CY
BACKFILL VOLUME:	5,500 CY

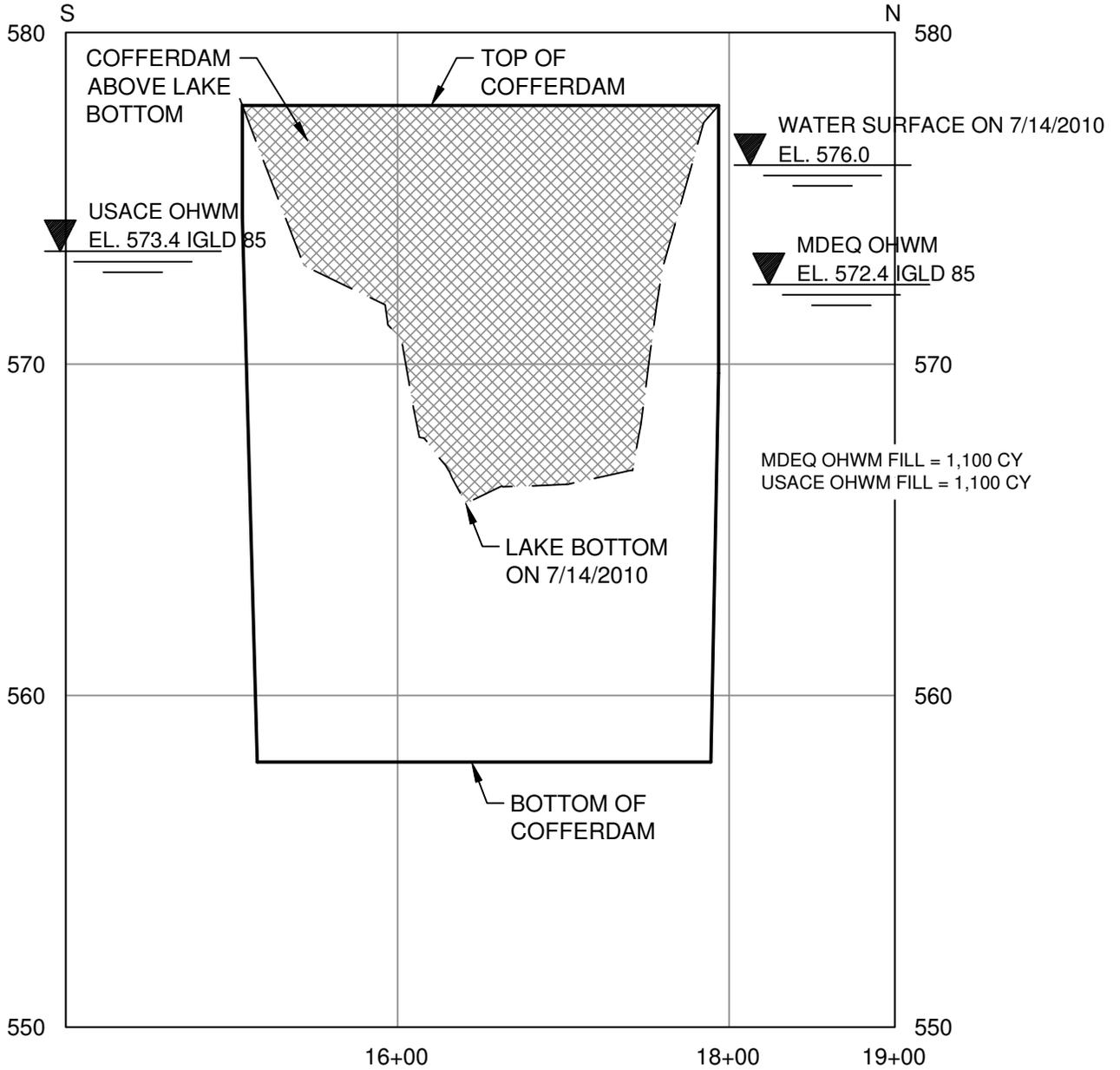
VOLUMES BELOW USACE OHWM	
DREDGE VOLUME:	16,600 CY
LAKE AREA DREDGE VOLUME:	300 CY
STRUCTURE VOLUME:	11,300 CY
BACKFILL VOLUME:	5,600 CY

**FIGURE 10-2E LAKE ERIE CONSTRUCTION AREA  
 PROPOSED INTAKE STRUCTURE SECTION 'D' DETAILS**



**PROPOSED COFFERDAM AT INTAKE STRUCTURE**

SCALE: 1"=100'



**PROFILE OF COFFERDAM**

SCALE: 1"=100' HORZ.; 1"=20' VERT. (IGLD 85 DATUM)

NOTE:  
 APPROXIMATELY 1,100 CY OF  
 FILL WILL BE USED TO  
 CONSTRUCT THE COFFERDAM  
 AND REMOVED AFTER  
 CONSTRUCTION.

**FIGURE 10-2F LAKE ERIE CONSTRUCTION  
 AREA PROPOSED COFFERDAM**

AREA OF LAKE FILL

**Attachment 10-3**

Section 10:  
Projects Impacting Wetlands or Floodplains or Located on an Inland  
Lake or Stream or a Great Lake

Construction Area 5  
(following 4 pages)

## 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:

Floodplain fill    Wetland fill    riprap    seawall    culvert    other

Refer to Attachment 12-6 for information specific to wetland 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.

Will filter fabric be used under proposed fill?       No    Yes

Source of fill       on-site    commercial    other

Fill will extend – N/A

Fill Volume below OHWM – N/A

#### B. PROJECTS REQUIRING DREDGING AND EXCAVATION – N/A

## Attachment 10-3 Construction Area 5

### C. PROJECTS REQUIRING RIPRAP

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

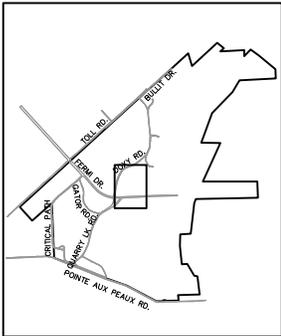
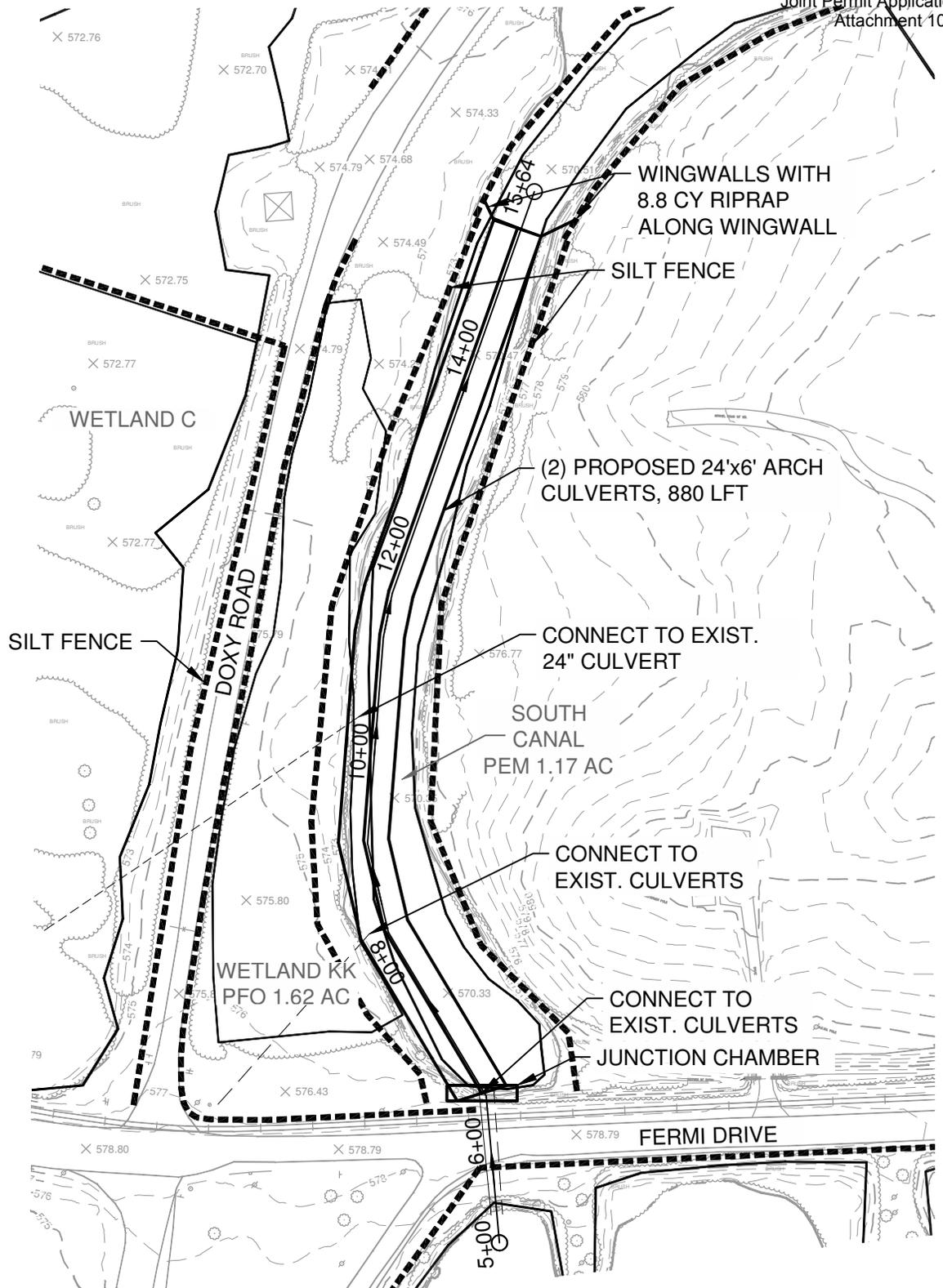
Refer to Figure 10-3A and Figure 10-3B

Type of Riprap –  field stone  angular rock  other

Will filter fabric be used under proposed fill?  No  Yes

- D. SHORE PROTECTION PROJECTS – N/A
- E. DOCK-PIER – N/A
- F. BOAT WELL – N/A
- G. BOAT LAUNCH – N/A
- H. BOAT HOIST – N/A
- I. BOARDWALKS AND DECKS – N/A
- J. INTAKE PIPES/OUTFALL PIPES – N/A
- K. MOORING AND NAVIGATION BUOYS – N/A
- L. FENCES IN WETLANDS, STREAMS OR FLOODPLAINS – N/A
- M. Other – N/A

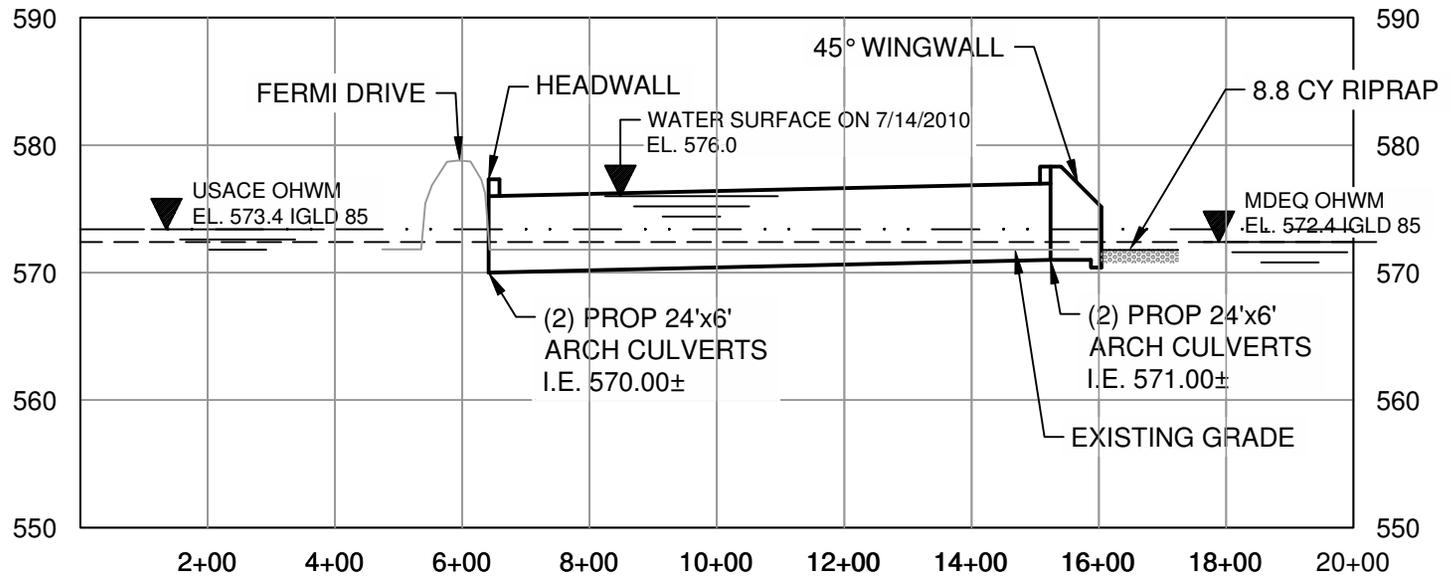
Refer to Attachment 12-6 for photographs of South Canal



LOCATION MAP

# 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)

**Attachment 10-4**

Section 10:  
Projects Impacting Wetlands or Floodplains or Located on an Inland  
Lake or Stream or a Great Lake

New Operations Access Road  
(following 4 pages)

## Attachment 10-4 New Operations Access Road

### BOX CULVERT CROSSING UNDER TOLL ROAD

Water Level Elevation       On a Great Lake use IGLD 85

#### A. PROJECTS REQUIRING FILL

Check all that apply:

Floodplain fill     Wetland fill     riprap     seawall     culvert     other

Refer to Attachment 12-8 for information specific to wetland fill.

Type of clean fill       pea stone     sand     gravel     wood chips     other

Will filter fabric be used under proposed fill?       No     Yes

Source of fill       on-site     commercial     other

Fill will extend –

Fill Volume below OHWM –

#### B. PROJECTS REQUIRING DREDGING AND EXCAVATION – N/A

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

## Attachment 10-4 New Operations Access Road

### C. PROJECTS REQUIRING RIPRAP

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

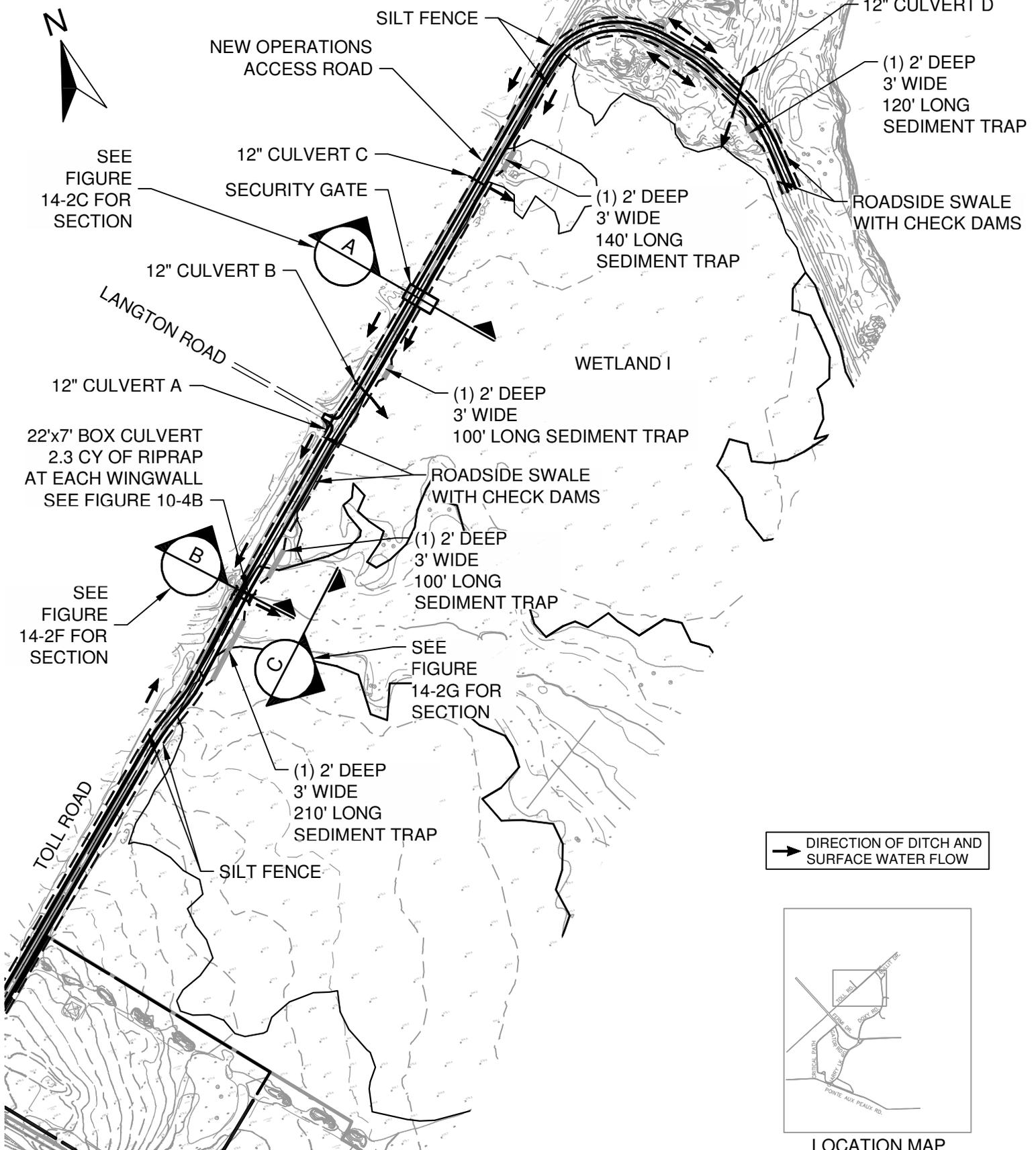
Refer to Figures 10-4A, 10-4B

Type of Riprap  field stone  angular rock  other

Will filter fabric be used under proposed fill?  No  Yes

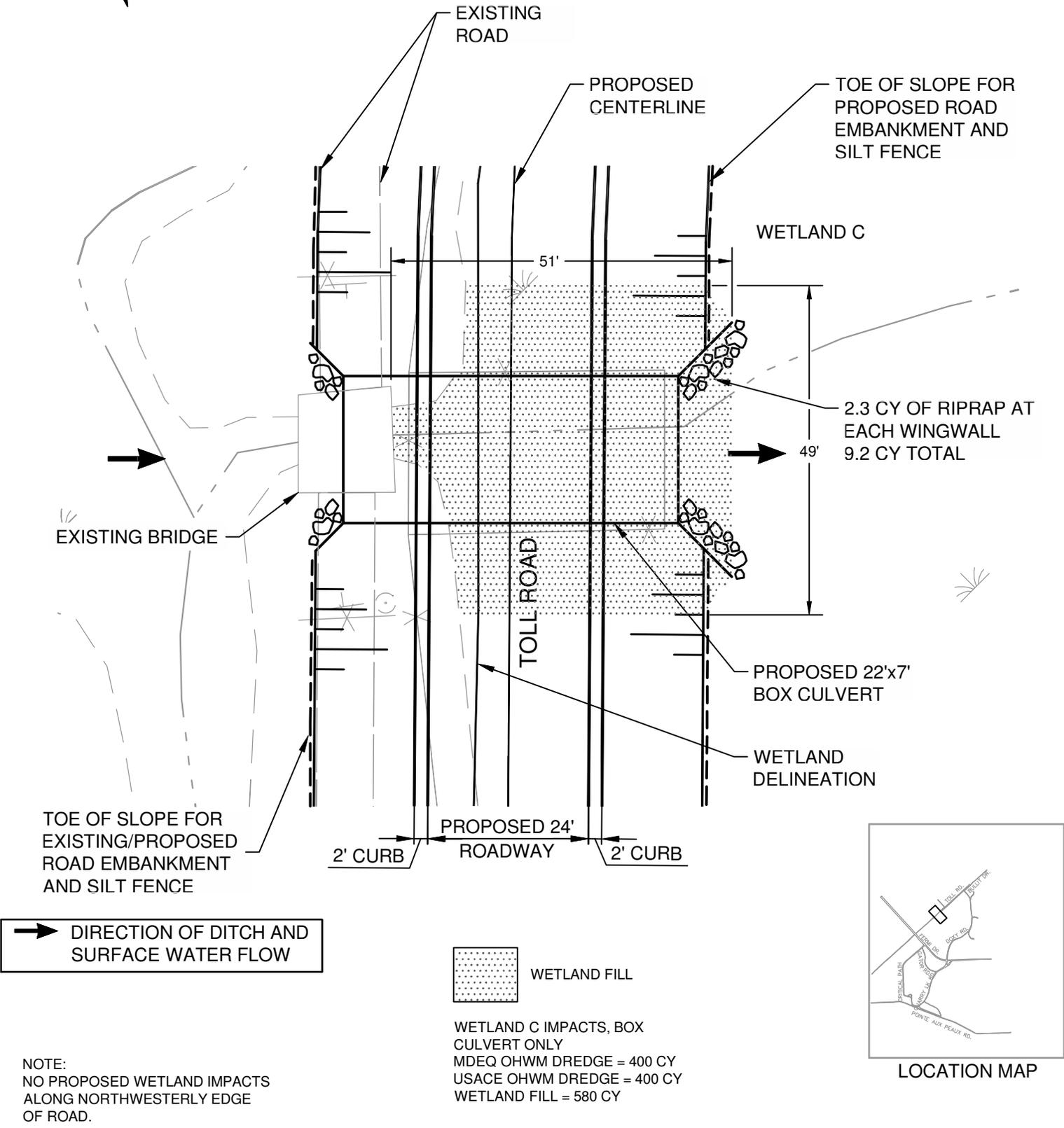
- D. SHORE PROTECTION PROJECTS – N/A
- E. DOCK-PIER – N/A
- F. BOAT WELL – N/A
- G. BOAT LAUNCH – N/A
- H. BOAT HOIST – N/A
- I. BOARDWALKS AND DECKS – N/A
- J. INTAKE PIPES/OUTFALL PIPES – N/A
- K. MOORING AND NAVIGATION BUOYS – N/A
- L. FENCES IN WETLANDS, STREAMS OR FLOODPLAINS – N/A
- M. Other – N/A

Refer to Attachment 14-2 for photographs of proposed New Operations Access Road



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

SCALE: 1"=500'  
 Revision 0



**FIGURE 10-4B  
 NEW OPERATIONS ACCESS ROAD 22'x7' BOX CULVERT PLAN VIEW**

SCALE: 1"=20'

**Attachment 12-1**

Section 12:  
Activities that May Impact Wetlands

Site Wide Total of Wetland Impact Volumes  
(following 1 page)

## Attachment 12-1 Site Wide Total of Wetland Impact Volumes

Activity Area	MDEQ OHWM		USACE OHWM		WETLAND DREDGE/ EXCAVATION					FILL				
	DREDGE	EXCAVATION	DREDGE	EXCAVATION	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>(1)</sup>
	Volume (CY) <sup>(1)</sup>	Volume (CY) <sup>(1)</sup>	Volume (CY) <sup>(1)</sup>	Volume (CY) <sup>(1)</sup>										
Construction Area 1	NA	8,680	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	NA	3,570	428	280	1.14	2	3,570	428	280	1.14	5	7,905
Construction Area 3	82,755	21,709	97,641	6,823	652	772	12.97	5	104,464	652	772	12.97	6	121,880
Construction Area 4	NA	15,211	NA	15,211	774	393	4.59	2	15,211	774	393	4.59	3.5	20,989
Construction Area 5	684	4,501	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	18,515	444	18,959	NA	801	226	2.24	3	18,959	1,263	226	2.49	8.8	41,290
New Operations Access Road	400	78	400	78	1,205	52	0.95	2.5	478	1,205	52	0.95	3.2	2,563
Onsite Transmission	768	NA	768	NA	36	36	0.24	12	768	36	36	0.24	12	768
<b>Site Totals</b>	<b>103,122</b>	<b>54,193</b>	<b>119,833</b>	<b>37,482</b>	<b>NA</b>	<b>NA</b>	<b>26.44</b>	<b>2.6</b>	<b>157,315</b>	<b>NA</b>	<b>NA</b>	<b>27.86</b>	<b>4.6</b>	<b>229,744</b>

Notes:

MDEQ = Michigan Department of Environmental Quality; USACE = United States Corps of Engineers; OHWM = Ordinary High Water Mark

NA = not applicable

(1) Volumes were determined in AutoCAD as most fill areas were not square in shape. Please see attached cross sections for each construction area for details.

Excavation represents cut volume beneath ground surface to the ordinary high water mark.

Dredging represents cut volume beneath the ordinary high water mark.

SECTION 12: ACTIVITIES THAT MAY IMPACT WETLANDS

**Attachment 12-2**

Section 12:  
Activities that May Impact Wetlands

Construction Area 1  
(following 6 pages)

# 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

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

Activity Area	Impacted Wetland	FILL				
		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
<b>Totals</b>		<b>NA</b>	<b>NA</b>	<b>2.69</b>	<b>3.8</b>	<b>14,123</b>

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

# Attachment 12-2 Construction Area 1

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 Figures 12-2A through C for plan view and section details.

Considered alternatives are outlined in Section 4 of the JPA.

iv) Photographs of Construction Area 1



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

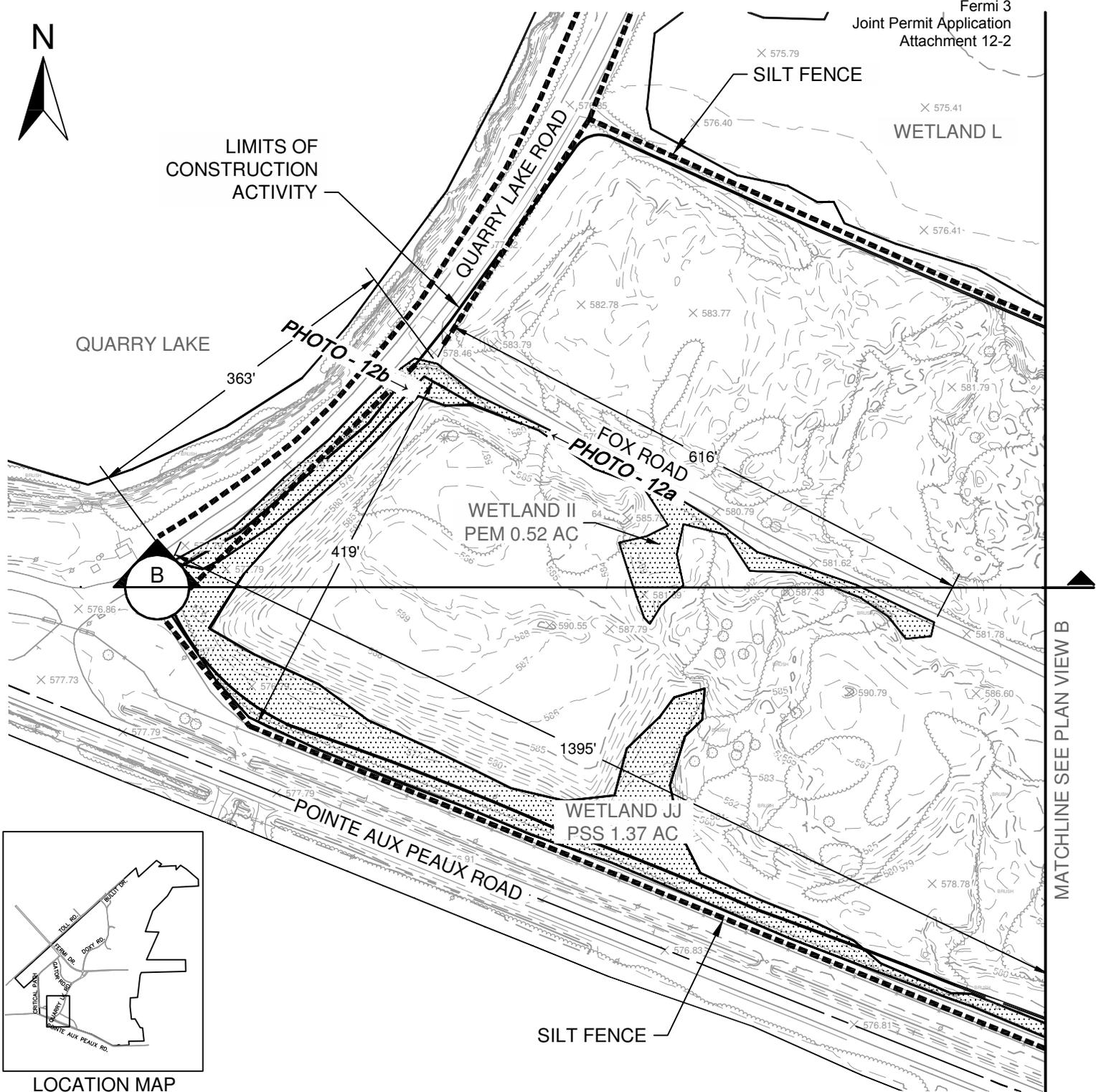


Photo – 12b: Looking east at Wetland JJ (August 2010)

**Attachment 12-2 Construction Area 1**



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



**NOTE:**

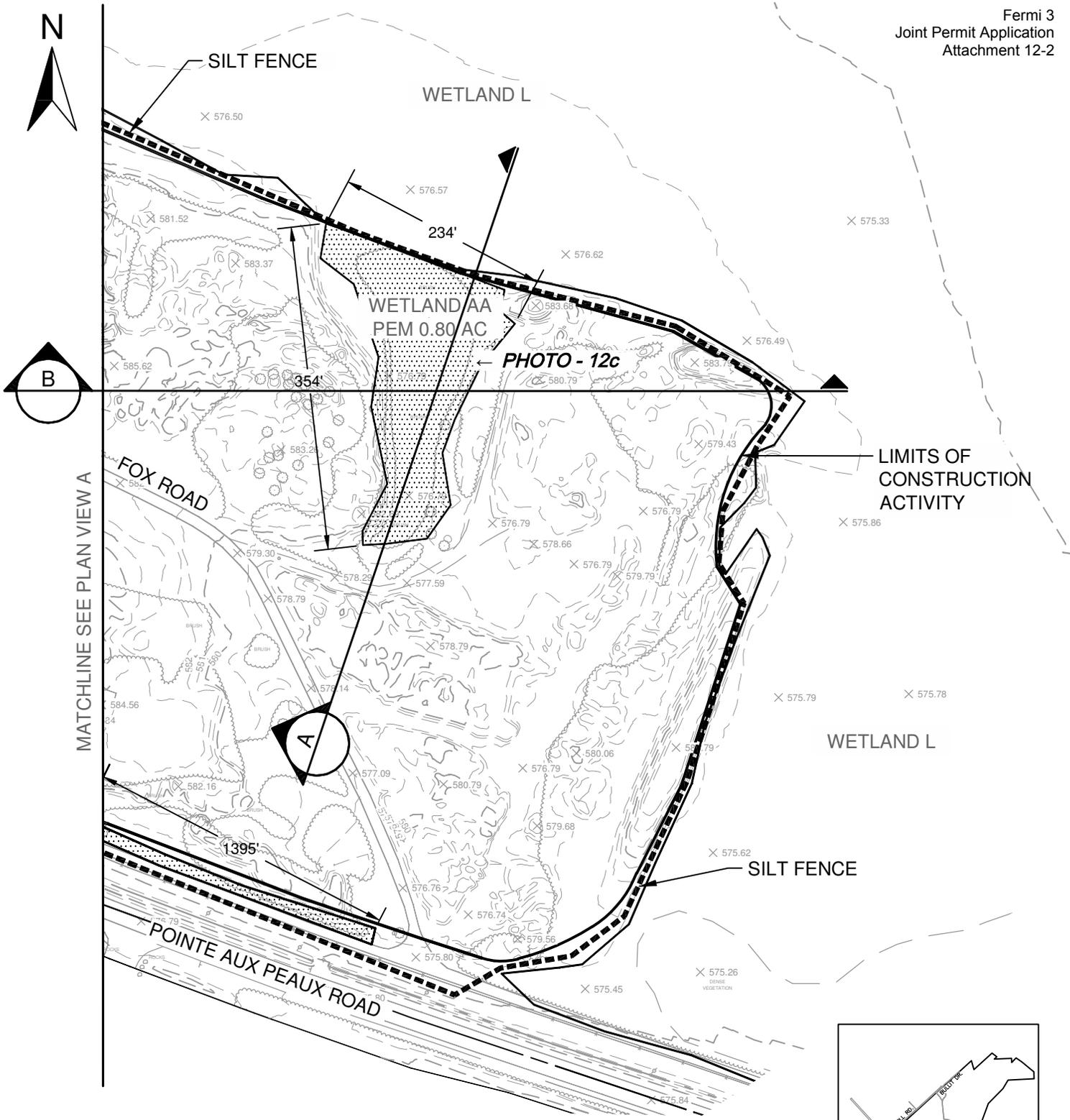
1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITY WILL BE USED FOR BACKFILL ONSITE. AFTER WHICH, THE AREA WILL BE USED TO STOCKPILE SPOILS FROM LOCATIONS ONSITE.
2. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND II  
 AREA = 0.52 acres  
 MDEQ OHWM DREDGE = NA  
 MDEQ OHWM EXCAVATION = 1,675 CY  
 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  
 MDEQ OHWM DREDGE = NA  
 MDEQ OHWM EXCAVATION = 4,437 CY  
 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

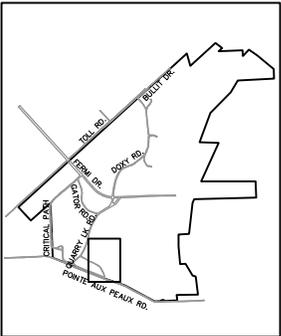
SCALE: 1"=150'



NOTE:

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.

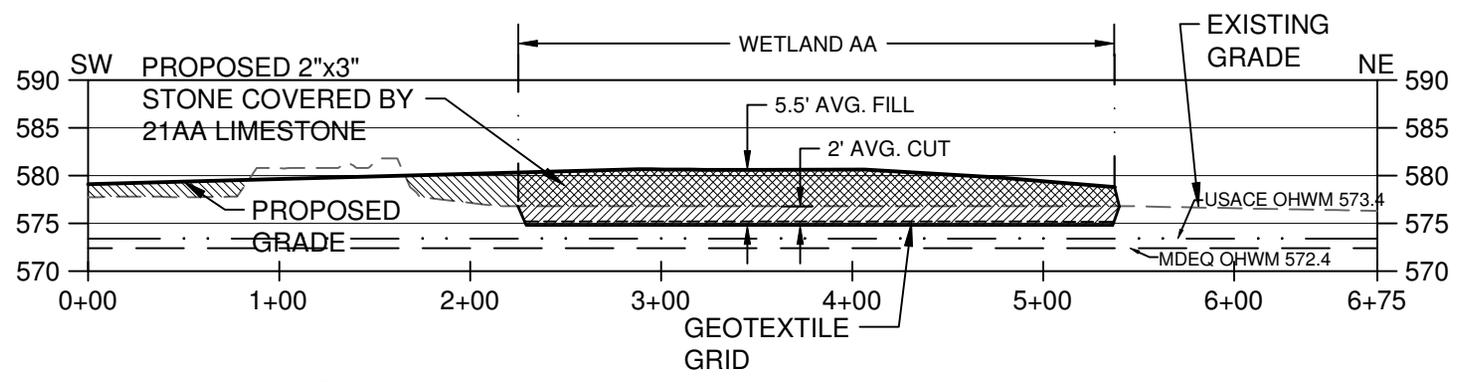
WETLAND AA  
 AREA = 0.80 acres  
 MDEQ OHWM DREDGE = NA  
 MDEQ OHWM EXCAVATION = 2,568 CY  
 USACE OHWM DREDGE = NA  
 USACE OHWM EXCAVATION = 2,568 CY  
 WETLAND EXCAVATION = 2,568 CY  
 WETLAND FILL = 6,593 CY



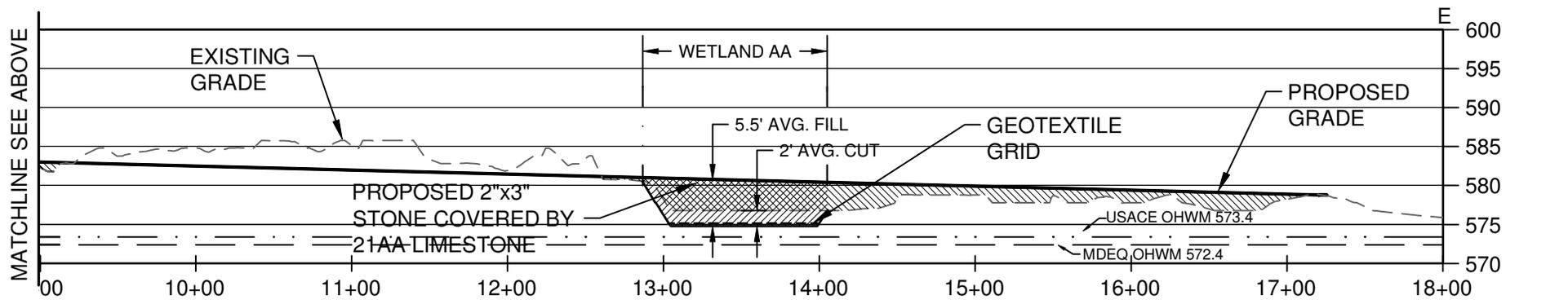
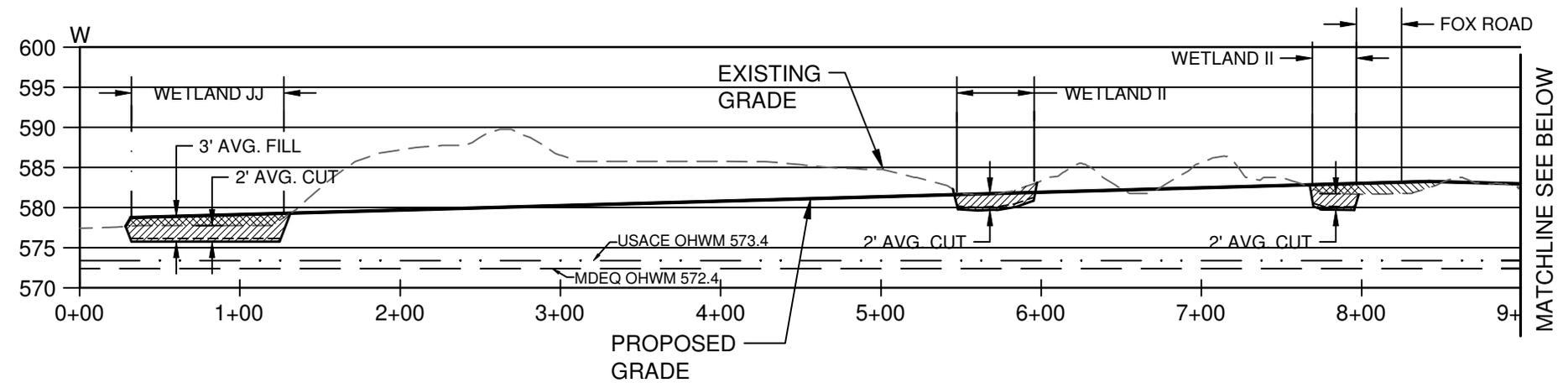
LOCATION MAP

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

SCALE: 1"=150'



**A CONSTRUCTION AREA 1 SECTION**  
 SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)



**B CONSTRUCTION AREA 1 SECTION**  
 SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

**FIGURE 12-2C CONSTRUCTION AREA 1 SECTION DETAILS**

**Attachment 12-3**

Section 12:  
Activities that May Impact Wetlands

Construction Area 2  
(following 4 pages)

# Attachment 12-3 Construction Area 2

Wetland Y (PFO) – 1.14 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

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

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

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

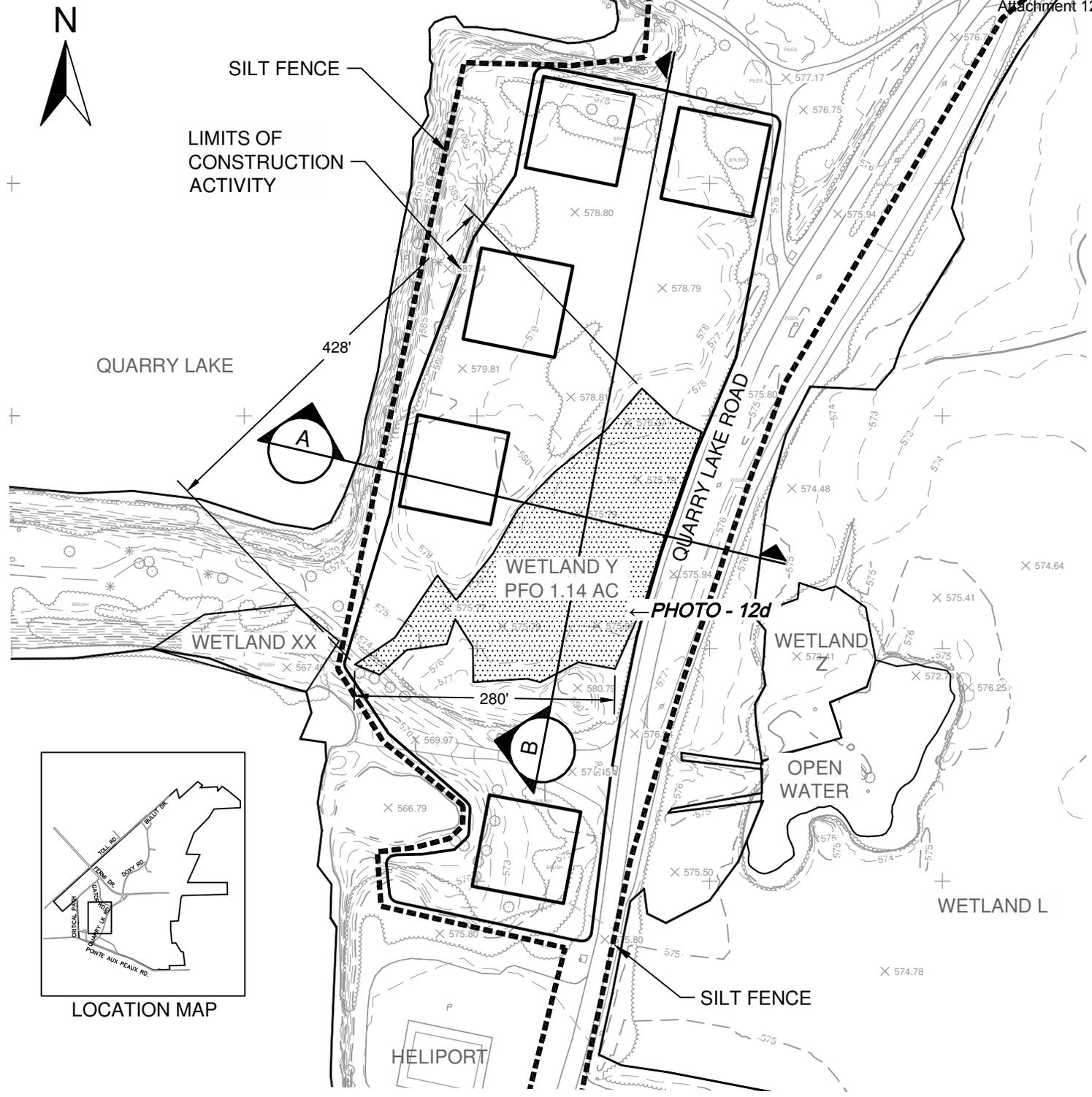
Greater detail regarding the proposed use and impact of the wetlands is available in Section 2 of the JPA. Refer to attached Figures 12-3A and B for plan view and section details.

Considered alternatives are outlined in Section 4 of the JPA.

iv) Photograph of Construction Area 2



Photo – 12d: Looking west at Wetland Y



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 WITHIN THE CONSTRUCTION FOOTPRINT.

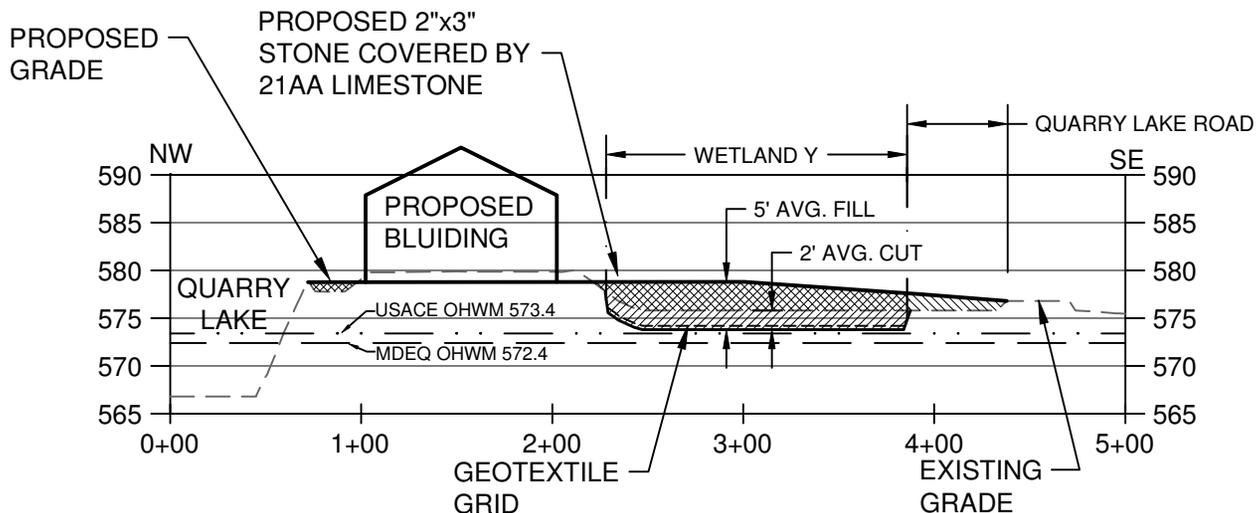
WETLAND Y  
 AREA = 1.14 acres  
 MDEQ OHWM DREDGE = NA  
 MDEQ OHWM EXCAVATION = 3,570 CY  
 USACE OHWM DREDGE = NA  
 USACE OHWM EXCAVATION = 3,570 CY  
 WETLAND EXCAVATION = 3,570 CY  
 WETLAND FILL = 7,905 CY

= PROPOSED BUILDING

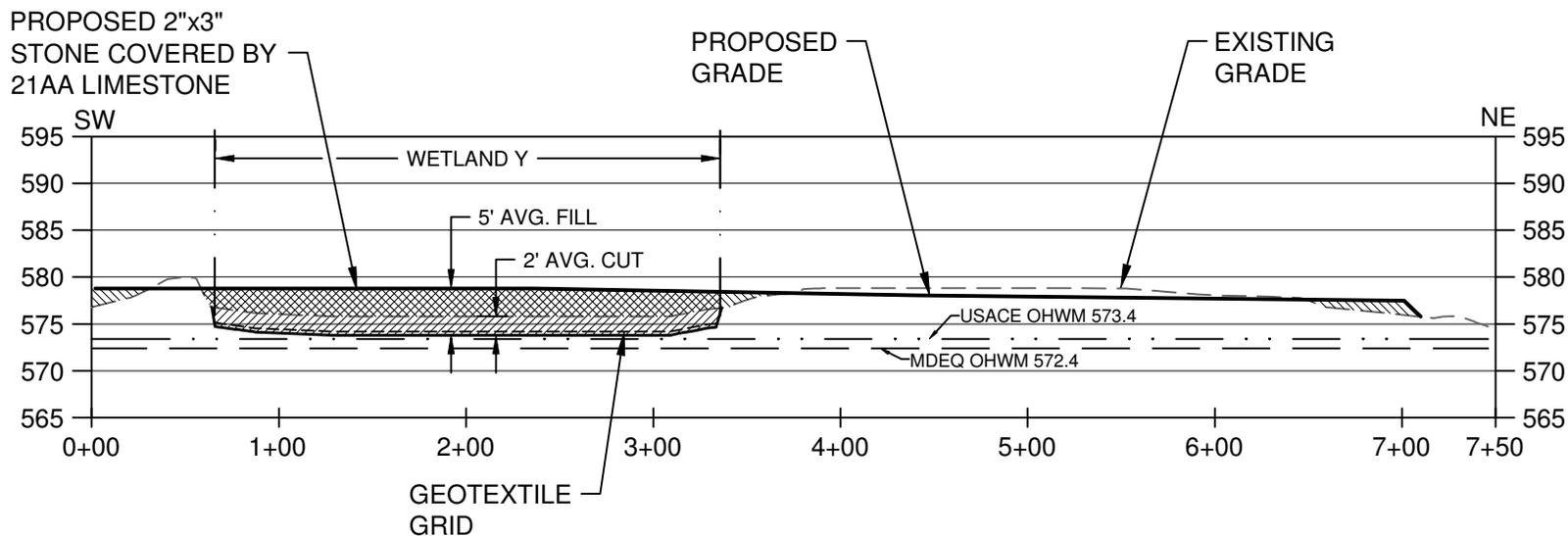
# FIGURE 12-3A CONSTRUCTION AREA 2 PLAN VIEW

SCALE: 1"=150'

Revision 0



**A CONSTRUCTION AREA 2 SECTION**  
 SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)



**B CONSTRUCTION AREA 2 SECTION**  
 SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

-  AREA OF EXCAVATION
-  AREA OF UPLAND FILL
-  AREA OF WETLAND FILL

# FIGURE 12-3B CONSTRUCTION AREA 2 SECTION DETAILS

**Attachment 12-4**

Section 12:  
Activities that May Impact Wetlands

Construction Area 3  
(following 7 pages)