Fermi 3 EGLE/USACE Joint Permit Application

October 28, 2021

PREPARED FOR

DTE Electric Company
6400 North Dixie Highway
Newport, MI 48166

PREPARED BY

Tetra Tech, Inc
710 Avis Drive, Ste 100
Ann Arbor, MI 48108

Binder 1 of 2

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas

version 1.24

(Submission #: HPA-HZP4-BDZ21, version 1)

Details

Submission ID	HPA-HZP4-BDZ21
Submission Reason	New
Status	Draft

Form Input

Instructions

To download a copy or print these instructions. Please click this link (recommended).

Contact Information

Applicant Information (Usually the property owner)

First Name Michael
Last Name *Brandon*

Organization Name
DTE Electric Company

Phone Type	Number	Extension
Mobile	865-223-9555	

Email
michael.brandon@dteenergy.com

Address
One Energy Plaza
Detroit, MI 48226

Is the Property Owner different from the Applicant?
No

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?
Yes

Upload Attachment for Authorization from Agent

TetraTechAuthorize.pdf - 10/18/2021 02:48 PM

Comment

NONE PROVIDED

Agent Contact

First Name Patti **Last Name** *McCall*

Organization Name

Tetra Tech, Inc.

Phone Type	Number	Extension
Mobile	7344767998	

Email

patti.mccall@tetratech.com

Address

710 Avis Dr

STE 100

Ann Arbor, MI 48108

Are there additional property owners or other contacts you would like to add to the application?

Yes

Additional Contact Information (1 of 3)

Contact Role(s)

NONE PROVIDED

Contact Information

Prefix

Mr.

First Name Randall **Last Name** *Westmoreland*

Title

Technical Expert - Nuclear Licensing

Organization Name

DTE Electric Company

Phone Type	Number	Extension
Mobile	2487989961	

Email

randall.westmoreland@dteenergy.com

Address

One Energy Plaza

Detroit, MI 48226

Additional Contact Information (2 of 3)

Contact Role(s)

NONE PROVIDED

Contact Information

Prefix
Ms.

First Name	**Last Name**
Valerie	*Byrd*

Title
Principal Engineer - Environmental

Organization Name
DTE Electric Company

Phone Type	**Number**	**Extension**
Mobile	313-378-0956	

Email
valerie.byrd@dteenergy.com

Address

One Energy Plaza

Room 410 G.O.

Detroit, MI 48226

Additional Contact Information (3 of 3)

Contact Role(s)
Consultant

Contact Information

Prefix
NONE PROVIDED

First Name	**Last Name**
Patti	*McCall*

Title
NONE PROVIDED

Organization Name
Tetra Tech, Inc.

Phone Type	**Number**	**Extension**
Business	17342134069	

Email
patti.mccall@tetratech.com

Address

710 Avis Dr

STE 100

Ann Arbor, MI 48108

Project Location

DEQ Site Reference Number (Pre-Populated)
7744842549919779824

Project Location
41.9608,-83.2619

6400 North Dixie Highway, Newport, MI

Project Location Address

6400 North Dixie Highway

Newport, MI 48166

County
Monroe

Is there a Property Tax ID Number(s) for the project area?
Yes

Please enter the Tax ID Number(s) for the project location
07 021 501 00; 07 528 001 00; 07 020 506 00; 07 528 013 00; 07 020 505 30; 07 016 501 00; 07 528 009 00; 07 028 119 00; 07 028 071 00; 07 028 508 00; 07 907 001 00; 07 028 504 00; 07 028 503 00; 07 028 514 00; 07 028 507 00; 07 028 506 00; 07 029 502 00; 07 029 507 00; 07 029 504 00; 07 029 505 00; 07 029 503 00; 07 017 502 00; 07 852 004 00; 07 852 005 00; 07 852 006 00; 07 852 010 00; 07 852 012 00; 07 852 014 00; 07 852 101 00; 07 852 104 00; 07 852 105 00; 07 852 106 00; 07 852 110 00; 07 852 112 00; 07 852 114 00.

Is there Subdivision/Plat and Lot Number(s)?
No

Is this project within Indian Lands?
No

Local Unit of Government (LUG)
Frenchtown Township

Directions to Project Site
From Dixie Highway, turn at Enrico Fermi Energy Center sign and follow Fermi Drive to the Security Gatehouse.

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?
Yes

Provide the date of the pre-application meeting/inspection
12/14/2020

Pre-application File Number:
HP4-6DAA-XRAEQ

EGLE and/or USACE staff person involved in the pre-application meeting/inspection:
Bridgett Carver, Kathy David

Has the project scope or design changed since the pre-application meeting/inspection?
No

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?
Yes

Please enter the WIP assessment number:
WIP File Number: 08-58-0003-WA dated 11/7/2008 with information update letters on 3/30/2009 and 8/18/11

Upload copy of WIP letter

Update to file no. 08-58-0003-WA 3-30-2009-v1.pdf - 08/06/2021 04:10 PM
Part 3 Fermi3 mdeq wetland certification 2008-v1.pdf - 08/06/2021 04:10 PM
Part 4 Fermi3 mdeq wetland certification 2008-v1.pdf - 08/06/2021 04:10 PM
Part 5 Fermi3 mdeq wetland certification 2008-v1.pdf - 08/06/2021 04:10 PM
Part 1 Fermi3 mdeq wetland certification 2008-v1.pdf - 08/06/2021 04:10 PM
Part 2 Fermi3 mdeq wetland certification 2008-v1.pdf - 08/06/2021 04:10 PM
MDEQ update to file 08-58-0003-WA 8-18-2011-v1.pdf - 08/06/2021 04:10 PM

Comment

NONE PROVIDED

Environmental Area Number (if known):

NONE PROVIDED

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?

Yes

DA File Number:

LRE-2008-00443-1-S11, LRE-2008-00443-1-J11 and LRE-2008-00443-1-J12

Please attach a copy of the determination letter to this application

USACE Preliminary Jurisdicational Determination 11-10-16.pdf - 08/06/2021 04:39 PM
20120530 Mitigation Site USACE Jurisdiction Determination Revision.pdf - 08/06/2021 04:43 PM
USACE Approved Jurisdiction determination 2-24-12.pdf - 08/06/2021 04:44 PM
USACE Prelim JD for 38 acre conservation area.pdf - 08/06/2021 04:45 PM
Corrected WRP005458 Approved Plans 2-2-17 rdw.pdf - 10/27/2021 08:59 PM

Comment

NONE PROVIDED

Were any regulated activities previously completed on this site under an EGLE and/or USACE permit?

Yes

List the permit numbers.

WRP001033, WRP010274, WRP017418, WRP014992, WRP014238, WRP019995, WRP006924, WRP015777, WRP010529, WRP010652

Describe the regulated activities that were previously permitted.

Fermi 2 project activities; Fermi 3 has been permitted twice but not constructed.

Have any activities commenced on this project?

No

Is this an after-the-fact application?

No

Are you aware of any unresolved violations of environmental law or litigation involving the property?

No

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?

Yes

Easement Holder Contact Information

First Name **Last Name**
Susan *White*

Organization Name
U.S. Fish and Wildlife Service

Phone Type	Number	Extension
Business	734-362-3711	

Email
susan_white@fws.gov

Address
5437 West Jefferson Avenue
Trenton, MI 48183
United States

Describe the type of easement or encumbrance
Cooperative Agreement - Detroit River International Wildlife Refuge

Attach a copy of a description of the easement or encumbrance
Attachment 3-1 Cooperative Agreement between DTE & USFWS.pdf - 10/11/2021 10:27 AM
Comment
NONE PROVIDED

Are there any other federal, interstate, state, or local agency authorizations associated with this project?
Yes

List all other federal, interstate, state, or local agency authorizations.

Agency	Type of Approval	Number	Date Applied	Approved/Denied/Undetermined
U.S. Army Corps of Engineers	Section 10 Permit	LRE-2008-00443-1-S11	08/25/2011	Approved

Comments
See Attachment 6-1 for full list of Authorizations in the Upload of Proposed Site Plans section with the Additional Required and Supplemental Documents. Besides the EGLE/USACE joint permit application, no other permits are being applied for at this time.

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for.
Individual Permit for all other projects

This type of permit application requires that you include contact information for the adjacent landowners to this project. If you are only entering in a small number of bordering parcel owners contact information, please select "Enter list of recipients". If there is a rather large number of affected property owners such as a project that significantly affects lake levels, please upload a spreadsheet of the property owners. Please include names and mailing addresses.
Upload a list.

Uploads/Attachments
Fermi 3 adjacent property owner labels - avery 5163.pdf - 10/15/2021 04:15 PM
Fermi 3_ AdjLandowners.xlsx - 10/15/2021 04:35 PM
Comment
NONE PROVIDED

Project Description

Project Use: (select all that apply - Private, Commercial, Public/Government/Tribal, Receiving Federal/State Transportation Funds, Non-profit, or Other)
Commercial

Project Type (select all that apply):
Development-Commercial/Industrial
Other: Nuclear power plant

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.
DTE Electric Company (DTE) proposes to construct and operate a new nuclear power plant at the existing Enrico Fermi Atomic Power Plant (Fermi) site. The proposed unit is designated as Fermi 3. The purpose of the Fermi 3 project is to provide new baseload electric generation capacity with a net electrical output of approximately 1,535±50 megawatts (MWe) for sale. This purpose is in-line with DTE's mission to provide reliable and affordable electrical power. Refer to Attachment 2-1 for a summary of proposed project activities and Attachment 4-1 for a description of the project purpose and intended use.

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.
The proposed project consists of construction of a new nuclear power unit and ancillary facilities at the Fermi site. The existing site conditions at the Fermi site are depicted on Figure 2-1. A wetland delineation map is shown on Figure 2-2. The proposed wetland impacts are shown on Figure 2-3. The proposed construction areas are shown on Figure 2-4. The overall site plan is shown on Figure 2-5. Refer to Attachment 2-1 for a description of the proposed construction sequence and methods. All figures are included in the Impact Figures pdf.

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.
DTE Electric Company 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 the 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. Refer to Attachment 4-1 for onsite layout alternatives considered and relevant impacts to aquatic resources associated with those alternatives for the Fermi 3 project.

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)
Proposed impacts include 35.55 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 Code (HUC:04100001). To compensate for wetland impacts, DTE Electric Company proposes to restore approximately 21.4 acres of wetlands onsite post construction and restore 111 acres of wetlands offsite in the coastal zone of Western Lake Erie and the northern portion of the Ottawa-Stony Watershed. The attached Fermi 3 Aquatic Resource Mitigation Strategy and Final Design describes the proposed mitigation development.

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.

Attachment 2-1 - Proposed Project and Associated Activities, and the Construction Sequence and Methods.pdf - 08/10/2021 05:34 PM
Attachment 4-1 - Proposed Project Purpose, Intended Use, and Alternatives Considered.pdf - 08/10/2021 05:35 PM
Fermi 3 Aquatic Resource Mitigation Strategy Report -Part 1.pdf - 10/11/2021 10:52 AM
Fermi 3 Aquatic Resource Mitigation Strategy Report -Part 2 Hydrology Report.pdf - 10/11/2021 10:56 AM
Fermi 3 Aquatic Resource Mitigation Strategy Report -Part 4 Plans.pdf - 10/11/2021 11:21 AM
Fermi 3 Aquatic Resource Mitigation Strategy Report - Part 3 WD.pdf - 10/27/2021 07:59 PM

Comment
Part 3 of the Aquatic Resource Mitigation Strategy Report is the Wetland Delineation Report, which has been uploaded to the Wetland Project Information and Impacts section. The Impact Figures File referenced above has been downloaded to the Upload of Proposed Site Plans section.

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.
Intake or Outfall Structures
Shore Protection such as Seawalls, RipRap, and Bioengineering
Utility Crossings - Above Ground
Wetland Restoration
Culvert- Wetland Equalizer Only
Other Project Type

The Proposed Project will involve the following resources (check ALL that apply).
Wetland
Great Lake
Proposed Wetland Mitigation
Pond (open water less than 5 acres in size)

Pond Information

What is the surface area of the pond? (acres)
1.86

Identify all resources impacted by the proposed pond.
Neither of the above options

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes?
Yes

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)
Yes

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application?
No

Is a subdivision, condominium, or new golf course proposed?
No

Wetland Project Information and Impacts

Has a professional wetland delineation been completed for this site?
Yes

Attach a copy of wetland delineation report with data form.

Ducks Unlimited_Wetland Report April 2011.pdf - 10/11/2021 10:31 PM
Ducks Unlimited_Wetland Report_Appendix A Sheets 1-5.pdf - 10/11/2021 10:46 PM
Ducks Unlimited_Wetland Report_Appendix A Sheets 11-15.pdf - 10/14/2021 10:01 AM
Ducks Unlimited_Wetland Report_Appendix A Sheets 16-20.pdf - 10/14/2021 10:25 AM
Ducks Unlimited_Wetland Report_Appendix A Sheets 21-25.pdf - 10/14/2021 11:24 PM
Ducks Unlimited_Wetland Report_Appendix A Sheets 26-29.pdf - 10/18/2021 05:32 PM
Ducks Unlimited_Wetland Report Appendix B.pdf - 10/18/2021 05:36 PM
Ducks Unlimited_Wetland Report_Appendix C.pdf - 10/18/2021 05:38 PM
Ducks Unlimited_Wetland Report Appendix A sheets 6-10.pdf - 10/27/2021 08:03 PM

Comment

NONE PROVIDED

Total acres of wetland affected by this project.

Category	Affected area (acres)
Permanent	14.16
Temporary	23.67
	Sum: 37.83

Is filling or draining of 1 acre or more (cumulatively) of wetland proposed?

Yes

Select all wetland types that will be affected by this project:

Emergent
Forested
Scrub-shrub
Rare and Imperiled

If your project includes placing fill in wetland then select the proposed activities from the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

General Fill
Grading or Mechanical Land Clearing
Road - New
Road - Upgrade/Improvement
Driveway
Temporary Access
Riprap
Spoils Disposal
Parking Area
Path/Sidewalk

Complete this table for projects involving Fill. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Refer to Impact Tables: Attachments 12-2 through 12-9	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

Source of Fill Material:
Off-site
Please Describe
Offsite sand and gravel as well as on-site material will be used for the construction of roads and other facilities. Refer to Figure 2-1 for proposed location of on-site source of fill material.

Type of Fill.
Other: on-site material; sand and gravel; 2"x3" stone covered by 21AA limestone; concrete; HMA surfacing/aggregate base/sand subbase

Is riprap proposed?
Yes
Indicate size range of riprap in inches:
6-12

Type of riprap
Angular rock

Will material be installed under the riprap?
No

Select from the following list for Excavation/Dredge Activities (if your proposed project is primarily a structure enter the impact as a structure. Only enter an impacted area in one of the impact tables in one impact section):
Excavation (wetlands)

If your project includes EXCAVATION/DREDGE IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Refer to Impact Tables: Attachments 12-2 through 12-9	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

Spoils Disposal

Will the excavation/dredge spoils be disposed of on site or off site?
On site

Describe any measures used to retain sediment:
silt fence, dredge spoils will be placed in the dewatered Pond H, see Att. 2-1

If your project includes STRUCTURES IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
Culvert
Building - non-residential new, Commercial/Industrial/Public
Utility Structure

Projects involving Structures:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (Sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Refer to Impact Tables: Attachments 12-2 through 12-9	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

If your project includes Other Activities in WETLAND not listed in this section, then select from the proposed activities in the following list. If your activity in Wetland has not been listed in this Wetland Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.
Vegetation Removal
Restoration

Projects involving All other: (Many of these types of projects will not have a depth or volume. In this case, enter "0" in those boxes.)

Activity	Length	Width	Depth	Area	Volume	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Refer to Impact Tables: Attachments 12-2 through 12-9	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

Is Wetland Mitigation being proposed as part of this proposed project?
Yes

Mitigation Project Details for Wetlands

Impact Location (include identifier on site plan)	Impact Type:	Impact Amount (acres)	Replacement Ratio (include any reduction)	Mitigation Type	Mitigation Amount (acres)	Kind of Mitigation
Fermi 3 impacts	Other: Emergent, Scrub-Shrub & Forested	35.55	3:1	Other: Emergent/Scrub-Shrub, & Forested	111.17	Enhancement
		Sum: 35.55			Sum: 111.17	

Wetland mitigation plan or associated documents
NONE PROVIDED
Comment
The Aquatic Resource Mitigation Strategy Report and attachments have been uploaded to the Project Description section.

Voluntary Wetland Restoration

Describe any other activities that are included in the WETLAND restoration project that have not previously been captured in this application.
In addition to restoring 111.17 acres of wetlands of similar type offsite in the same watershed (coastal zone), the onsite restoration of 21.4 acres of the impacted wetlands post-construction and the enhancement of existing wetlands at the offsite mitigation area will provide added ecological value and benefits above the required compensatory mitigation.

Project Proposing Berms and/or Impoundments

Item/Activity (example: Berm #1/Impoundment #1)	Impoundment size at design elevation (acres)	Berm top elevation (feet)	Impoundment flood elevation (feet) (Emergency Spillway)	Downstream berm toe elevation (feet)	Structural height (feet) (Berm top to toe)	Normal Pool elev. (feet) (Primary Spillway)
NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED

Do you have flowage rights to all proposed flooded property at the design elevation?
Yes

Is Microtopography proposed in this project?
No

Great Lake Project Information (1 of 1)

Great Lake Water elevation reference* (show elevation on plans with description):
IGLD 85

Great Lakes observed water elevation (feet)
573.12

Great Lake Average water depth at activity location in a normal year: (feet)
13.12

Date of observation (M/D/Y)
10/11/2021

Great Lakes Information Upload
NONE PROVIDED
Comment
NONE PROVIDED

Describe any measures used to retain sediment:
coffer dam and turbidity curtain

Will a turbidity curtain be used during the proposed project?
Yes

Inland Lakes, Great Lakes and Stream Impacts (1 of 1)

The following impact description applies to: (select only one at a time, duplicate this entire section if there are impacts to multiple waterbody types):
Great Lake

Acres of Inland lake/Great Lake affected by your project below the Ordinary High Water Mark:

Category	Acres
Permanent	0

Category	Acres
Temporary	0.08
	Sum: 0.08

Select from the following list all Fill Activities (select all that apply to this waterbody impacted):
Other: Fill for discharge pipe, intake structure and coffer dam
Riprap

Complete this table for projects involving Fill below the Ordinary High Water Mark. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards	Corrected Value for complex impact Area (square feet)
Refer to Impact Tables Attachment 10-2	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

Type of Fill
Peastone
Sand

Source of Fill
Off-site

Is riprap proposed?
Yes
Indicate size range of riprap:
6 inch layer of MDOT 6AA bedding; 2 ft min 8-16 in size rocks

Type of riprap
Angular rock

Will material be installed under the riprap?
Yes

Type of material installed under riprap:
Filter fabric

Activities Involving Dredging or Excavation: Select from the following list for Excavation/Dredge Activities (select all that apply to this waterbody impacted):
Other: Dredging/excavation for intake structure, discharge pipe, and fish return pipe installation.

Projects involving Excavation/Dredging below the Ordinary High Water Mark:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact Areas (square feet)
Refer to Impact Tables Attachment 10-2	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

Has this area been previously dredged?
Yes
describe:
9/24/15 per USACE LRE-1988-10408-L15 issued 9/10/15, MDEQ 11-58-0055-P issued 4/25/12 & MDEQ 13-58-0013-P issued 6/25/13

Date the area was previously Dredged:
09/24/2015

Permit Number under which previous dredging was authorized:
USACE LRE-1988-10408-L15 issued 9/10/15, MDEQ 11-58-0055-P issued 4/25/12 & MDEQ 13-58-0013-P issued 6/25/13

Previous Owner's Name
NONE PROVIDED

Will the previously dredged area be enlarged?
Yes

Is long-term maintenance dredging proposed?
No

What is the method used to be dredged?
Other: method undetermined at this time

Has the dredge material been tested?
No

Spoils Disposal

Will the excavation/dredge spoils be disposed of on site or off site?
On site

If your project includes STRUCTURES then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
Outfall Structure
Piling
Intake Structure
Seawall New
Pier/Wharf/Dock
Groin

Projects involving Structures constructed below the Ordinary High Water Mark:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Refer to Impact Tables Attachment 10-2	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

If your project includes Other Activities not listed in this section, then select from the proposed activities in the following list. If your activity has not been listed in this Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.
Dewatering

Projects involving All other activities below the Ordinary High Water Mark:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet).
Refer to Attachment 2-1 for dewatering details	0	0	0	0	0	0	NONE PROVIDED
				Sum: 0	Sum: 0	Sum: 0	Sum: NaN

Does the proposed project include mitigation?
none

Shore Protection Project such as Seawalls, RipRap, or Bioengineering

Select all that apply to your project.
Seawall - new or replacement

Is a cumulative length of seawalls, bulkheads, or revetments of 500 feet or more in length proposed?
Yes

Is the proposed structure going to extend 150 feet or more into a lake or stream?
No

Distance from the project to the adjacent property lines

Distance from property line to the left (feet)	Distance from property line to the right (feet)
5500	3700

Distance of project from an obvious fixed structure (example - 50 ft from SW corner of house)
20 ft from eastern edge of Fermi 1 Intake Structure/screen house

Will any existing structures be removed as part of this project including walls or any other structure?
No

SEAWALL

Is the seawall new, repair, or replacement?
New

Is toe stone proposed along the entire wall?
Yes

Does the proposed toe stone have a slope equal to or gentler than 1-foot vertical to 2-feet horizontal?
Yes

Intake or Outfall Structures

Is the intake structure associated with an authorized outfall structure?
Yes

Number of intakes or outfalls:
3

Pipe Description

Unique Identifier	Pipe Diameter (inches):	Invert Elevation:
Intake Structure	852x192	559.67
Discharge Outfall	48	558
Fish Return Outfall	24	572

Type of intake or outfall stabilization:
Riprap

Has the water been treated (outfall only)?
Yes

Upload of Proposed Site Plans

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	Yes
Fill and Excavation areas with associated amounts in cubic yards	Yes
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	Yes
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	Yes
Dimensions to other Structures and Lot Lines associated with the project	Yes
Topographic Contour Lines from licensed surveyor or engineer when applicable	Yes

Upload Site Plans and Cross Section Drawings for your Proposed Project

Impact Figures.pdf - 10/18/2021 04:11 PM

Comment

Wetland equalization culvert information in Wetland Project Information and Impacts section of MiWaters is detailed in the impact figures: 1) south canal culverts (Construction Area 5): Figures 10-3A, 10-3B, 12-6B, 14-1A, and 14-1B 2) Doxy road culverts (Warehouse, PAP/VIB and Parking Garage): Figures 10-1A, 10-1B, 10-1C, 10-1D, and 12-7B 3) box culvert (New Operations Access Road): Figures 10-4A, 10-4B, 14-2A, 14-2E, 14-2F, and 14-2G

Additional Required and Supplementary Documents

Attachment 5-1 Project Location Map.pdf - 10/18/2021 03:56 PM
Attachment 6-1_Other Agency Authorizations.pdf - 10/18/2021 03:58 PM
Impact Tables.pdf - 10/18/2021 04:03 PM
Photographs.pdf - 10/18/2021 04:12 PM
JPA-OVERALL Fermi 3 Site Figure B & W.pdf - 10/18/2021 06:05 PM
JPA_Fermi 3 OVERALL_24X36_COLOR_Figure.pdf - 10/18/2021 06:06 PM
Impact Figures.pdf - 10/27/2021 08:39 PM

Comment

NONE PROVIDED

Fees

Major Project Fee
+$2000.00

Total Fee Amount:
$2000.00

Is the applicant or landowner a State of Michigan Agency?
No

Attachments

Date	Attachment Name	Context	User
10/27/2021 8:59 PM	Corrected WRP005458 Approved Plans 2-2-17 rdw.pdf	Attachment	Patti McCall
10/27/2021 8:39 PM	Impact Figures.pdf	Attachment	Patti McCall
10/27/2021 8:03 PM	Ducks Unlimited_Wetland Report Appendix A sheets 6-10.pdf	Attachment	Patti McCall
10/27/2021 7:59 PM	Fermi 3 Aquatic Resource Mitigation Strategy Report - Part 3 WD.pdf	Attachment	Patti McCall
10/18/2021 10:40 PM	26115C0257F.png	Attachment	Patti McCall
10/18/2021 10:38 PM	26115C0259F.png	Attachment	Patti McCall
10/18/2021 6:06 PM	JPA_Fermi 3 OVERALL_24X36_COLOR_Figure.pdf	Attachment	Patti McCall
10/18/2021 6:05 PM	JPA-OVERALL Fermi 3 Site Figure B & W.pdf	Attachment	Patti McCall
10/18/2021 5:38 PM	Ducks Unlimited_Wetland Report_Appendix C.pdf	Attachment	Patti McCall
10/18/2021 5:36 PM	Ducks Unlimited_Wetland Report Appendix B.pdf	Attachment	Patti McCall
10/18/2021 5:32 PM	Ducks Unlimited_Wetland Report_Appendix A Sheets 26-29.pdf	Attachment	Patti McCall
10/18/2021 4:12 PM	Photographs.pdf	Attachment	Patti McCall
10/18/2021 4:11 PM	Impact Figures.pdf	Attachment	Patti McCall
10/18/2021 4:03 PM	Impact Tables.pdf	Attachment	Patti McCall
10/18/2021 3:58 PM	Attachment 6-1_Other Agency Authorizations.pdf	Attachment	Patti McCall
10/18/2021 3:56 PM	Attachment 5-1 Project Location Map.pdf	Attachment	Patti McCall
10/18/2021 2:48 PM	TetraTechAuthorize.pdf	Attachment	Patti McCall
10/15/2021 4:35 PM	Fermi 3_ AdjLandowners.xlsx	Attachment	Patti McCall
10/15/2021 4:15 PM	Fermi 3 adjacent property owner labels - avery 5163.pdf	Attachment	Patti McCall
10/14/2021 11:24 PM	Ducks Unlimited_Wetland Report_Appendix A Sheets 21-25.pdf	Attachment	Patti McCall

Date	Attachment Name	Context	User
10/14/2021 10:25 AM	Ducks Unlimited_Wetland Report_Appendix A Sheets 16-20.pdf	Attachment	Patti McCall
10/14/2021 10:01 AM	Ducks Unlimited_Wetland Report_Appendix A Sheets 11-15.pdf	Attachment	Patti McCall
10/11/2021 10:46 PM	Ducks Unlimited_Wetland Report_Appendix A Sheets 1-5.pdf	Attachment	Patti McCall
10/11/2021 10:31 PM	Ducks Unlimited_Wetland Report April 2011.pdf	Attachment	Patti McCall
10/11/2021 11:21 AM	Fermi 3 Aquatic Resource Mitigation Strategy Report -Part 4 Plans.pdf	Attachment	Patti McCall
10/11/2021 10:56 AM	Fermi 3 Aquatic Resource Mitigation Strategy Report -Part 2 Hydrology Report.pdf	Attachment	Patti McCall
10/11/2021 10:52 AM	Fermi 3 Aquatic Resource Mitigation Strategy Report -Part 1.pdf	Attachment	Patti McCall
10/11/2021 10:27 AM	Attachment 3-1 Cooperative Agreement between DTE & USFWS.pdf	Attachment	Patti McCall
8/10/2021 5:35 PM	Attachment 4-1 - Proposed Project Purpose, Intended Use, and Alternatives Considered.pdf	Attachment	Randall Westmoreland
8/10/2021 5:34 PM	Attachment 2-1 - Proposed Project and Associated Activities, and the Construction Sequence and Methods.pdf	Attachment	Randall Westmoreland
8/6/2021 4:45 PM	USACE Prelim JD for 38 acre conservation area.pdf	Attachment	Randall Westmoreland
8/6/2021 4:44 PM	USACE Approved Jurisdiction determination 2-24-12.pdf	Attachment	Randall Westmoreland
8/6/2021 4:43 PM	20120530 Mitigation Site USACE Jurisdiction Determination Revision.pdf	Attachment	Randall Westmoreland
8/6/2021 4:39 PM	USACE Preliminary Jurisdicational Determination 11-10-16.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	Part 1 Fermi3 mdeq wetland certification 2008-v1.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	Part 2 Fermi3 mdeq wetland certification 2008-v1.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	MDEQ update to file 08-58-0003-WA 8-18-2011-v1.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	Update to file no. 08-58-0003-WA 3-30-2009-v1.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	Part 3 Fermi3 mdeq wetland certification 2008-v1.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	Part 4 Fermi3 mdeq wetland certification 2008-v1.pdf	Attachment	Randall Westmoreland
8/6/2021 4:10 PM	Part 5 Fermi3 mdeq wetland certification 2008-v1.pdf	Attachment	Randall Westmoreland

CONTACT INFORMATION

Tetra Tech Authorization

Tetra Tech Authorization

DTE

October 18, 2021

Submission HPA-HZP4-BDZ21
(2021-MEP-F3COL-0006)

Melissa Letosky
Michigan Department of Environment, Great Lakes, and Energy
Water Resources Division
301 E. Louis Glick Hwy
Jackson, MI 49201

Subject: **Letter Authorizing Tetra Tech to Apply for a Fermi 3 Permit on behalf of DTE**

Ms. Letosky:

As the Owner of the subject property, DTE hereby authorizes Tetra Tech to sign and submit a Joint Permit Application for the construction of Fermi 3 at 6400 North Dixie Highway in Frenchtown. Although this project will not be constructed during the permit timeframe, maintaining the permit is a requirement for the Fermi 3 Combined Operating License issued by the U.S. Nuclear Regulatory Commission. Please send correspondence and permit documentation to the attention of Patti McCall at Tetra Tech, 710 Avis Drive, Ann Arbor, Michigan 48108.

If you have any questions, or need additional information, please contact me at (313) 235-0443.

Sincerely,

Michael K. Brandon, Manager
Nuclear Development – Licensing
DTE Electric Company
One Energy Plaza
Detroit, MI 48226

CC: Randall Westmoreland
Julie Beste-Walz

BACKGROUND INFORMATION

Update to file no. 08-58-0003-WA 3-30-2009-v1

Fermi 3 MDEQ Wetland Certification 2008-v1

MDEQ update to file 08-58-0003-WA 8-18-2011-v1

USACE Preliminary Jurisdictional Determination 11-10-16

USACE Approved Jurisdiction Determination 2-24-12

20120530 Mitigation Site USACE Jurisdiction Determination Revision

USACE Prelim JD for 38 Acre Conservation Area

Attachment 3-1 Cooperative Agreement Between DTE and USFWS

Corrected WRP005458 Approved Plans 2-2-17

Update to file no. 08-58-0003-WA 3-30-2009-v1

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

March 30, 2009

Mr. Randall Westmoreland
The Detroit Edison Company
One Energy Plaza
Detroit, MI 48226-1279

Dear Mr. Westmoreland:

SUBJECT: Wetland Identification Report
Modified Wetland Identification File Number 08-58-0003-WA

The Department of Environmental Quality (DEQ) has been advised by your consultant, Mr. Peter Wycoff of Ducks Unlimited, that the location of wetland YY was incorrectly represented on the map in our original report issued November 7, 2008. The enclosed map, provided by Ducks Unlimited, shows the correct location of wetland YY. Wetland YY is located to the west of the area indicated on the original map.

This modified Report clarifies the previous report. No changes have been made to the regulatory status of the wetlands on site. The warranty period for this reassessment remains as October 16, 2011.

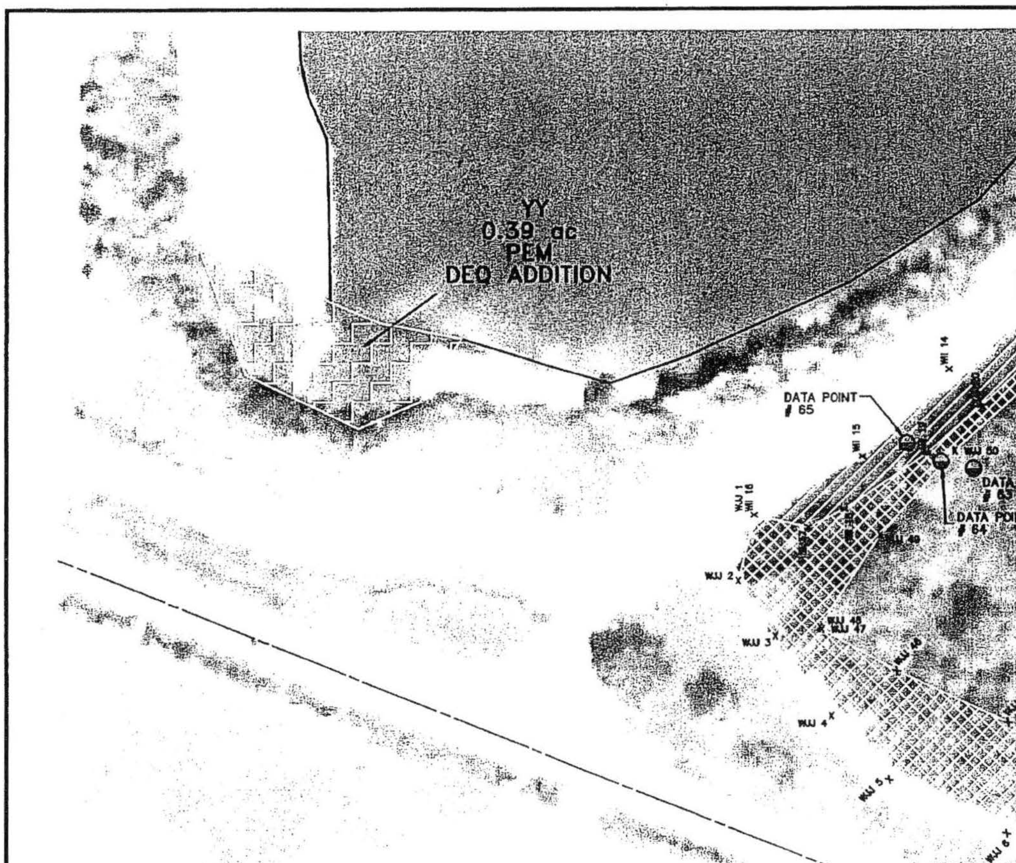
If you should have any questions regarding this letter, please contact me.

Sincerely,

Todd Losee
Wetland Identification Program Coordinator
Land and Water Management Division
517-335-3457

Enclosure

cc: Monroe CEA
Monroe County Health Department
Frenchtown Township Clerk
USACE
Mr. Peter Wyckoff, Ducks Unlimited
Ms. Lori Sargent, DNR, Wildlife, Michigan Natural Features Inventory
Ms. Mary Vanderlaan, DEQ, Jackson District Office



NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DUCKS UNLIMITED, INC. SHALL NOT ASSUME ANY RESPONSIBILITY FOR THE SAFETY OF THE WORK PERFORMED, PERSONS ENGAGED IN THE WORK, NEARBY STRUCTURES OR OF OTHER PERSONS ON-SITE.

Fermi 3 MDEQ Wetland Certification 2008-v1

17

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
JACKSON DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

November 7, 2008

Mr. Randall Westmoreland
The Detroit Edison Company
One Energy Plaza
Detroit, Michigan 48226-1279

Dear Mr. Westmoreland:

SUBJECT: Wetland Identification Report
Wetland Identification File Number: 08-58-0003-WA

The Department of Environmental Quality (DEQ) conducted a Level 3 Wetland Identification Review of 1,106 acres on property located in Town 06S, Range 10E, Sections 16, 17, 20, 21, 28, and 29, Frenchtown Township, Monroe County on October 14, 15, and 16, 2008. The wetland review was conducted in accordance with Part 303, Wetland Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); and Rule 4 (1), Wetland Identification and Assessment (R 281.924) of the Administrative Rules for Part 303. This is a report of our findings in response to your Wetland Identification Application.

The DEQ staff walked the flagged boundaries as requested in your wetland identification application. Based on our on-site review, which included review of plant communities, hydrologic indicators, and soils and an in-office review of other pertinent information, the DEQ confirms, in part, the wetland boundaries observed during the site inspection. Staff noted a few areas of disagreement with your consultant's boundaries.

Changes made to your consultant's boundaries include:

Wetland I
- connect flag I34 to flag I42
- connect flag I43 to flag I47

Wetland L
- connect flag L69 to flag L74

Wetland M and T
- connect flag M174 to flag T5
- leave berm out of wetland area

New Wetlands WW, XX, YY, and ZZ
- these four wetland areas shown on the map are located adjacent to the gravel pit lakes
- these wetlands were not flagged in the field, their locations are approximate

We documented the new boundaries on the enclosed site maps. The site maps of the review area were created by combining information from your consultant and the DEQ. The new maps identify the areas containing wetland and the non-wetland (upland). A new delineation is not necessary.

For those areas identified as regulated wetland on the site map; specifically Wetlands B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, BB, CC/DD, EE, FF, GG, HH, II, JJ, KK, WW, XX, YY, and ZZ; please be advised that any of the following activities require a permit under Part 303:

a) Deposit or permit the placing of fill material in a regulated wetland.
b) Dredge, remove, or permit the removal of soil or minerals from regulated wetland.
c) Construct, operate, or maintain any use or development in a regulated wetland.
d) Drain surface water from a regulated wetland.

For those areas identified as non-wetland (upland) and non-regulated wetland on the site map, the DEQ lacks jurisdiction under Part 303 for activities occurring in those areas. The non-regulated wetland, Wetland A, is not regulated since it is not contiguous to the Great Lakes, an inland lake or pond, or a river or stream.

You may request the DEQ reassess the subject review area, or any portion of the review area, should you disagree with the findings, within 60 days of the date of this report. A written request to reassess the Wetland Identification Review area must be accompanied by supporting evidence with regard to wetland vegetation, soils or hydrology different from, or in addition to, the information relied upon by DEQ staff in preparing this report. The request should be submitted to:

Wetland Identification Program
Land and Water Management Division
Department of Environmental Quality
P.O. Box 30458
Lansing, Michigan 48909-7756

Please be aware that this identification report does not constitute a determination of the presence of wetland that may be regulated under local ordinances or federal law. The U.S. Army Corps of Engineers (USACE) retains regulatory authority over certain wetlands pursuant to Section 404 of the Clean Water Act (CWA), and specifically those wetlands associated with traditionally navigable waters of the state. Navigable waters are generally the Great Lakes, their connecting waters, and river systems and lakes connected to these waters. In other areas of the state, the DEQ is responsible for identification of wetland boundaries for purposes of compliance with the CWA under an agreement with the U.S. Environmental Protection Agency.

Our review indicates your wetland identification area may be within those areas regulated by the USACE. Many activities within these areas may also require a federal review and/or a permit. Additional information may be obtained by contacting the USACE at 313-226-2218.

It should be noted that three State Threatened species were observed within the review area. Eastern fox snake (*Elaphe gloydi*) and bald eagle (*Haliaeetus leucocephalus*) were observed by individuals with Ducks Unlimited per their submitted wetland investigation report. American lotus (*Nulumbo lutea*) was observed in wetland CC & DD by DEQ staff during the site inspection on October 15, 2008. For more information concerning these species, please contact:

Ms. Lori Sargent
Department of Natural Resources, Wildlife Division
Email (preferred): SargentL@michigan.gov
Phone: 517-373-9418

This Wetland Identification Report is limited to findings pursuant to Part 303 and does not constitute a determination of jurisdiction under other DEQ administered programs. Any land use activities undertaken on the assessed parcel may be subject to regulation pursuant to the NREPA under the following programs:

Floodplain Regulatory Authority found in Part 31, Water Resources Protection
Part 91, Soil Erosion and Sedimentation Control
Part 301, Inland Lakes and Streams
Part 323, Shorelands Protection and Management
Part 325, Great Lakes Submerged Lands

The findings contained in this report are binding on the DEQ until October 16, 2011; a period of three years from the date of the site inspection; unless a reassessment is conducted. Please contact me if you have any questions regarding this report.

Sincerely,

Mary Vanderlaan

Mary Vanderlaan
Jackson District Supervisor
Land and Water Management Division
517-780-7915

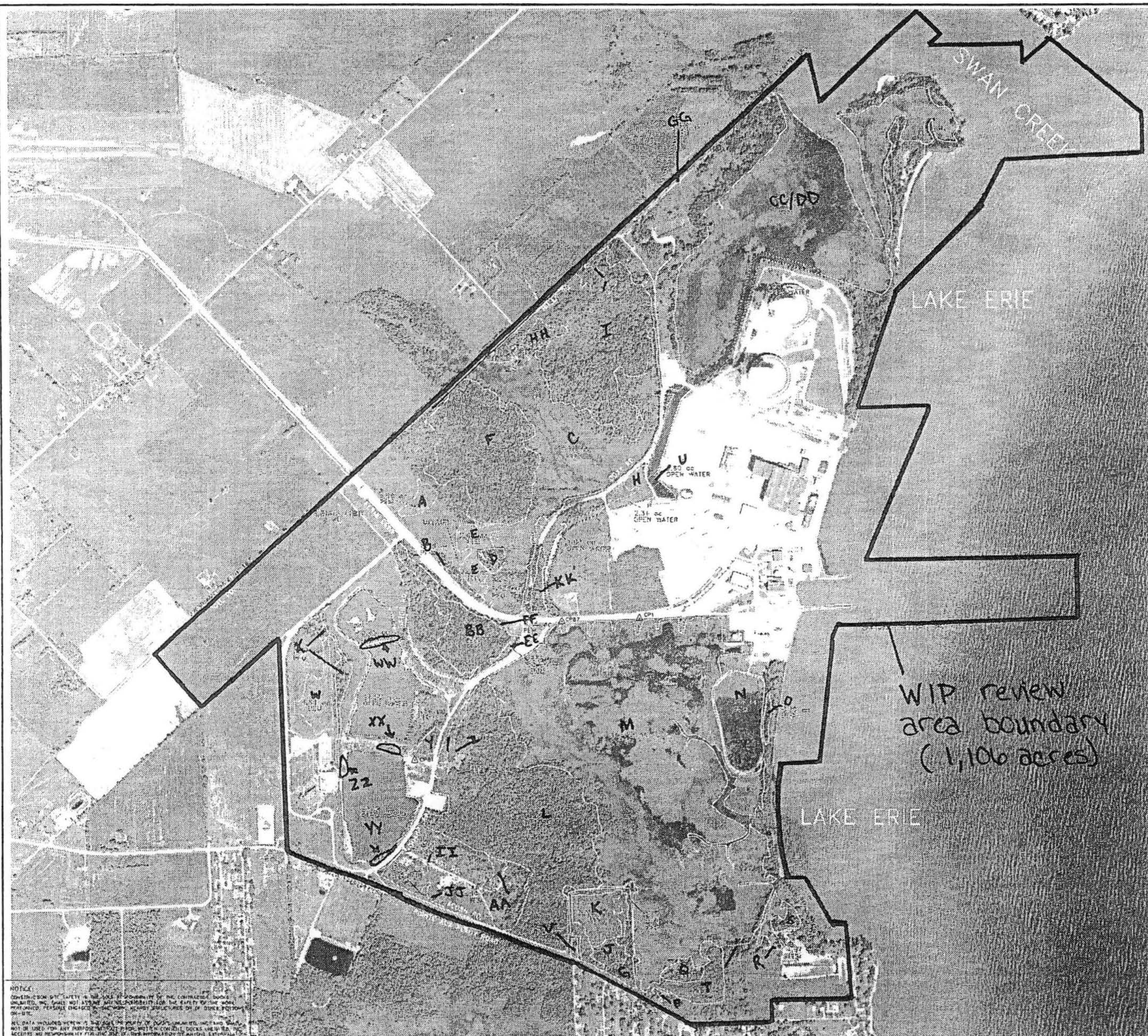
Enclosure

cc/enc: Monroe CEA
Monroe County Health Department
Frenchtown Township Clerk
USACE
City of Newport Clerk
Mr. Peter Wyckoff, Ducks Unlimited
Ms. Lori Sargent, DNR
Ms. Wendy Veltman, DEQ

SITE LOCATION

DTE – Fermi 08-58-0003-WA

MAP 2 of 28



N

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

LEGEND

PSS PALUSTRINE SCRUB SHRUB WETLAND
PEM PALUSTRINE EMERGENT WETLAND
PFO PALUSTRINE FORESTED WETLAND
APPROXIMATE PROPERTY LINE
OPEN WATER (FLAGGED)
OPEN WATER (NOT FLAGGED)
WETLAND BOUNDARY
DATA POINT
HORIZONTAL & VERTICAL CONTROL

UP = Upland (non-wetland)
reg = regulated wetland
non-reg = non-regulated wetland

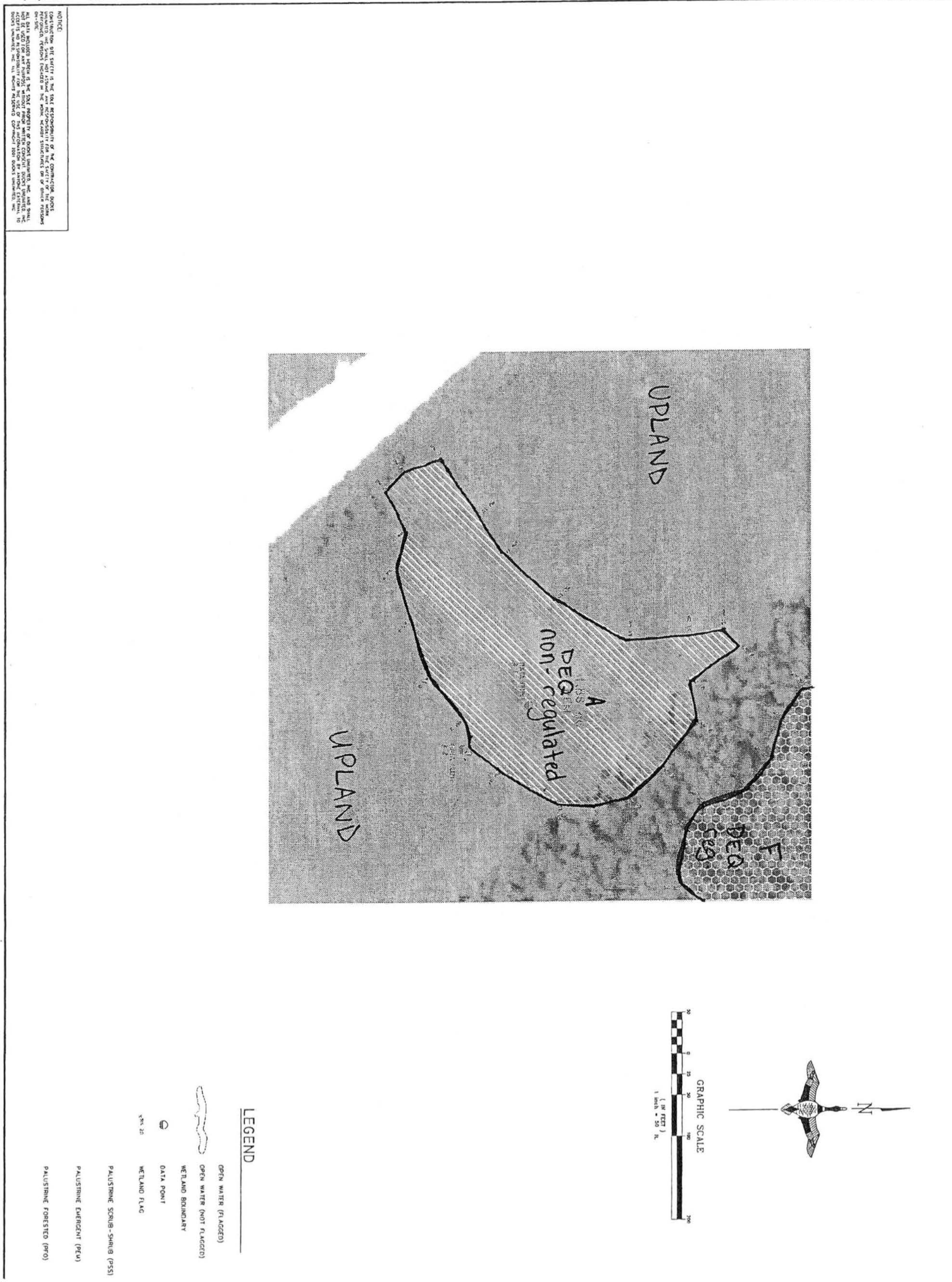
HORIZONTAL CONTROL – Coordinates are NAD 83 (CORS 1996) Michigan State Plane Coordinates, South Zone # 2113, units international feet. Coordinates established from NGS OPUS (National Geodetic Survey, Online Positioning User Service) solution for control point 81. Raw data was collected for 5 hours on June 4, 2008 using a Trimble 4700 GPS base receiver. OPUS solution for control point 81, North 167655.689 ift.
East 13420948.599 ift.

ONSITE CONTROL, HORIZONTAL

Control Point # 1 – Found concrete monument with brass cap on south side of Fermi Drive near sign.
N. 169217.291 ift.
E. 13423438.587 ift.

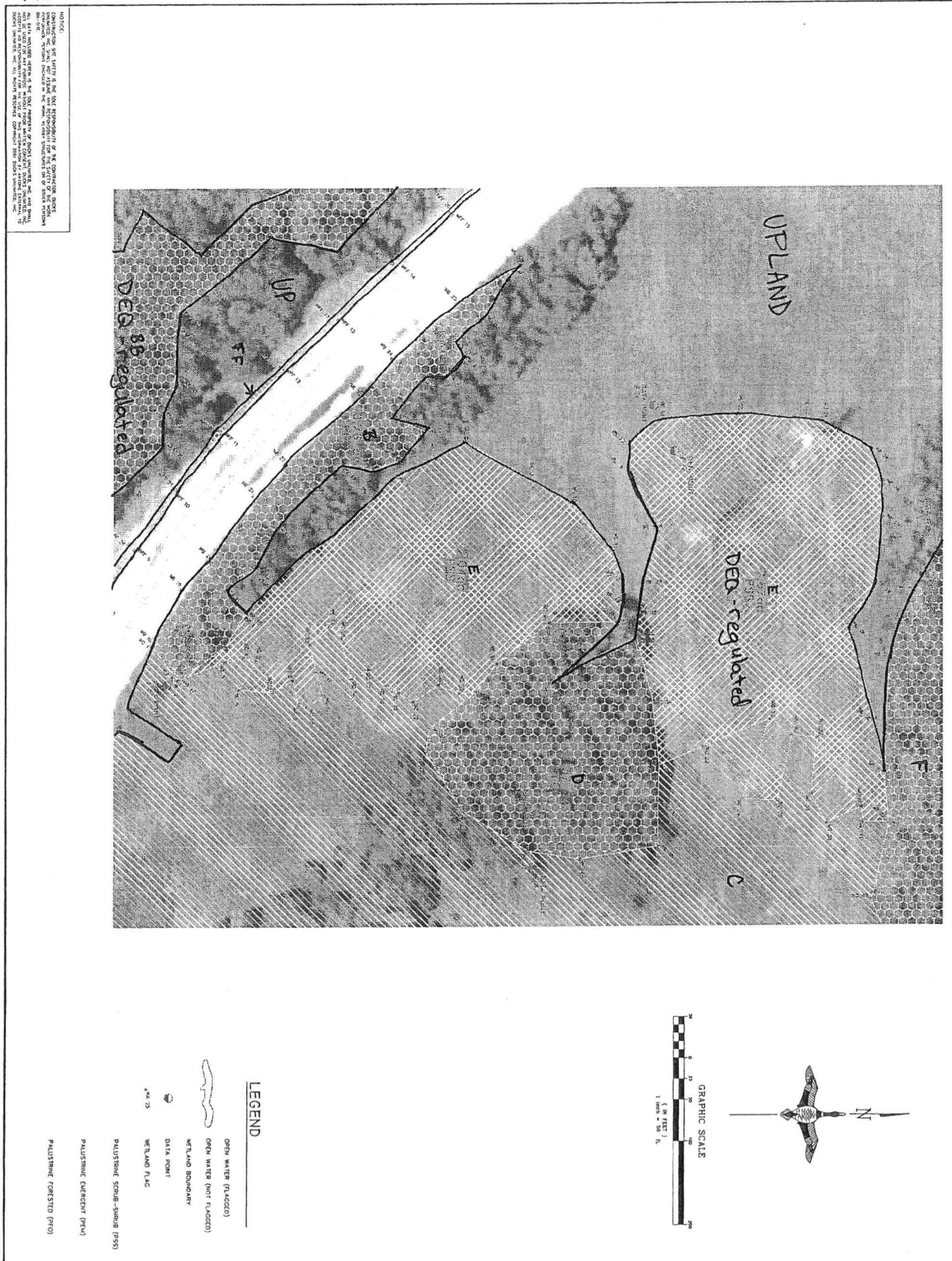
Control Point # 87 –Found concrete monument with brass cap on south side of Fermi Drive, 1.6 feet south of edge of pavement stamped "N.5106.143, E 3600 , EL. 580.167.
N. 169181.477 ift.
E. 13422586.221 ift.

Control Point # 81 – Found yellow capped iron rod #29252, lathe marked "#81 DTE"
N. 167655.689 ift.
E. 13420948.599 ift.



- This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.
- This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Map prepared by: Kathleen Fairchild, DEQ
10/27/2008



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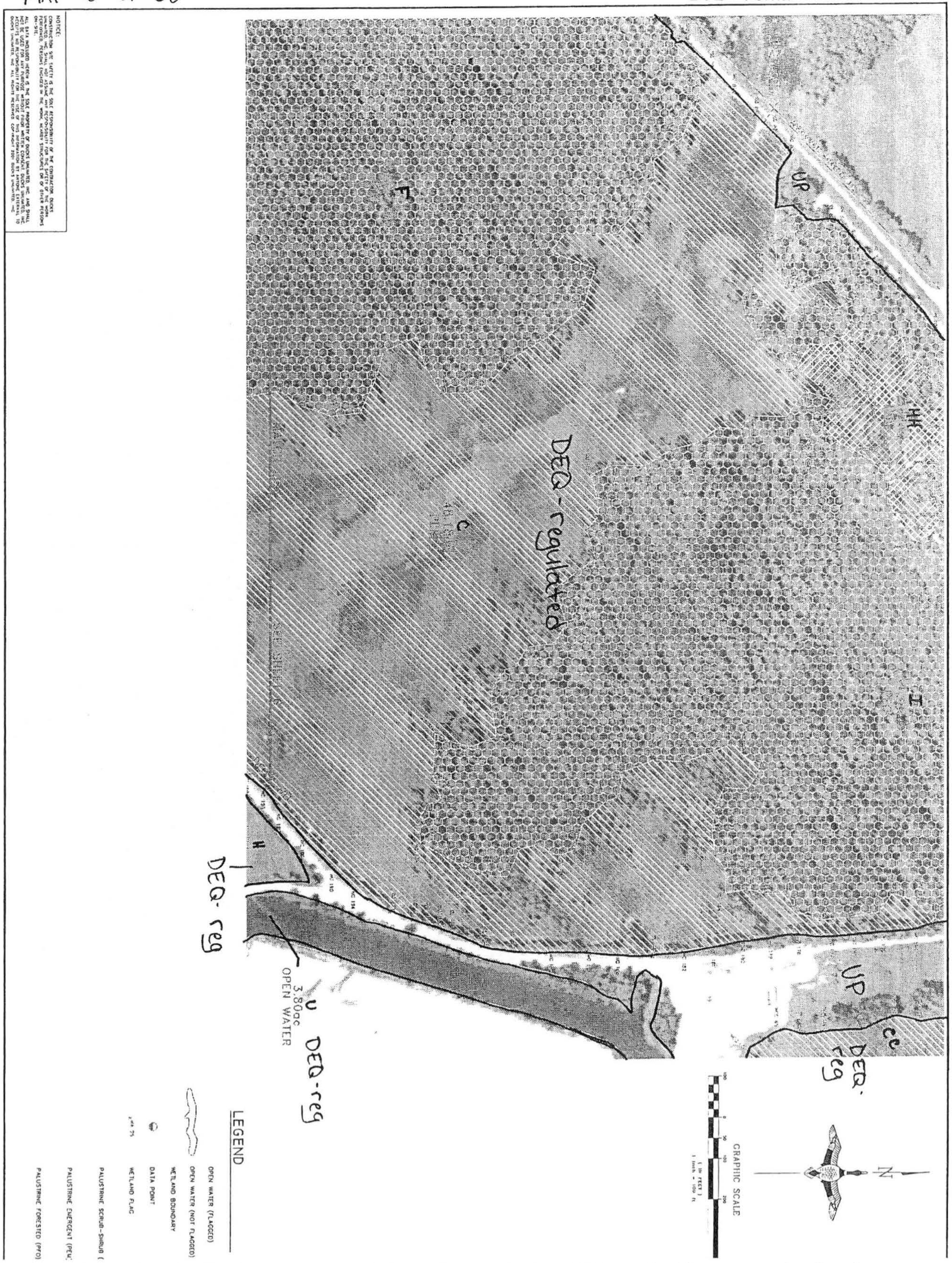

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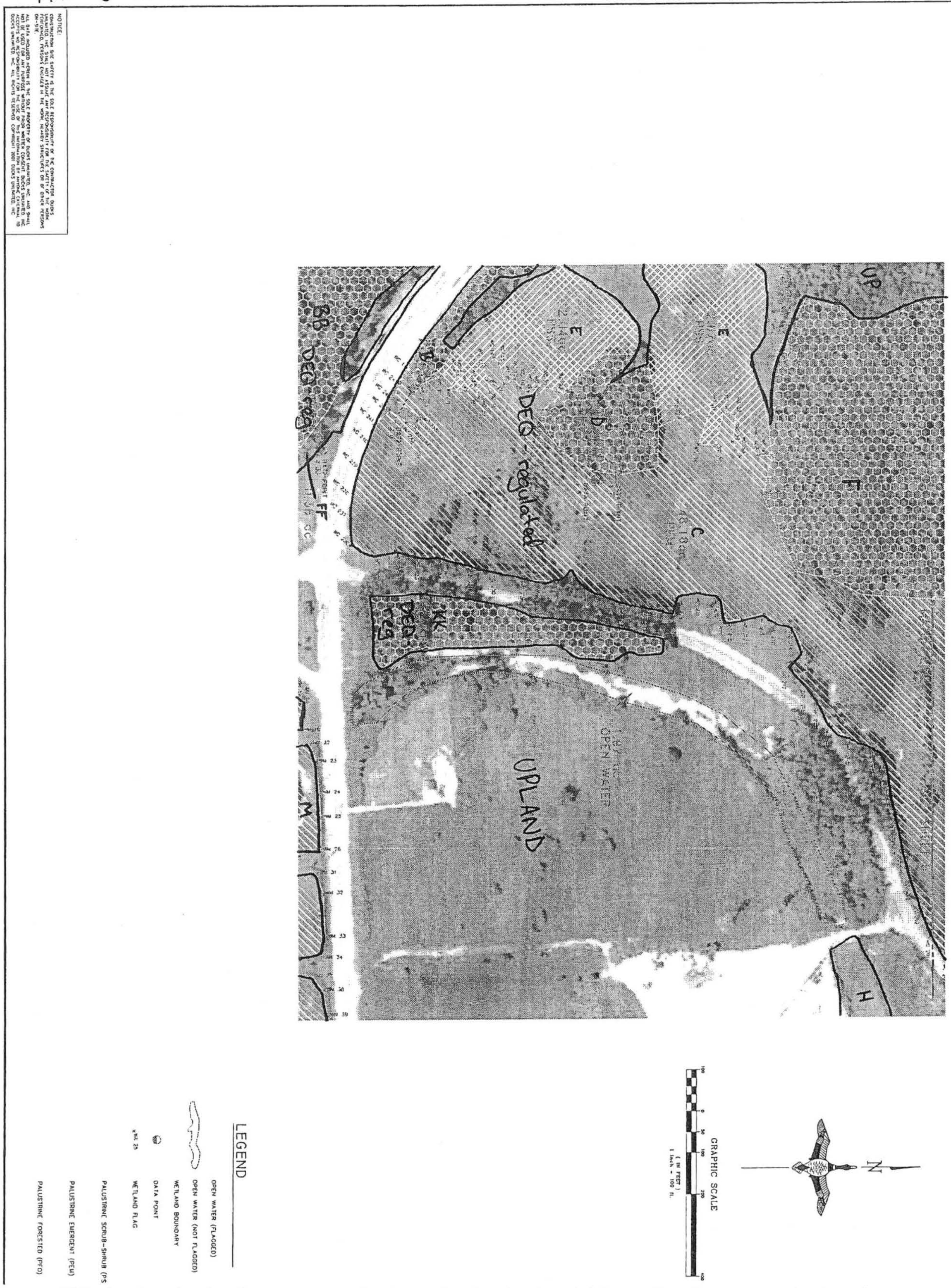

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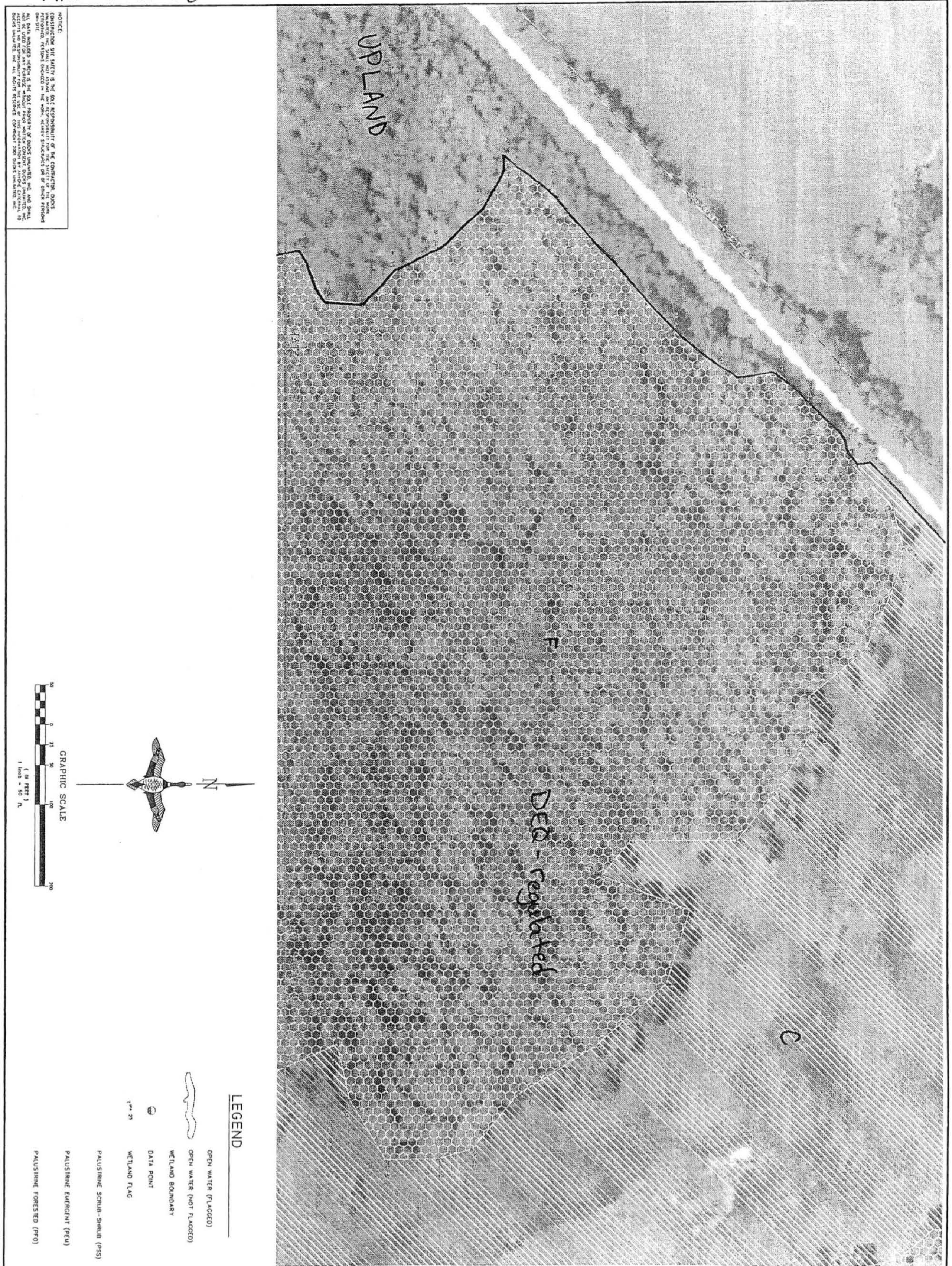

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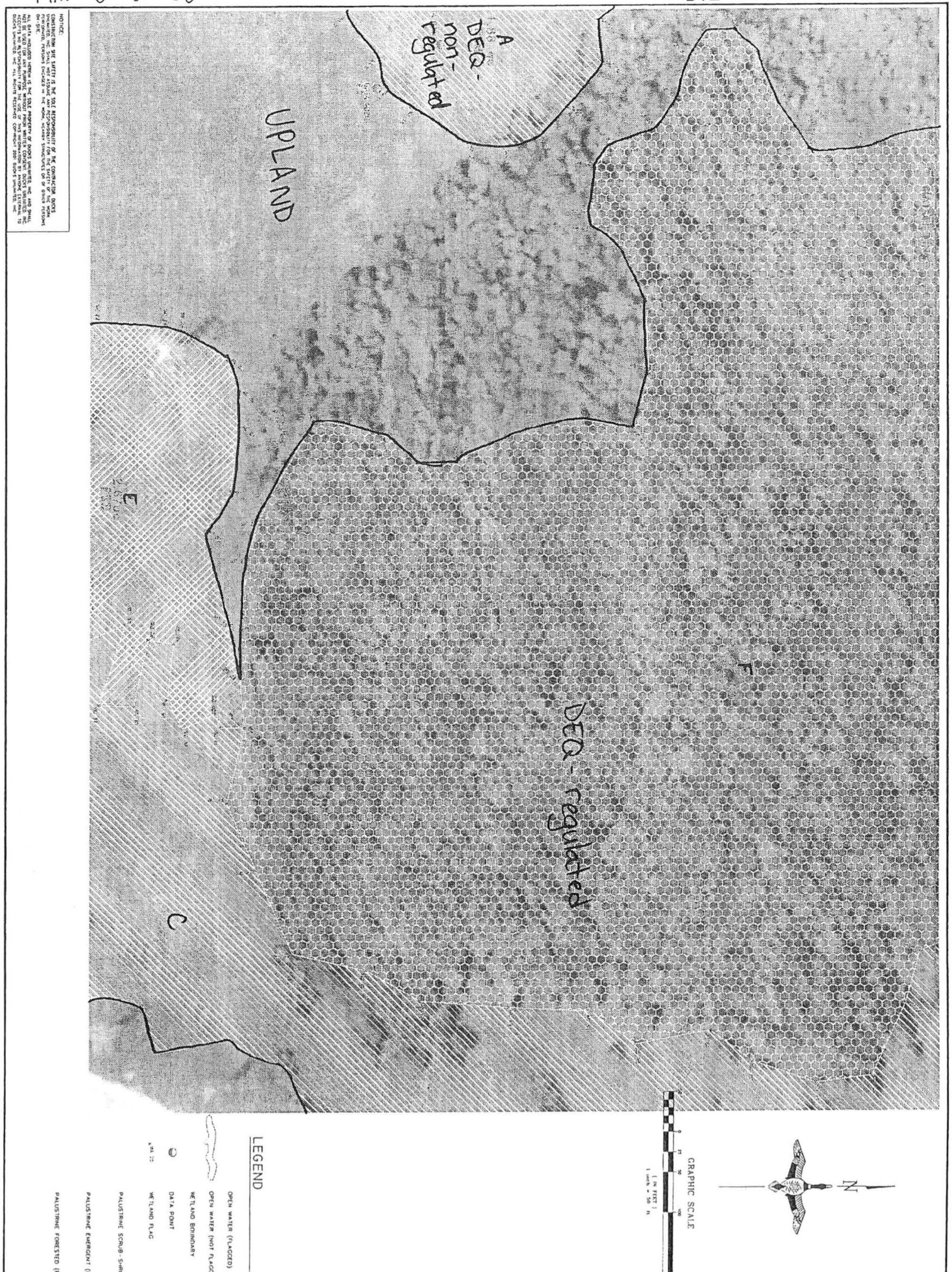
Map prepared by: Kathleen Fairchild, DEQ
10/27/2008

MAP 8 of 28 DTE – Fermi 08-58-0003-WA



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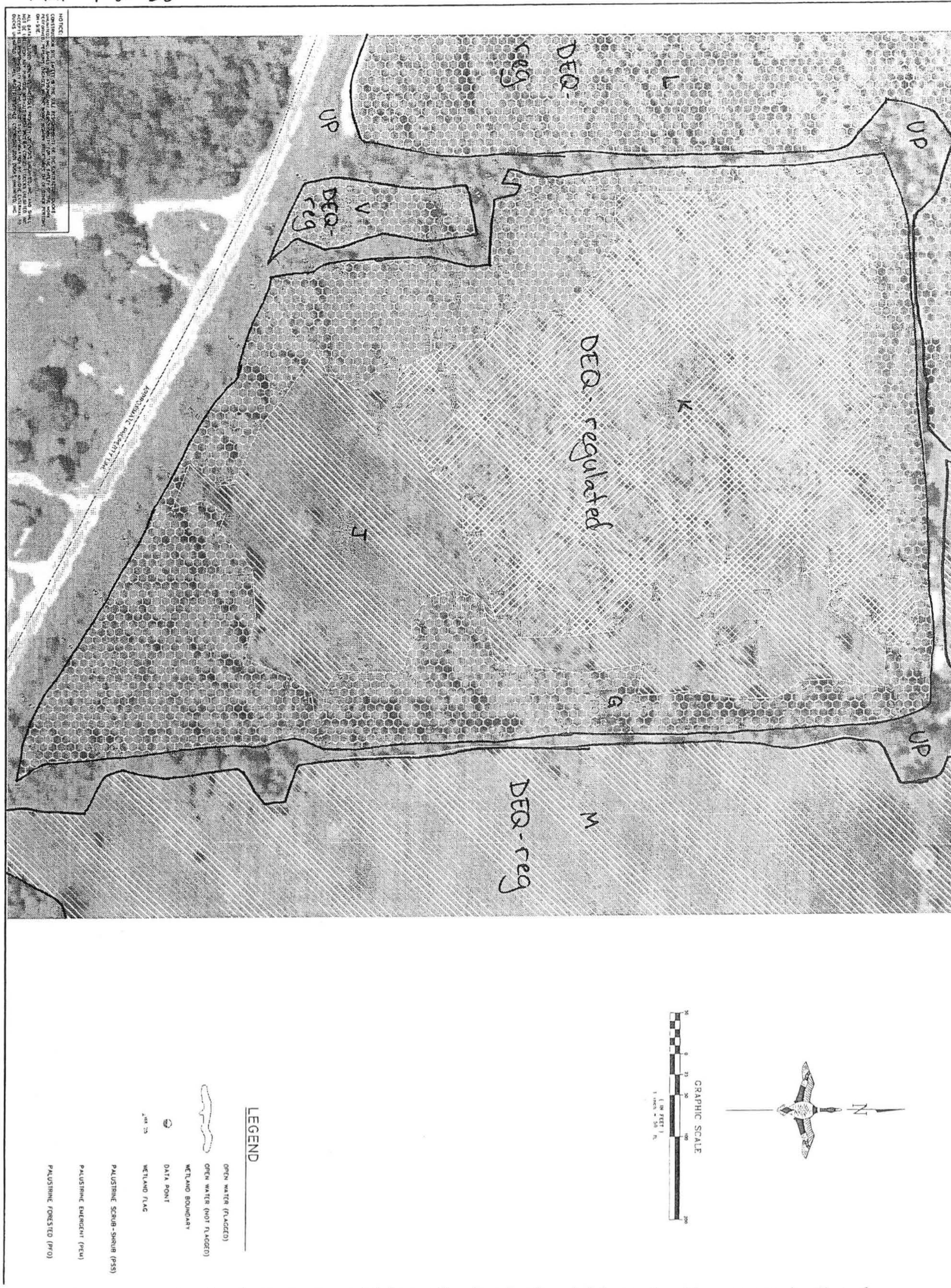
Map prepared by: Kathleen Fairchild, DEQ
10/27/2008

DTE – Fermi 08-58-0003-WA



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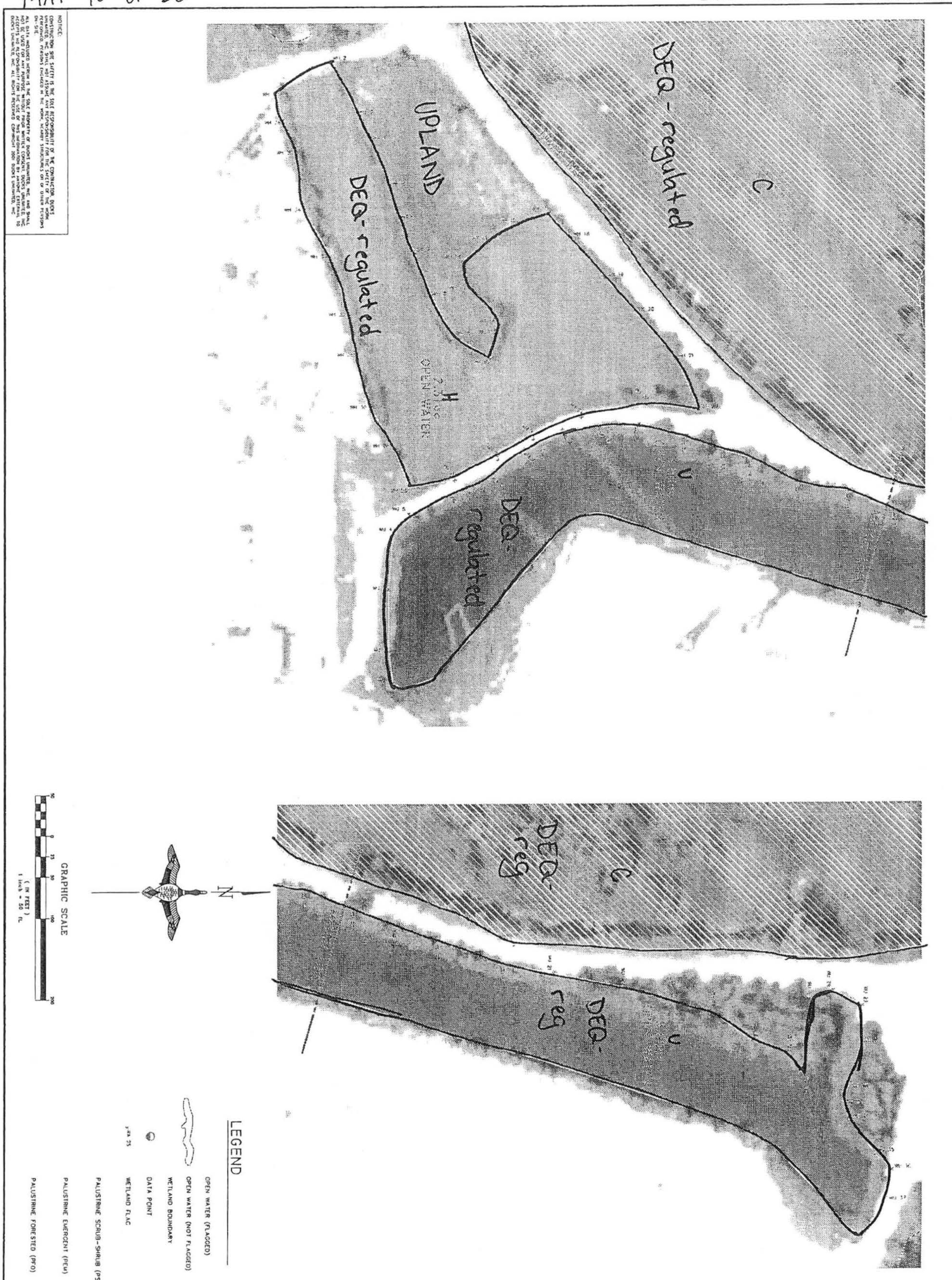

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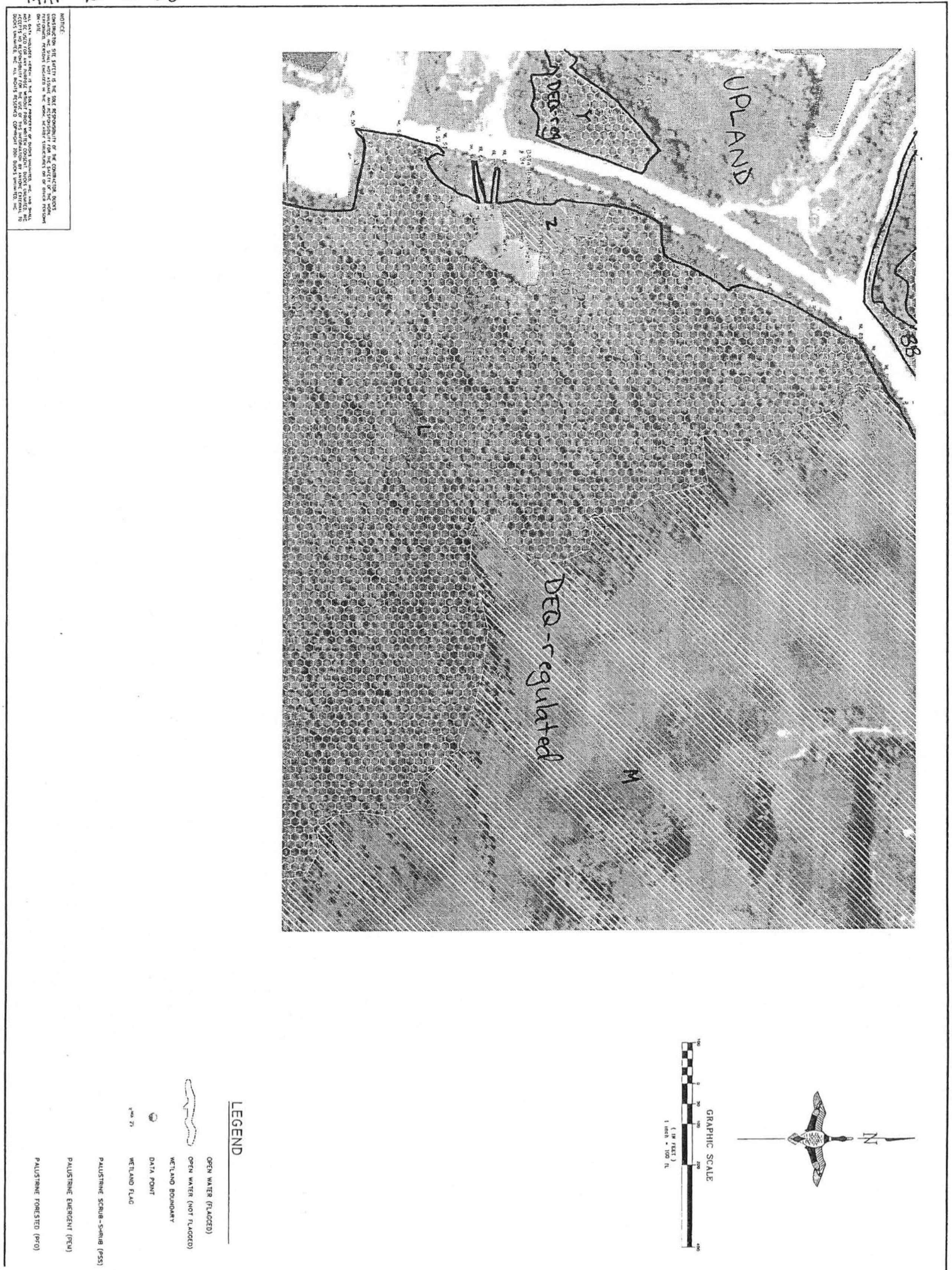

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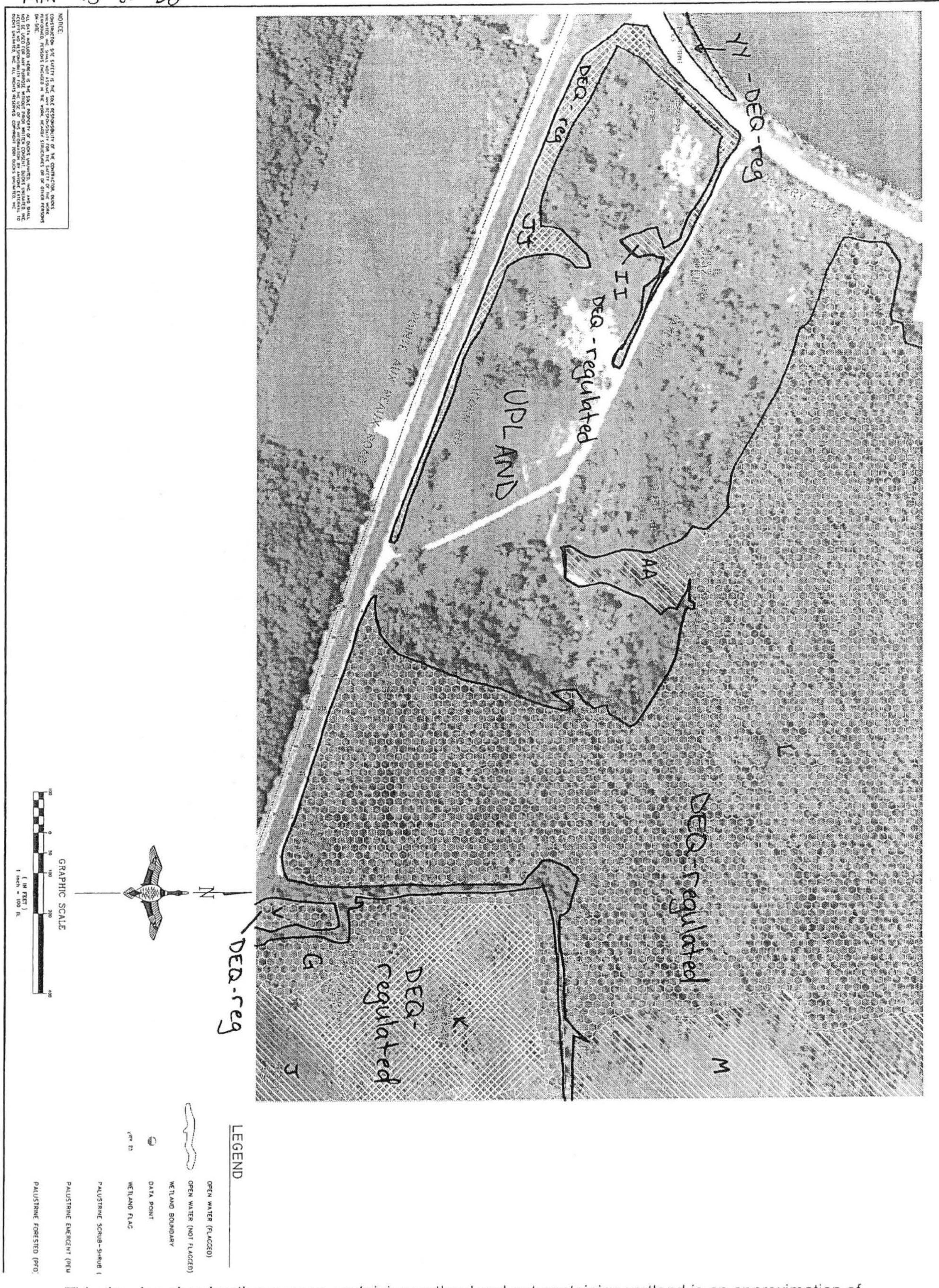

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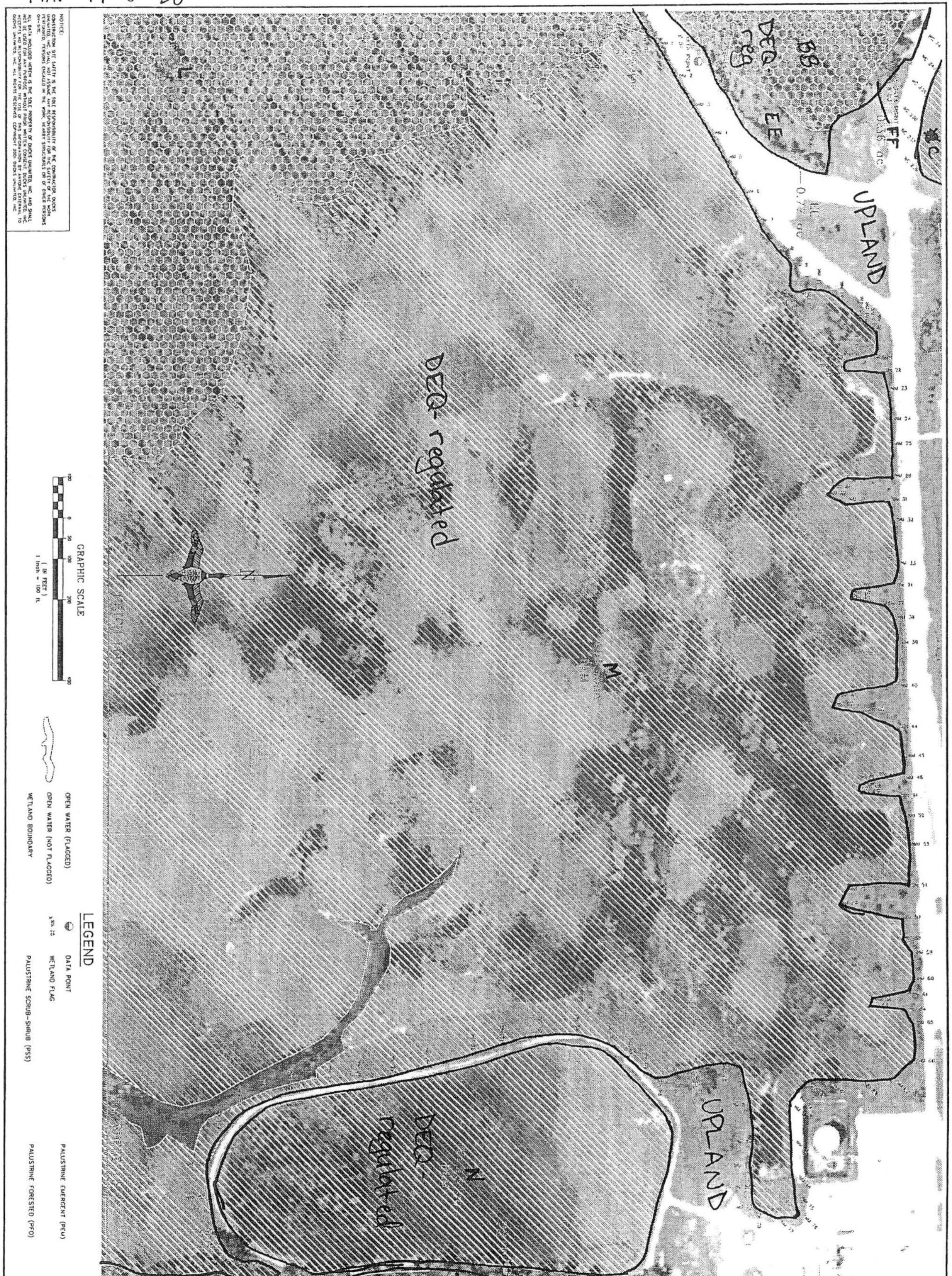

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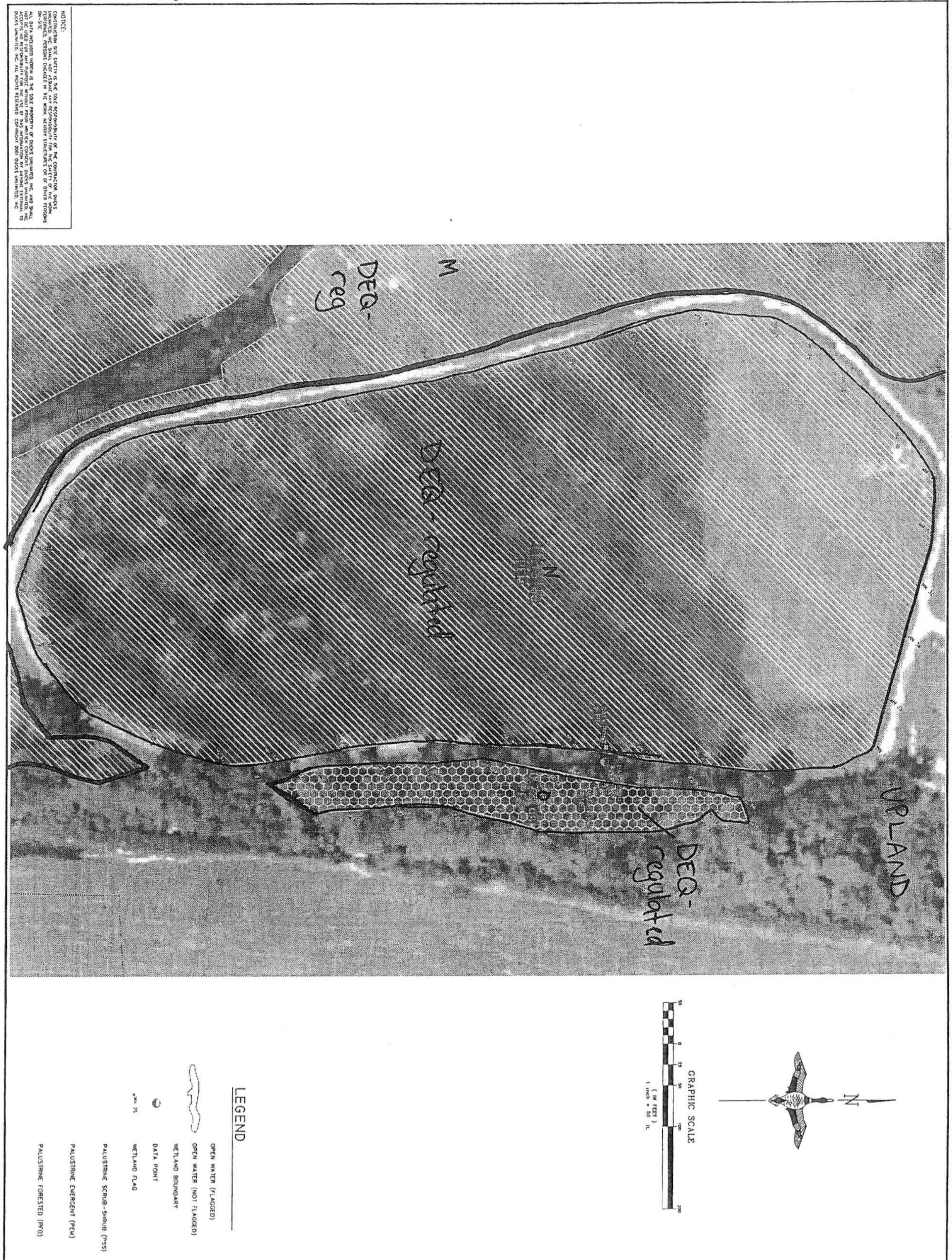

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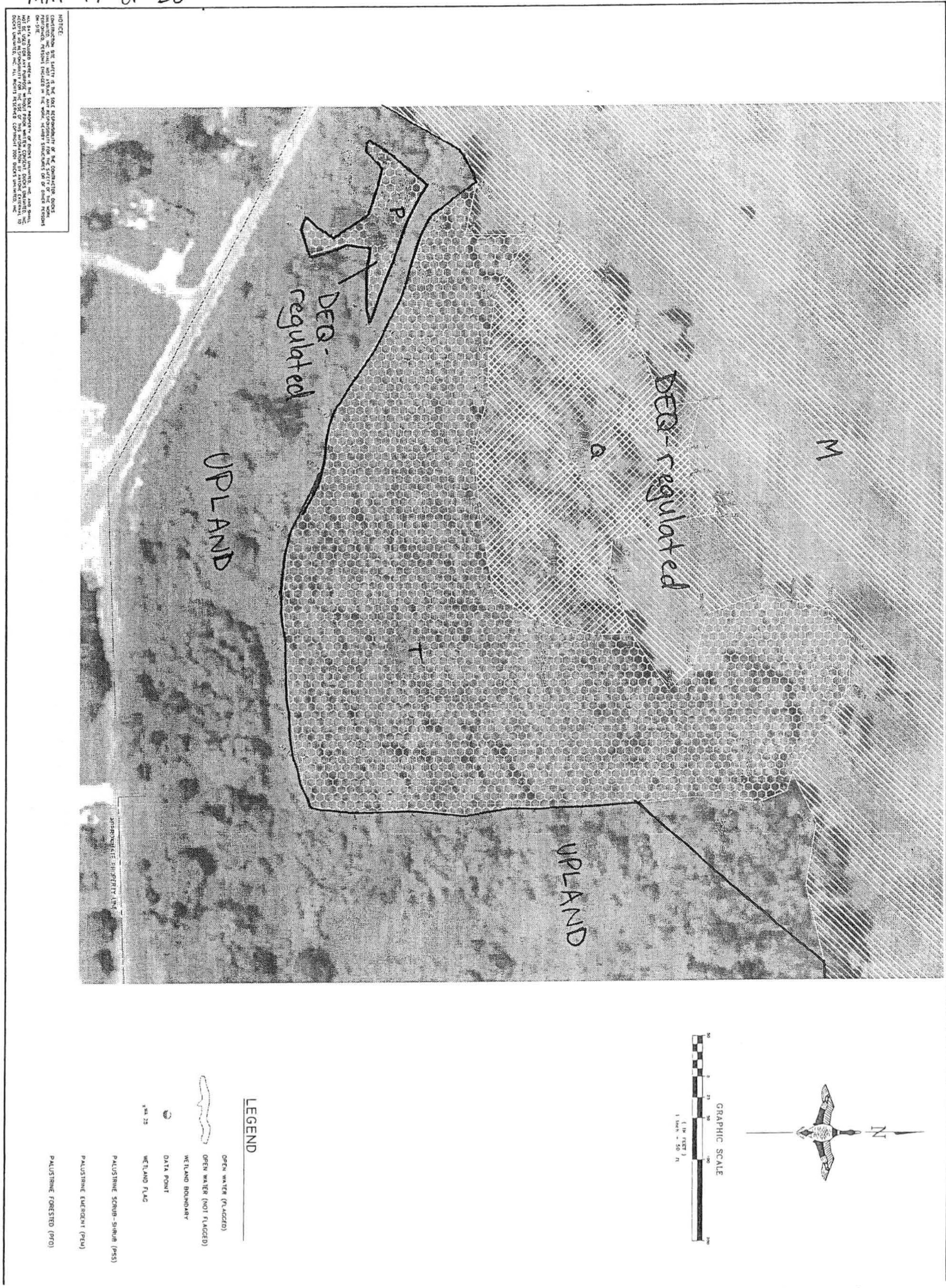
DTE – Fermi 08-58-0003-WA



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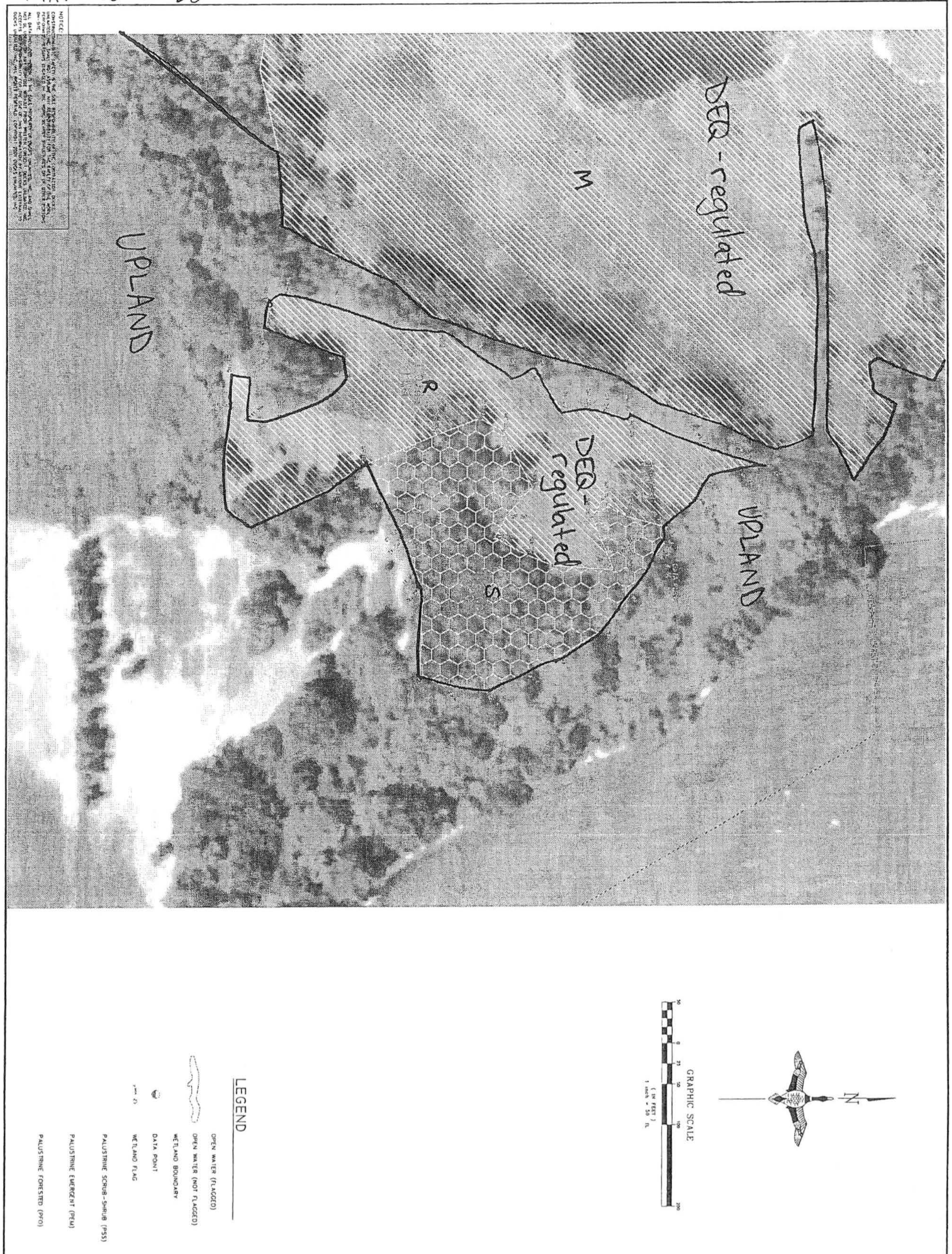

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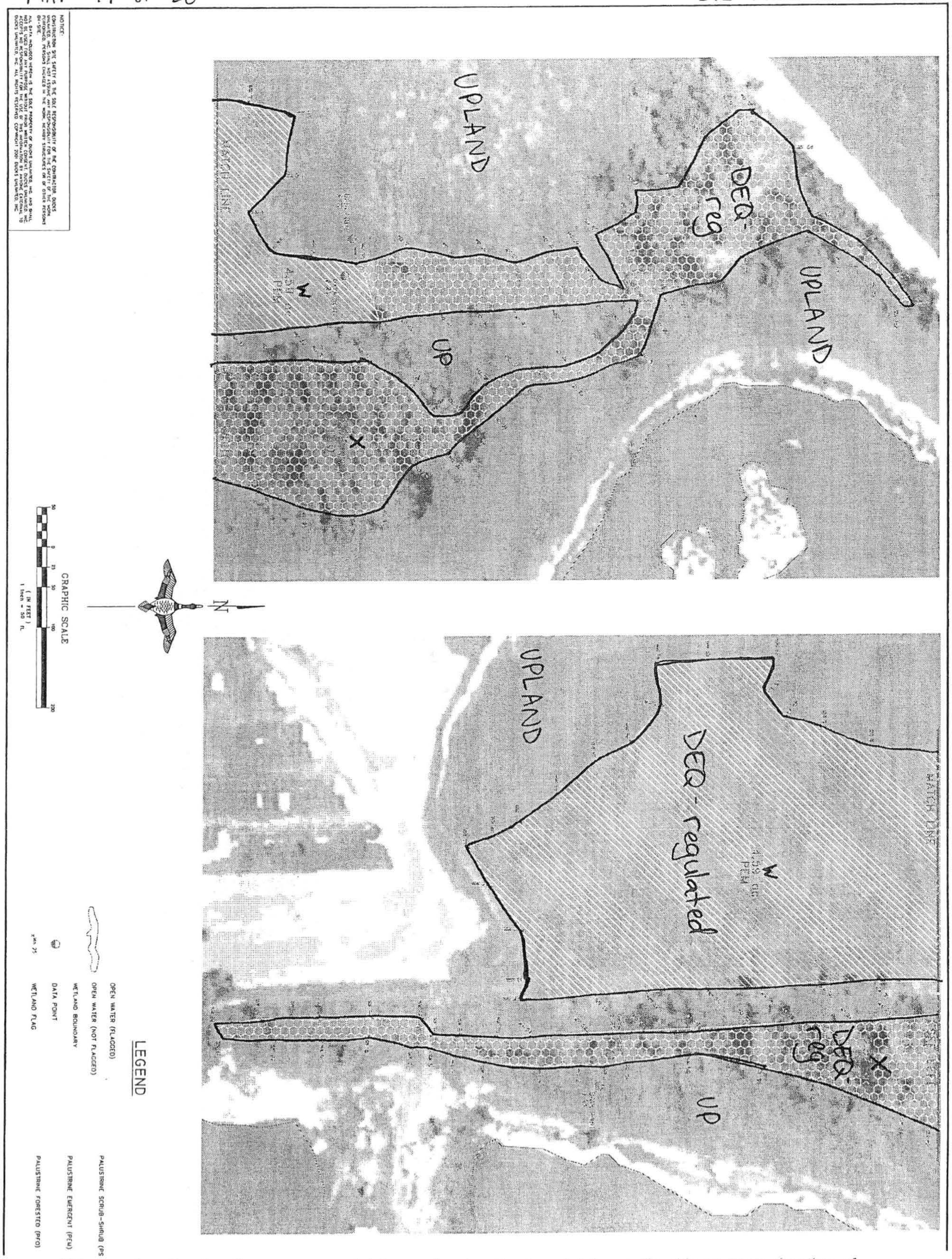
Map prepared by: Kathleen Fairchild, DEQ
10/27/2008



- This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.
- This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

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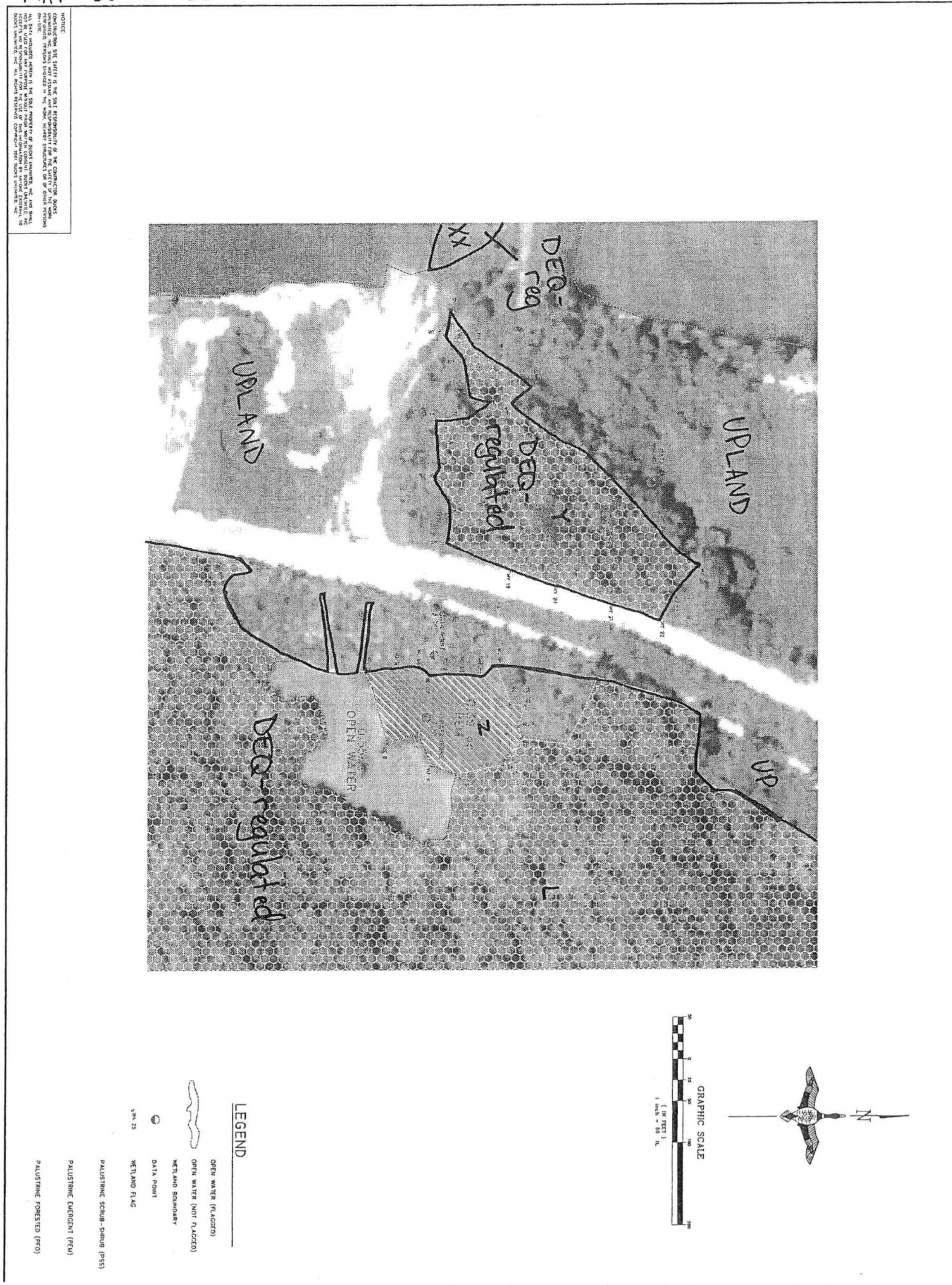

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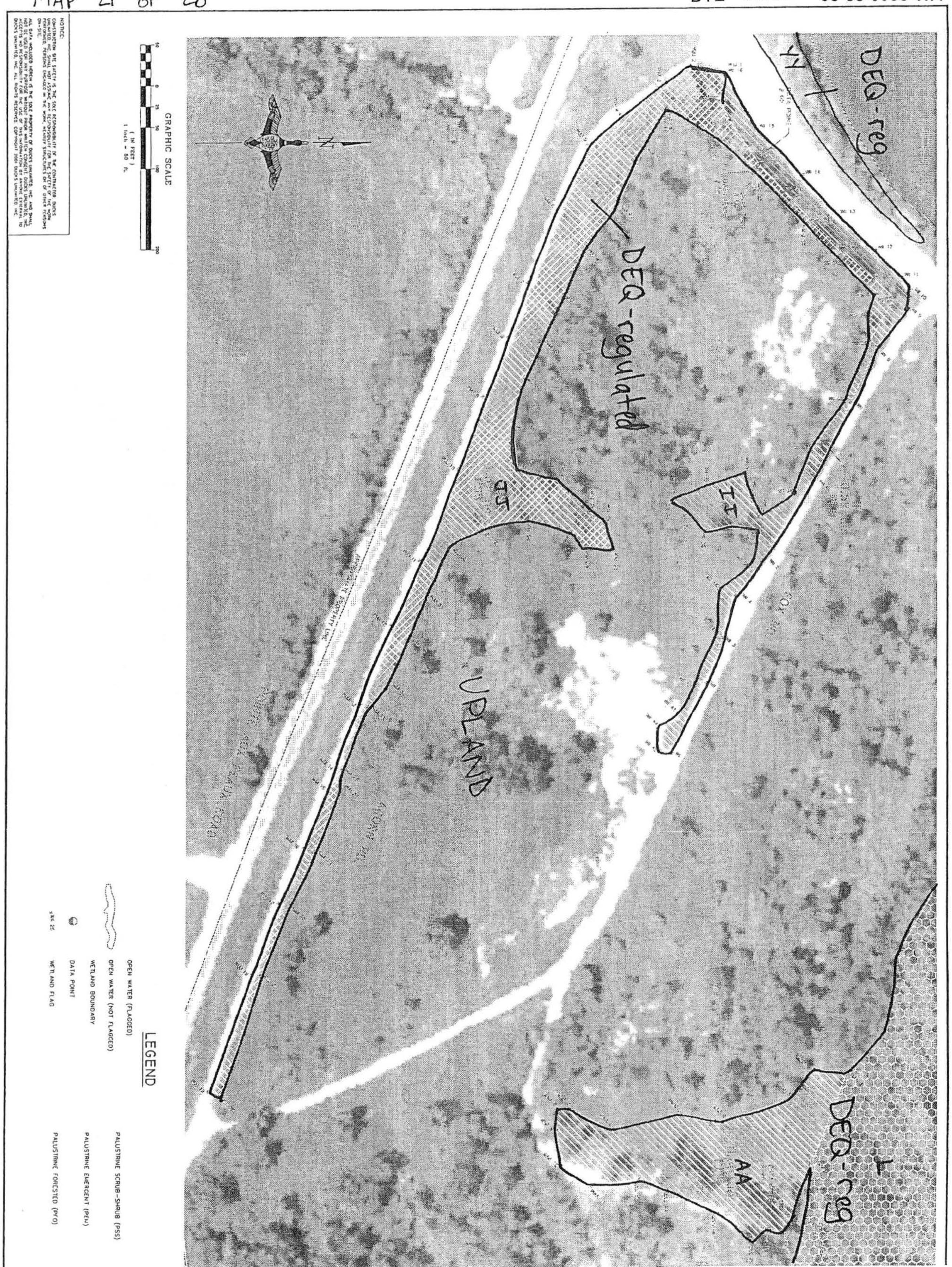

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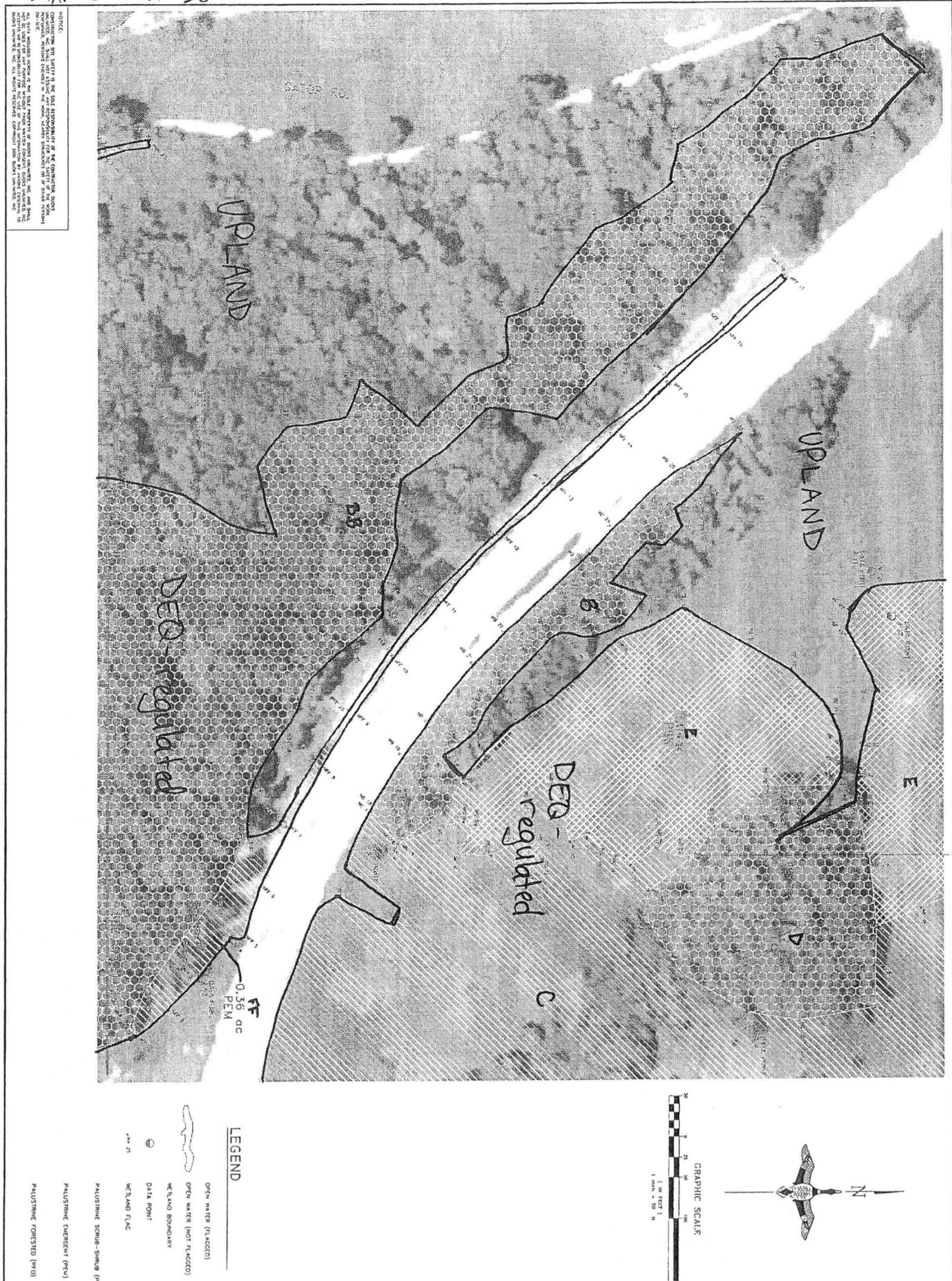

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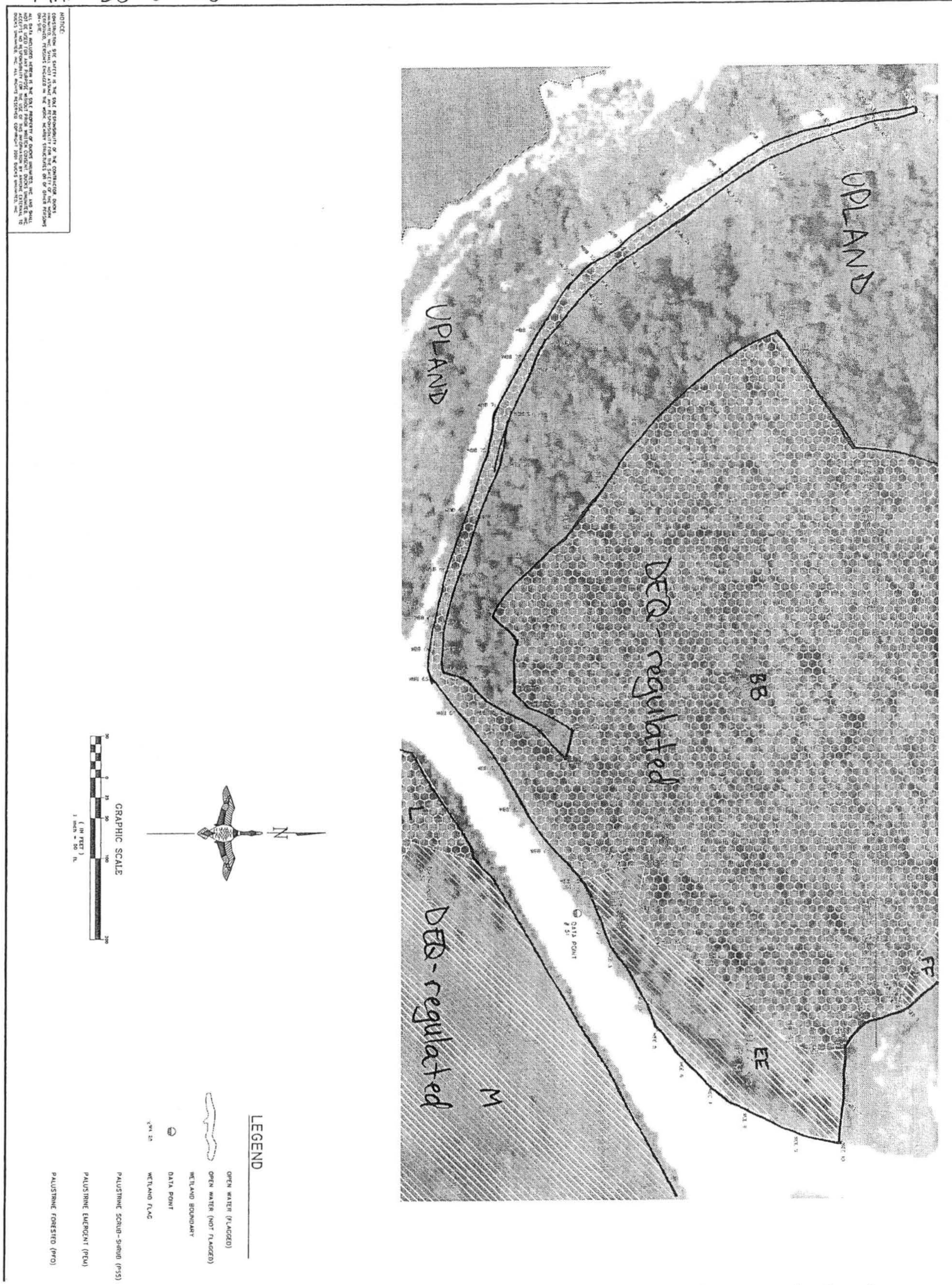

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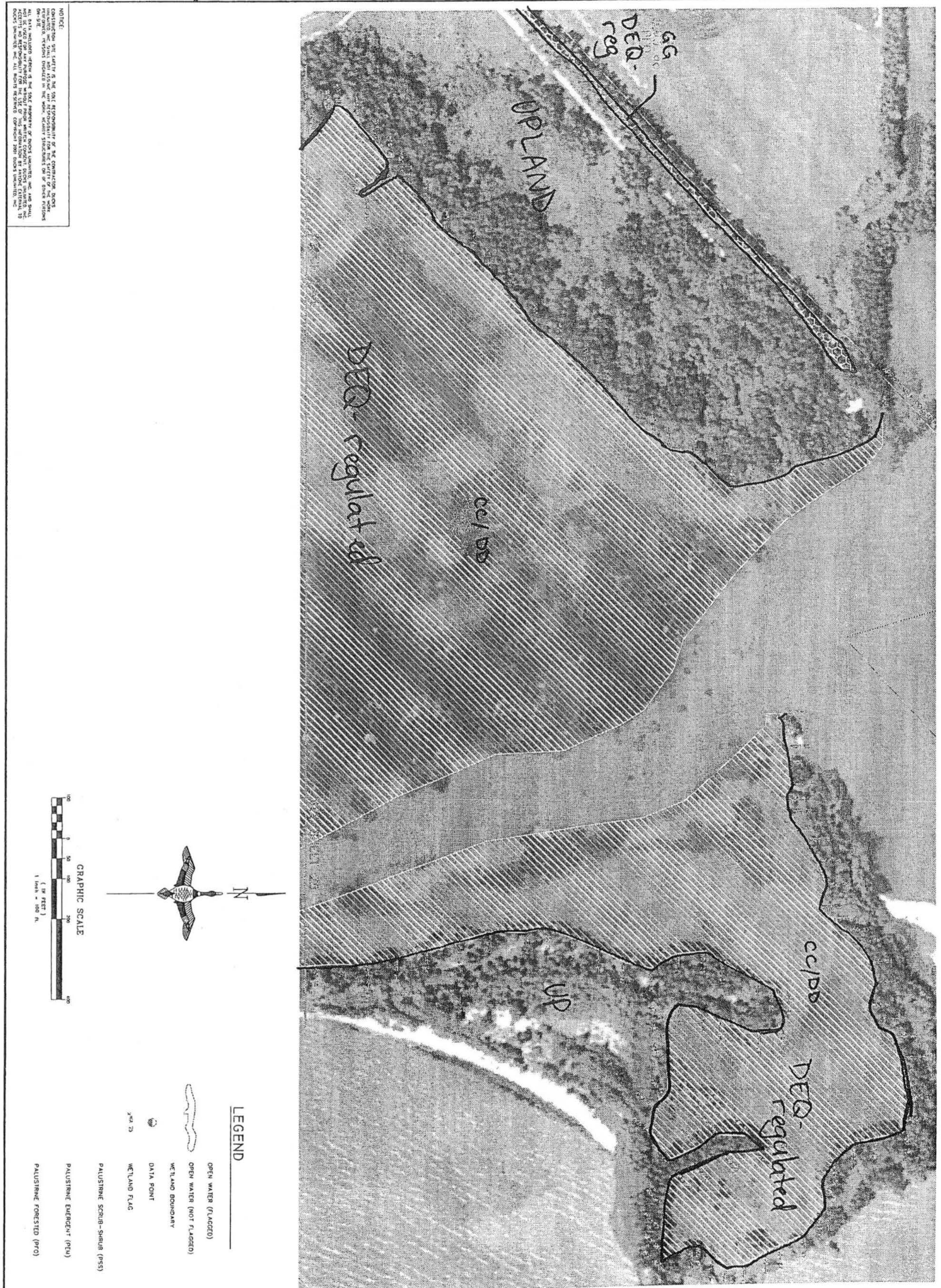
Map prepared by: Kathleen Fairchild, DEQ
10/27/2008

MAP 24 of 28

DTE – Fermi 08-58-0003-WA



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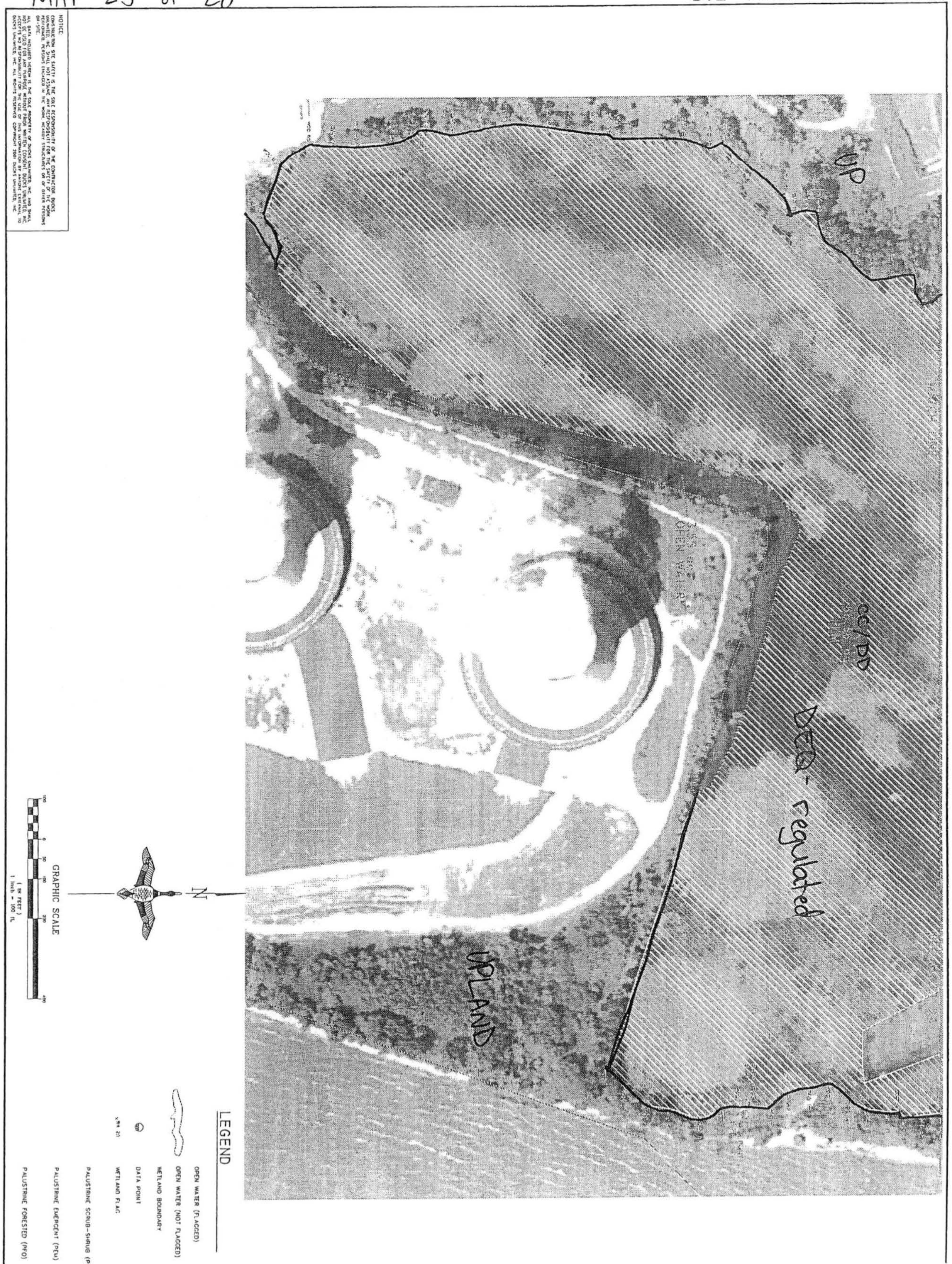
10/27/2008



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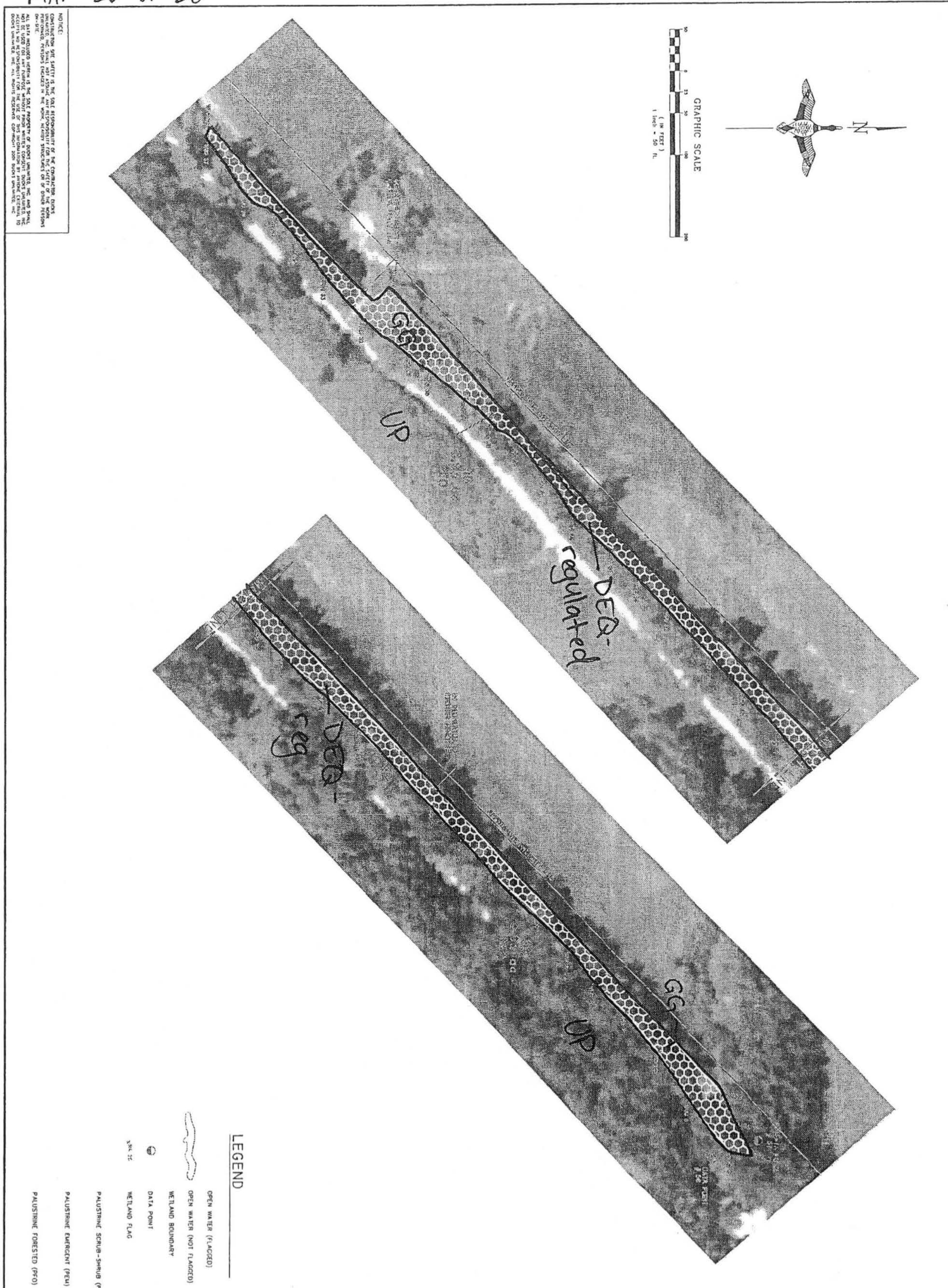
Map prepared by: Kathleen Fairchild, DEQ
10/27/2008

MAP 26 of 28 DTE – Fermi 08-58-0003-WA



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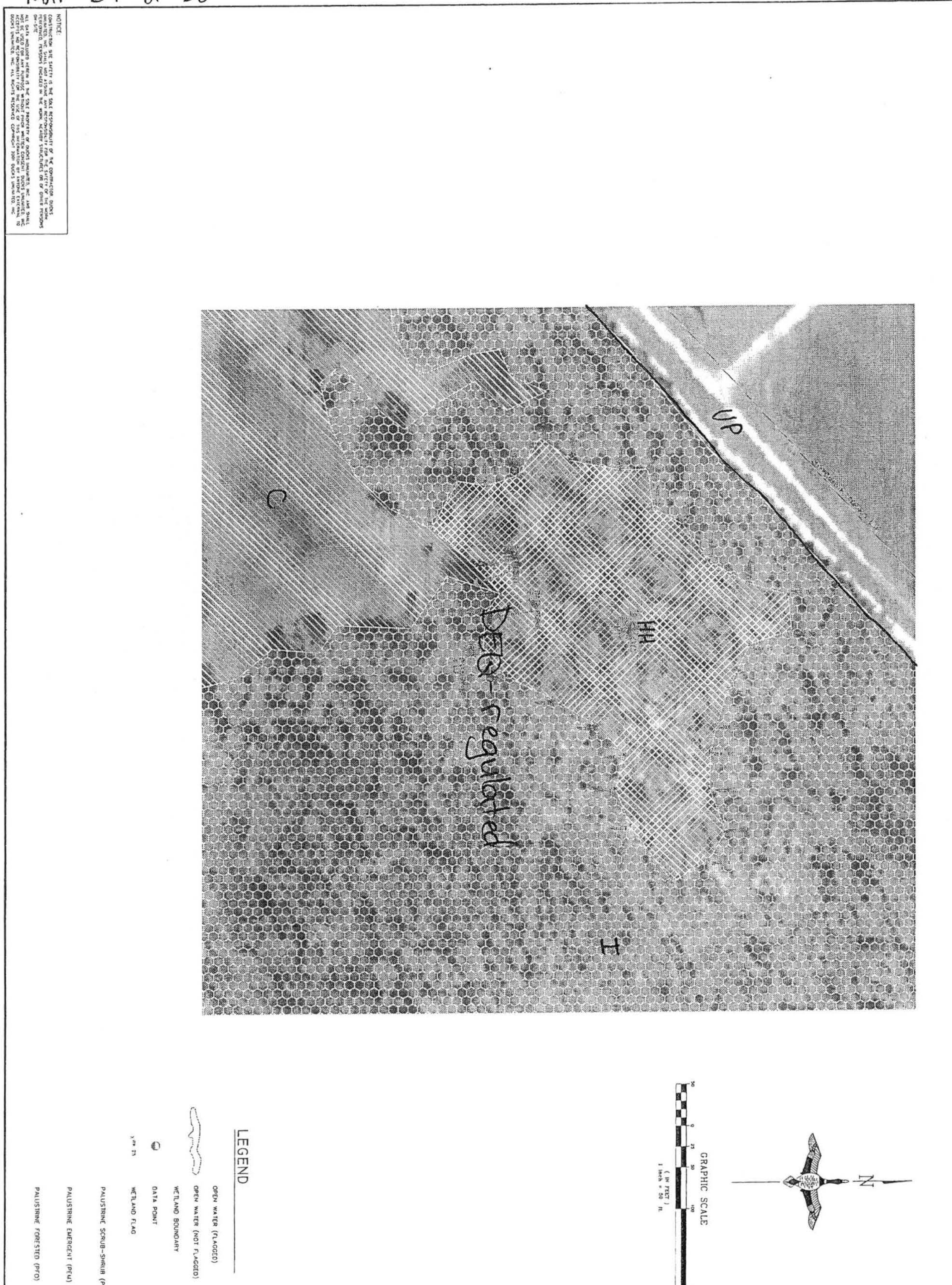
10/27/2008

DTE – Fermi 08-58-0003-WA



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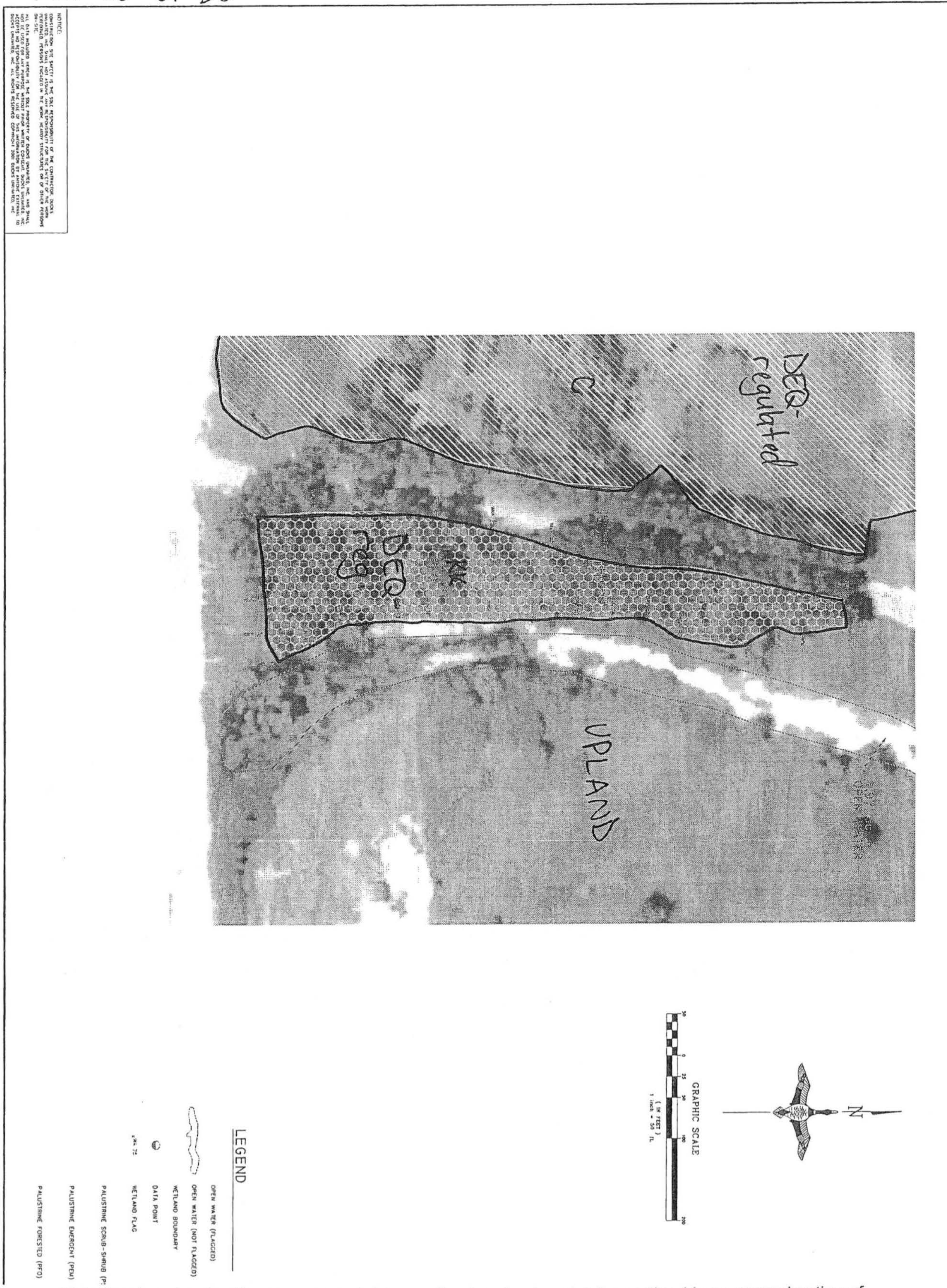
10/27/2008



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Map prepared by: Kathleen Fairchild, DEQ
10/27/2008

MDEQ update to file 08-58-0003-WA 8-18-2011-v1

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

RICK SNYDER
GOVERNOR

DAN WYANT
DIRECTOR

August 18, 2011

Mr. Randall D. Westmoreland
DTE Energy
One Energy Plaza
Detroit, Michigan 48226-1279

Dear Mr. Westmoreland:

Subject: Department of Environmental Quality (DEQ) File Number 10-58-0011-P
DTE Energy, Fermi site wetlands review

This letter is in response to recent discussions regarding the regulatory status and mitigation ratios required for various wetlands present on the Fermi site. The following findings are based on the Ducks Unlimited (DU) wetland investigation reports dated July 2008 and April 2011, the DEQ Wetland Identification Report 08-58-0003-WA dated November 7, 2008, attachments to DTE's December 15, 2010 Letter of Understanding, and other information collected and discussed during an October 2010 on-site meeting.

Specific wetlands listed within the DU wetland reports were inspected in October 2010 to confirm their type and the mitigation ratio required for each if impacts were permitted. Our findings are summarized in the table below.

Wetlands	Wetland Type	Mitigation Ratio
I, L, F, BB, EE, FF	Southern Hardwood Swamp	5:1
C, M, South Canal	Great Lakes Marsh	5:1
AA	Coastal, Emergent	2:1
E	Coastal, Scrub/Shrub	2:1
B, D, Y, KK	Coastal, Forested	2:1
II, JJ	Emergent	1.5:1
H, U	Emergent/Open Water	1.5:1

While on-site in October there was discussion specific to three canals on the site which are labeled in the delineation and above as Wetlands H, U, and South Canal. The regulatory status of these three wetlands was discussed because they were constructed by DTE and it was felt by DTE consultants that they offered limited wildlife habitat and wetland services, particularly H and U. In order to make a determination, additional information was requested verbally by the DEQ during this meeting, including survey or cross sectional data of each water body, connectivity of the canals, results of wildlife and vegetation surveys previously conducted by Black & Veatch, and any information pertinent to the construction of the canals as storm water management basins.

The first three items were provided as attachments in DTE's December 2010 letter to the DEQ. No information was provided indicating the canals were constructed for storm water management so they are not proven to be exempt from regulation under Part 303 Section 30305 (4).

Section 30301(w) of Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act 1994 PA 451, as amended, defines wetland, in pertinent part, as, "land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life...". Wetlands H, U, and South Canal each contain aquatic life as identified in the Aquatic Ecology Characterization Report conducted by Black and Veatch dated December 2009. The three wetlands were identified as being regulated by the DEQ in our Wetland Identification Report dated November 7, 2008. The regulatory status of each wetland identified within the report is binding, on the DEQ as well as the property owner, for a period of three years. The report will expire on October 16, 2011. In consideration of the statutory definition and based on the mentioned documentation Wetlands H, U, and South Canal, including their open water component, are features that are regulated by the DEQ and for which mitigation must be provided if proposed impacts are authorized.

In DTE's December 2010 letter it was stated that Wetland A was regulated by the DEQ and that the mitigation ratio would be 1.5:1. Subsequently, the regulatory status of Wetland A was questioned at the Fermi site inspection on August 8, 2011 with the Environmental Protection Agency, United States Fish and Wildlife Service and others. The DEQ Wetland Identification Report indicated Wetland A is not regulated by the State. As stated above, the report is binding on the DEQ for a period of three years; therefore, Wetland A remains unregulated by the DEQ.

The DEQ Wetland Identification Report indicated that, should you disagree with the findings, you may request the DEQ to reassess any portion of the review area. However, the request must be received within 60 days of the report. As more than 60 days has elapsed, if you wish the DEQ to reassess specific wetlands at this time, you must submit a new Wetland Identification Application with the appropriate fee for the areas in question. If you have any questions regarding these findings, please contact me at the DEQ, Jackson District Office, 301 East Louis Glick Highway, Jackson, Michigan 49201, by email at davidk@michigan.gov or at the telephone number listed below.

Sincerely,

Katherine David

Katherine David
Environmental Quality Analyst
Water Resources Division
517-780-7021

cc: Ms. Collette Luff, USACE
Ms. Sheila Hess, Conservation Connects
Ms. Lisa Matis, Tetra Tech

USACE Preliminary Jurisdictional Determination 11-10-16

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD)

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): September 16, 2016

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: DTE Energy (Michael Brandon), One Energy Plaza, 509 G.O., Detroit, MI, 48226-1279

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Detroit District, DTE Energy - Fermi 3 NPP Dredge, Discharge Fill, Structures, Restoration, Mitigation, LRE-2008-00443-1-S11

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: Lake Erie and wetlands in and adjacent to Lake Erie, DTE Fermi Energy facility, 6400 North Dixie Highway, Frenchtown Twp. MI; and Lake Lake Erie, wetlands in and adjacent to Lake Erie at a location (compensatory mitigation site) immediately north of La Plaisance Creek, Charter Township of Monroe, Monroe County, Michigan.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: MI **County/parish/borough:** Monroe **City:** Frenchtown Twp
Center coordinates of site (lat/long in degree decimal format): Lat. 41.959933 ° **N**, Long. -83.265205 ° **W**.

State: MI **County/parish/borough:** Monroe **City:** Monroe Twp.
Center coordinates of site (lat/long in degree decimal format): Lat. 41.876430° **N**, Long. -83.380847° **W**.

Universal Transverse Mercator:

Name of nearest waterbody: Lake Erie

Identify (estimate) amount of waters in the review area: **See Attached Table**

Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:

Wetlands: acres.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: N/A

Non-Tidal: Lake Erie; Davis Drain

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: 9/12/2016

☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party

who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

[X] Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Permit application and site plans

[X] Data sheets prepared/submitted by or on behalf of the applicant/consultant Fermi Site Wetland Delineation, and Mitigation Site Wetland Delineation

- [ ] Office concurs with data sheets/delineation report.
- [ ] Office does not concur with data sheets/delineation report.

[ ] Data sheets prepared by the Corps: .

[ ] Corps navigable waters' study: .

[ ] U.S. Geological Survey Hydrologic Atlas: .

- [ ] USGS NHD data.
- [ ] USGS 8 and 12 digit HUC maps.

[X] U.S. Geological Survey map(s). Cite scale & quad name:1:24,000, MI-STONY POINT and MI-ERIE

[ ] USDA Natural Resources Conservation Service Soil Survey. Citation:

[ ] National wetlands inventory map(s). Cite name: .

[ ] State/Local wetland inventory map(s): .

[ ] FEMA/FIRM maps: .

[ ] 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

[X] Photographs: [X] Aerial (Name & Date): Various, 1949-2016

or [ ] Other (Name & Date): .

[X] Previous determination(s). File no. and date of response letter:
Same File no. Approved JD: Frenchtown Twp DTE Fermi Site: 13 May 2008; 9 Nov 2010;
Same File no: Approved JD: Monroe Twp Mitigtion Site: 24 Feb 2012, revised 30 May 2012;
Same File no: PJD: Monroe Twp Mitigation Site(Davis Drain area): 30 May 2012
Conditions at the sites have not changed since these JD/ADJs were issued

[ ] Other information (please specify):

<u>IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.</u>

Cottett Hoff 9/16/2016
Signature and date of
Regulatory Project Manager
(REQUIRED)

M. Lk B 11/10/16
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Summary of Aquatic Resources

in

DTE Fermi 3 PJD Review Areas

Review Area: DTE Energy Center (Fermi 3 site), Frenchtown Twp, Monroe Cty, MI				
Aquatic Resources in Review Area				
Aquatic Resource Type	**Estimated Cowardin Class**	**Estimated Length (ft)**	**Estimated Width (ft)**	**Estimated Area (ac)**
Non-wetland AR				
Lake (Lake Erie)		12,000.0		
Vegetated AR*				
Wetlands	PEM			316.6
Wetlands	PSS			14.8
Wetlands	PFO			163.1
Wetlands	POW			3.3
AR TOTALS		**12,000.0**		**497.8**
* For this Review Area, vegetated ARs include those wetlands located both landward and waterward of the Lake Erie OHWM.				

Review Area: DTE Fermi 3 Mitigation Site, MonroeTwp, Monroe Cty, MI				
Aquatic Resources in Review Area				
Aquatic Resource Type	**Estimated Cowardin Class**	**Estimated Length (ft)**	**Estimated Width (ft)**	**Estimated Area (ac)**
Non-wetland AR				
Lake (Lake Erie)		1,900.0		
River (Davis Drain)		2,100.0		
Vegetated AR*				
Wetlands	PEM			151.5
Wetlands	PSS			3.5
Wetlands	PFO			21.3
TOTALS		**4,000.0**		**176.3**
* For this Review Area, vegetated ARs include those wetlands located both landward and waterward of the Lake Erie OHWM.				

FILE NO. LRE-2008-00443-1-S11
9/12/2016 PJD ATTACHMENT

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: DTE Energy (Michael Brandon)	File Number: LRE-2008-00443-1-S11	Date: September 16, 2016

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

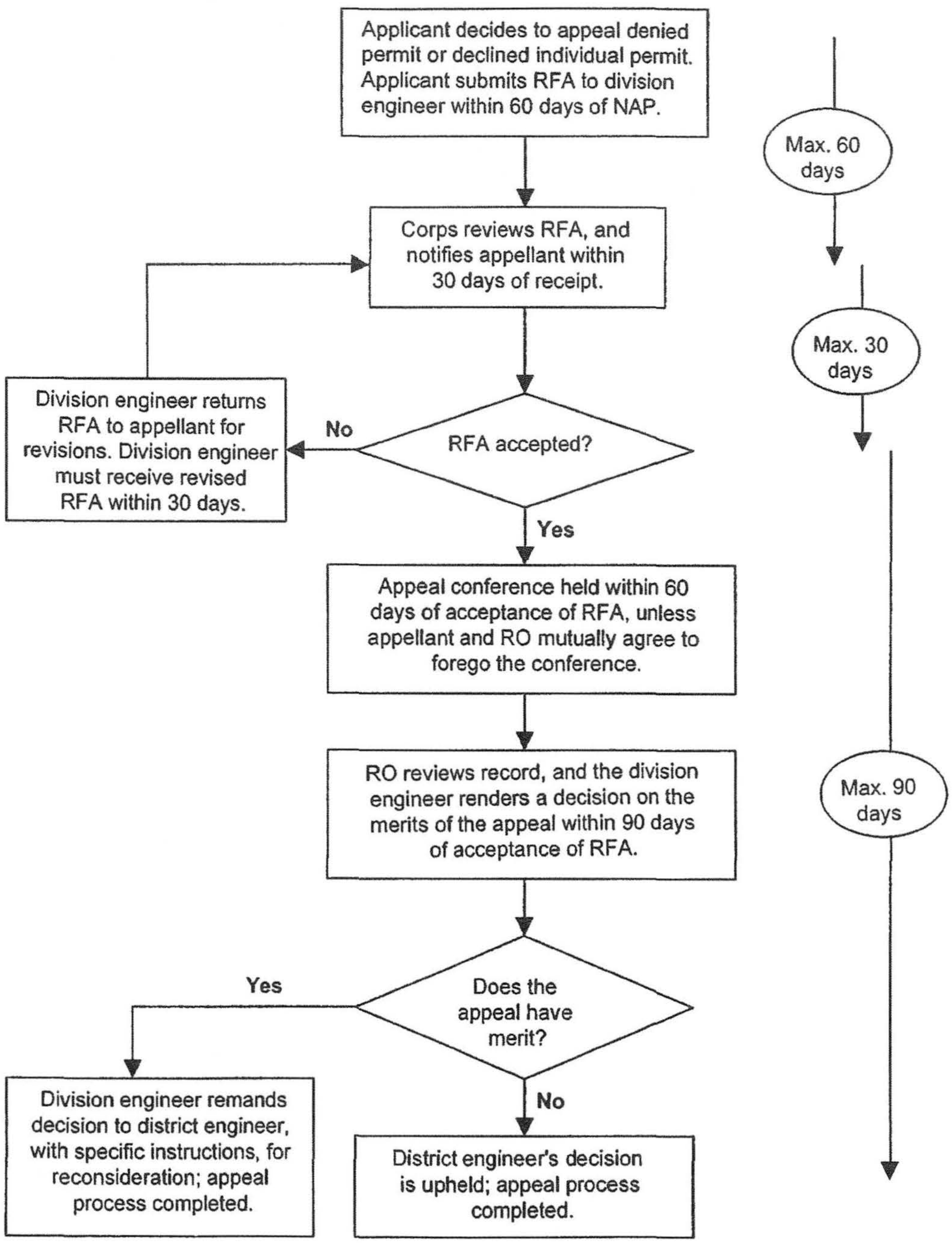
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Colette Luff U.S. Army Corps of Engineers Regulatory Office 477 MICHIGAN AVENUE, 6th Floor DETROIT, MICHIGAN 48226-2550 313-226-7485	Jacob Siegrist Appeal Review Officer Great Lakes and Ohio River Division CELRD-PD-REG 550 Main Street, Room 10524 Cincinnati, Ohio 45202-3222 Tel. (513) 684-2699 Fax (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
______________________________ Signature of appellant or agent.		

Administrative Appeal Process



Appendix A

USACE Approved Jurisdiction Determination 2-24-12

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
REGULATORY OFFICE
477 MICHIGAN AVENUE, 6TH FLOOR
DETROIT, MICHIGAN 48226-2550

REPLY TO
ATTENTION OF:

February 24, 2012

Engineering & Technical Services
Regulatory Office
File No. LRE-2008-00443-1-J11

Randy Westmoreland
Detroit Edison Company
2000 Second Avenue, 337 WCB
Detroit, MI 48226

Dear Mr. Westmoreland,

This letter is in response to your request for a determination of the Department of the Army jurisdiction on an approximately 175 acre parcel located east of I-75, north of La Plaisance Creek, Monroe, Michigan. We recently inspected the property and determined it contains waters of the United States. Lake Erie and its adjacent wetlands are under the regulatory jurisdiction of the Corps of Engineers.

In Lake Erie, as in all waters of the United States, including their adjacent wetlands, any construction or discharge of dredged and/or fill material must be authorized by the Department of the Army. The authority of the Corps of Engineers to regulate construction or other work in navigable waters of the United States is contained in Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act and regulations promulgated pursuant to these Acts.

Under Section 10, a Corps permit is required for any structures or work in the navigable waters of the United States such as Lake Erie to what is called the Ordinary High Water Mark (OHWM). In Lake Erie, the OHWM extends to the elevation contour of 573.4 ft. IGLD 1985. In addition, a Section 10 permit is required for structures or work outside this limit if they affect the course, location, or condition of the waterbody as to its navigable capacity.

Section 404 requires a Corps permit for the discharge of dredged or fill material into navigable waters of the United States and in wetlands adjacent to those waters. The area of Corps jurisdiction under Section 404 extends to the OHWM, and to the upland boundary of any adjacent wetlands. Projects involving discharges typically include placement of fill material for homes and landscaping, impoundments, causeways, road fills, dams and dikes, riprap, groins, breakwaters, revetments, and beach nourishment. Section 404 also regulates discharges of dredged material incidental to certain activities such as grading, mechanized land clearing, ditching or other excavation activity, and the installation of certain pile-supported structures.

We have conducted an on-site inspection with your consultant and verified, with some minor changes, your consultant's delineation of waters within the review area. The regulated waters on the property under the Corp's jurisdiction are depicted on the enclosed drawing. Please be advised that the property does contain wetlands within the jurisdiction of the Corps of Engineers. Any discharges of dredged and/or fill material into the waters on this property will require a Corps permit.

Our assertion of jurisdiction is based on the following criteria: (1) our documentation that the site in question is waterward of the line on the shore reached by the ordinary high water mark (OHWM) of Lake Erie, which is a navigable water of the United States (2) our documentation that the areas identified as wetlands meet our technical definition of a wetlands per the criteria in the 1987 *Corps of Engineers Wetlands Delineation Manual* (3) our documentation that areas identified as nonwetlands do not meet the same criteria (4) our documentation that the wetlands in question are adjacent (bordering, contiguous or neighboring) to Lake Erie, which is a navigable water of the United States and recognition that the use degradation, or destruction of this waterbody could affect interstate commerce.

This determination, in part, has been conducted to identify the limits of the Corps' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are United States Department of Agriculture (USDA) program participants or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work in the site in question.

This letter contains an approved jurisdictional determination for the property in question. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 Code of Federal Regulations (CFR) Part 331. We have enclosed a Notification of Appeal Process (NAP) fact sheet and a Request For Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Corps' Great Lakes and Ohio River Division office at following address:

Appeals Review Officer
U.S. Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street
Rm 10-524
Cincinnati, Ohio 45202-3222

In order for an RFA to be accepted by the Corps, the Corps must determine that the RFA is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division office within 60 days of the date of the NAP sheet. If you decide to submit an RFA form, it must be received at the above address by **April 24, 2012**. It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter. You may contact the Appeals Review Officer at (513) 684-6212 and send a facsimile at (513) 684-2460.

This jurisdiction determination is valid for a period of five years from the date of this letter unless new information warrants revision of the delineation before the expiration date. For your convenience, the necessary permit application can be found on our website at *www.lre.usace.army.mil/regulatory*. Plan view and cross-sectional view drawings, in 8 1/2" x 11" format, should accompany the application. Drawings and the appropriate sections of the application form should include a description of all quantities, dimensions, and nature of materials to be placed and soil to be moved within the project area. We also advise you to contact the Michigan Department of Environmental Quality (MDEQ) at (517) 780-7021 for a determination of State Permit requirements.

If you have questions, please contact me, Sabrina Miller, at (313) 226-7495 or by e-mail at sabrina.m.miller@usace.army.mil. Please refer to File Number: LRE-2008-00443-1 in all communications with this office regarding this matter.

We are interested in your thoughts and opinions concerning your experience with the Detroit District, Corps of Engineers Regulatory Program. If you are interested in letting us know how we are doing, you can complete an electronic Customer Service Survey from our web site at: **http://per2.nwp.usace.army.mil/survey.html**. Alternatively, you may contact us and request a paper copy of the survey that you may complete and return to us by mail or fax. Thank you for taking the time to complete the survey, we appreciate your feedback.

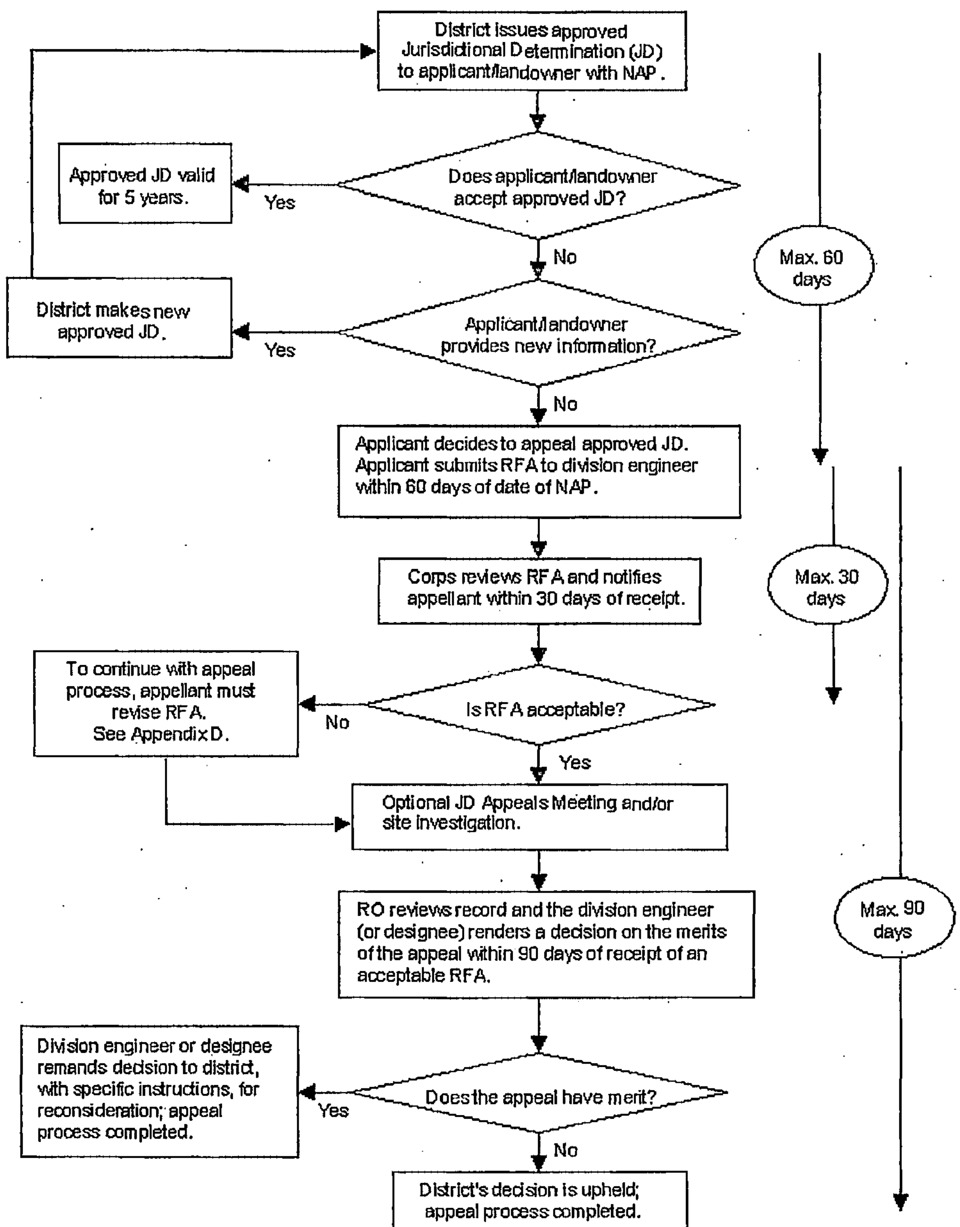
Sincerely,

Sabrina Miller
Regulatory Project Manager
Compliance & Enforcement Branch

Enclosures
- Site Map
- Flowchart
- NAP Document

Copy Furnished
- MDEQ, Katherine David
- USACE, Colette Luff

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: Randall Westmoreland, on behalf of Detroit Edison Company	File Number: LRE-2008-00443-1-J11	Date: February 24, 2012

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
XX	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

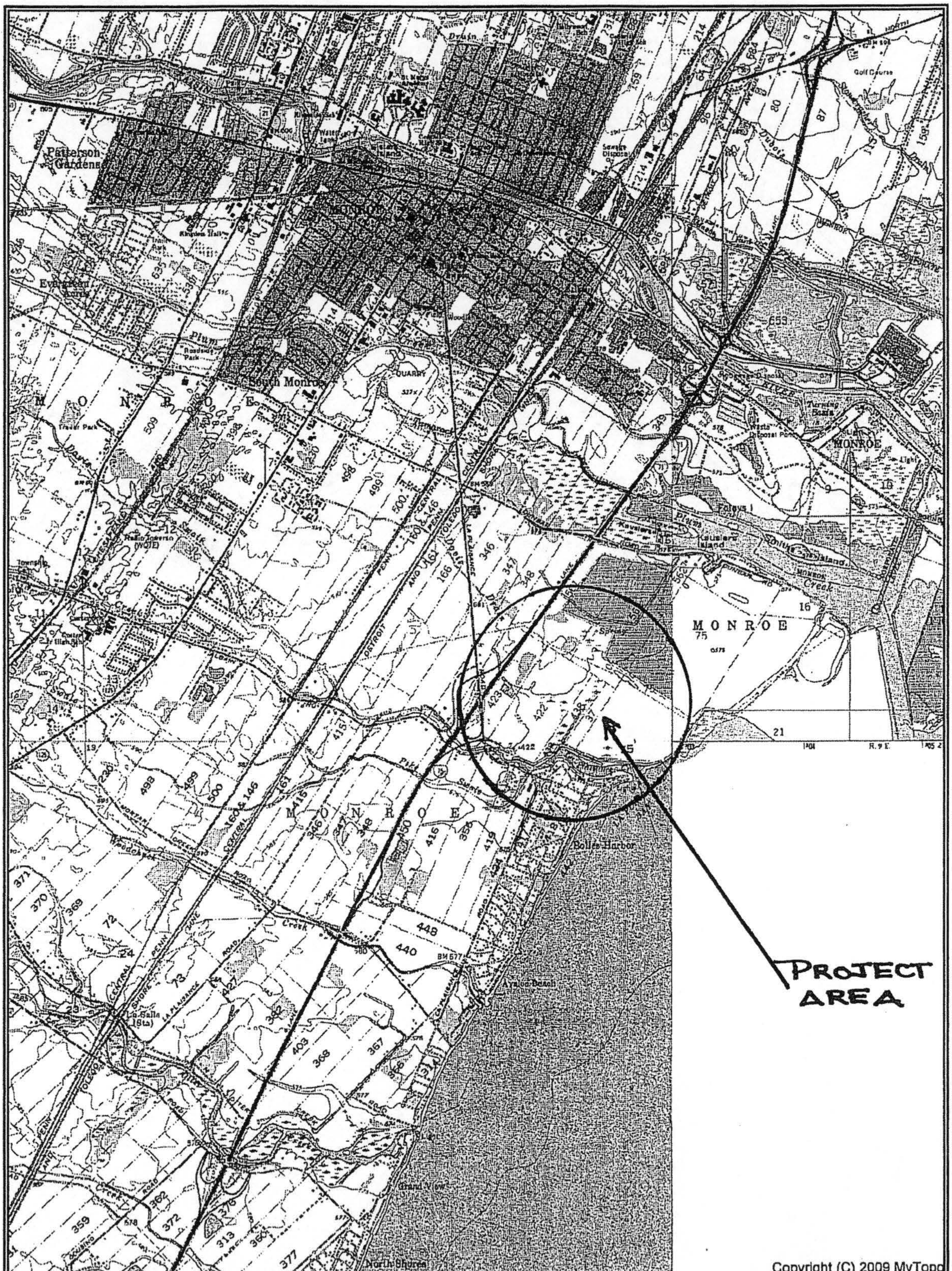
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Sabrina Miller REGULATORY OFFICE 477 MICHIGAN AVENUE, 6TH FLOOR DETROIT, MICHIGAN 48226-2550 313-226-7485 EXT. 6-7485	Appeal Review Officer U.S. Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Rm 10-524 Cincinnati, Ohio 45202-3222 Tel. (513) 684-6212 Fax. (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:



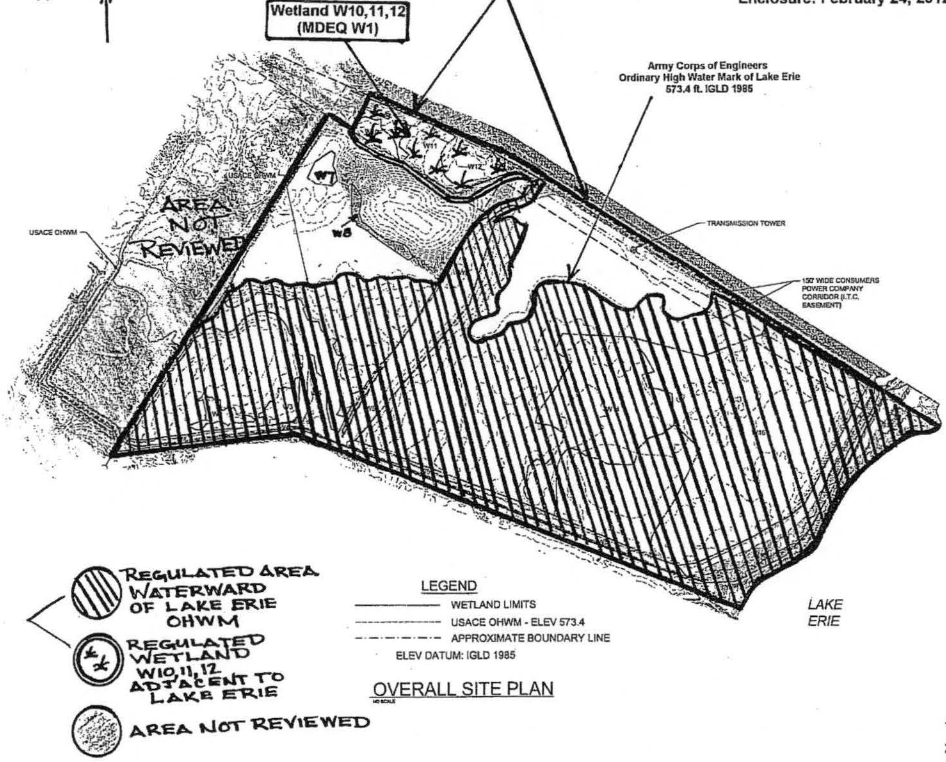
Base Map: LRE-2008-00443-1-J11
Fermi III Proposed Mitigation Site
Approved Jurisdiction Determination
February 24, 2012

SCALE 1:48000

0 10000

FEET

LRE-2008-00443-1
Fermi III Proposed Mitigation Site
Approved Jurisdiction Determination
Enclosure: February 24, 2012



2-22-2012

* W7 & W8 ARE STATE ASSUMED WATERS

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): February 23, 2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Detroit District, Fermi III Mitigation Site, LRE-2008-00443-1

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Michigan County/parish/borough: Monroe City: Newport
Center coordinates of site (lat/long in degree decimal format): Lat. 41.87752° N, Long. -83.38155° W.
Universal Transverse Mercator:
Name of nearest waterbody: Lake Erie

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lake Erie
Name of watershed or Hydrologic Unit Code (HUC): 04100001
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): June 28 & 29, 2011

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☒ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: Per 33 CFR Part 329, the Detroit District maintains a list of navigable waters. Navigability determinations have been made for the waters on the list. The proposed mitigation site contains area waterward of the OHWM of Lake Erie and wetlands adjacent to this area. Aerial photographs show the property was inundated by Lake Erie to the Ordinary High Watermark (OHWM) including wetlands adjacent to Lake Erie, landward of the OHWM.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☒ TNWs, including territorial seas
      ☒ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: Established by OHWM.
      Elevation of established OHWM (if known): 573.4 ft. IGLD 1985.

2. **Non-regulated waters/wetlands (check if applicable):**[3]

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain: .

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: **Lake Erie.**

Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": Wetland areas labeled W10, W11, W12 constitute one wetland, WETLAND W10,11,12. Wetland W10,11,12 is within the review area, landward of the OHWM of Lake Erie, and is directly abutting, having a direct physical connection, to wetlands immediately waterward of the OHWM of Lake Erie. Wetland W10,11,12 extends beyond the initial review area to the northwest into an area that is currently held by DTE as a conservation area but that was not delineated and will be addressed seperately.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: Pick List
Drainage area: Pick List
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through Pick List tributaries before entering TNW.

Project waters are Pick List river miles from TNW.
Project waters are Pick List river miles from RPW.
Project waters are Pick List aerial (straight) miles from TNW.
Project waters are Pick List aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain:

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7] Ibid.

Identify specific pollutants, if known:

(iv) **Biological Characteristics. Channel supports (check all that apply):**
- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**
- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☒ Wetlands adjacent to TNWs: approx 7 acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☒ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☒ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000; MI-STONEY POINT.
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA Soil Survey of Monroe County, MI; 1981 Sheet 64; Shows the original course of the Davis Drain.
- ☒ National wetlands inventory map(s). Cite name: http://www.fws.gov/wetlands/Data/Mapper.html.
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): Corps aerial photograph library and online aerial photography sources from 1949 - 2009.
  or ☐ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: Historical maps and aerial photos show that the review area, before modifications to accommodate agriculture, was once entirely Lake Erie coastal wetland marsh at the outlets of Davis Drain, LaPlaisance Creek and Plum Creek. The property also served as an early port for the city of Monroe in the early 1800s (nautical maps show a railroad spur and pier labeled Monroe Docks 1849) prior to navigational improvements to the Rasin River and the develpoment of the Port of Monroe further north. Alterations to the property and surrounding properties and waterways after 1975 have excluded the full influence of Lake Erie to the OHWM and adjacent wetlands in the review area.

20120530 Mitigation Site USACE Jurisdiction Determination Revision

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
REGULATORY OFFICE
477 MICHIGAN AVENUE, 6TH FLOOR
DETROIT, MICHIGAN 48226-2550

REPLY TO
ATTENTION OF:

May 30, 2012

Engineering & Technical Services
Regulatory Office
File No. LRE-2008-00443-1-J11

Randy Westmoreland
Detroit Edison Company
2000 Second Avenue, 337 WCB
Detroit, MI 48226

Dear Mr. Westmoreland,

This letter is in response to an e-mail from your agent, Lisa Matis, dated March 5, 2012, requesting a revised map to the Department of the Army Approved Jurisdiction Determination, dated February 24, 2012, to reflect corrected topographic elevations. Please find enclosed a revised jurisdictional determination map for the proposed Fermi III mitigation site.

To reiterate, in Lake Erie, as in all waters of the United States, including their adjacent wetlands, any construction or discharge of dredged and/or fill material must be authorized by the Department of the army. The authority of the Corps of Engineers to regulate construction or other work in navigable waters of the United States is contained in Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act and regulations promulgated pursuant to these Acts.

Under Section 10, a Corps permit is required for any structures or work in the navigable waters of the United States such as Lake Erie to what is called the Ordinary High Water Mark (OHWM). In Lake Erie the OHWM extends to the elevation contour of 573.4 IGLD 1985. In addition, a Section 10 permit is required for structures or work outside this limit if they affect the course, location, or condition of the waterbody as to its navigable capacity.

Section 404 requires a Corps permit for the discharge of dredged or fill material into navigable waters of the United States and in wetlands adjacent to those waters. The area of Corps jurisdiction under Section 404 extends to the OHWM, and to the upland boundary of any adjacent wetlands. Projects involving discharges typically include placement of fill material for homes and landscaping, impoundments, causeways, road fills, dams and dikes, riprap, groins, breakwaters, revetments, and beach nourishment. Section 404 also regulates discharges of dredged material incidental to certain activities such as grading, mechanized land clearing, ditching or other excavation activity, and the installation of certain pile-supported structures.

Our assertion of jurisdiction is based on the following criteria: (1) our documentation that the site in question is waterward of the line on the shore reached by the OHWM of Lake Erie, which is a navigable water of the United States (2) our documentation that the areas identified as wetlands meet our technical definition of wetlands per the criteria in the 1987 Corps of Engineers Wetlands Delineation Manual (3) our documentation that areas identified as nonwetlands do not meet the same criteria and (4) our documentation that the wetlands in question are adjacent (bordering, contiguous or neighboring) to Lake Erie, which is a navigable water of the United States and the recognition that the use, degradation, or destruction of this waterbody could affect interstate commerce.

If you have questions regarding this jurisdictional determination, please contact Sabrina M. Miller at (313) 226-7495 or by E-mail at sabrina.m.miller@usace.army.mil. Please refer to File Number: LRE-2008-00443-1-J11 in all future communications with this office.

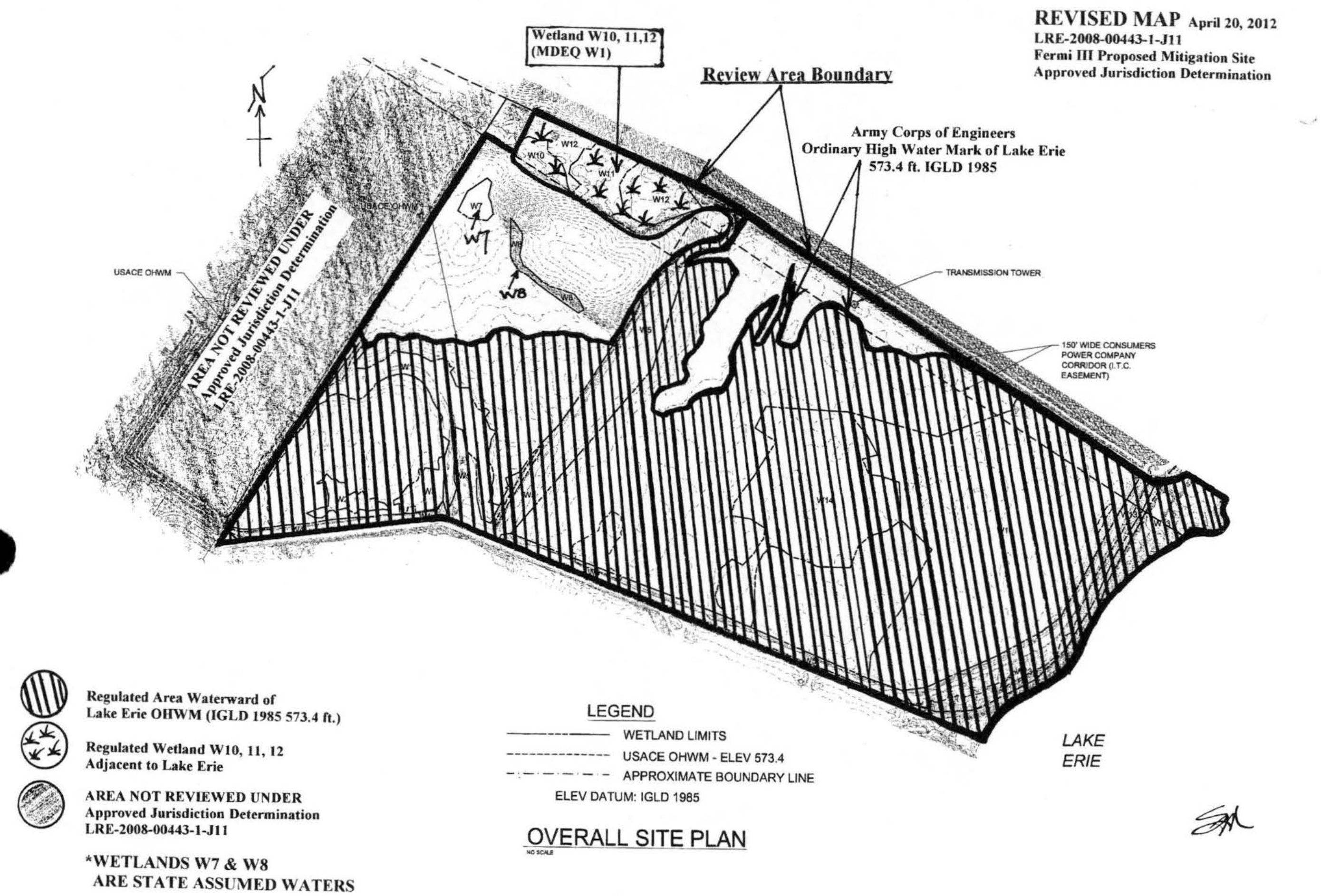
We are interested in your thoughts and opinions concerning your experience with the Detroit District, Corps of Engineers Regulatory Program. If you are interested in letting us know how we are doing, you can complete an electronic Customer Service Survey from our web site at: **http://per2.nwp.usace.army.mil/survey.html**. Alternatively, you may contact us and request a paper copy of the survey that you may complete and return to us by mail or fax. Thank you for taking the time to complete the survey, we appreciate your feedback.

Sincerely,

Sabrina M. Miller
Regulatory Project Manager
Compliance & Enforcement Branch

Enclosure
Site Map

Copy Furnished
MDEQ, Katherine David
USACE, Colette Luff


REVISED MAP April 20, 2012
LRE-2008-00443-1-J11
Fermi III Proposed Mitigation Site
Approved Jurisdiction Determination
Wetland W10, 11,12
(MDEQ W1)
Review Area Boundary
Army Corps of Engineers
Ordinary High Water Mark of Lake Erie
573.4 ft. IGLD 1985
N
AREA NOT REVIEWED UNDER
Approved Jurisdiction Determination
LRE-2008-00443-1-J11
USACE OHWM
TRANSMISSION TOWER
150' WIDE CONSUMERS POWER COMPANY CORRIDOR (I.T.C. EASEMENT)
W7
W8
W10
W11
W12
LAKE ERIE
Regulated Area Waterward of Lake Erie OHWM (IGLD 1985 573.4 ft.)
Regulated Wetland W10, 11, 12 Adjacent to Lake Erie
AREA NOT REVIEWED UNDER Approved Jurisdiction Determination LRE-2008-00443-1-J11
*WETLANDS W7 & W8 ARE STATE ASSUMED WATERS
LEGEND
WETLAND LIMITS
USACE OHWM - ELEV 573.4
APPROXIMATE BOUNDARY LINE
ELEV DATUM: IGLD 1985
OVERALL SITE PLAN
NO SCALE

USACE Prelim JD for 38 acre conservation area

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
REGULATORY OFFICE
477 MICHIGAN AVENUE, 6TH FLOOR
DETROIT, MICHIGAN 48226-2550

REPLY TO
ATTENTION OF:

May 30, 2012

Engineering & Technical Services
Regulatory Office
File No. LRE-2008-00443-1-J12

Randy Westmoreland
Detroit Edison Company
2000 Second Avenue, 337 WCB
Detroit, Michigan 48226

Dear Mr. Westmoreland,

This letter is regarding the Department of the Army jurisdiction on an approximately 38 acre parcel, currently a conservation area, located east of I-75, north of La Plaisance Creek, Monroe Michigan. The proposed project site contains a section of the former bed of the Davis Drain waterward of the Ordinary High Water Mark (OHWM) of Lake Erie as well as wetlands adjacent to and directly abutting Lake Erie.

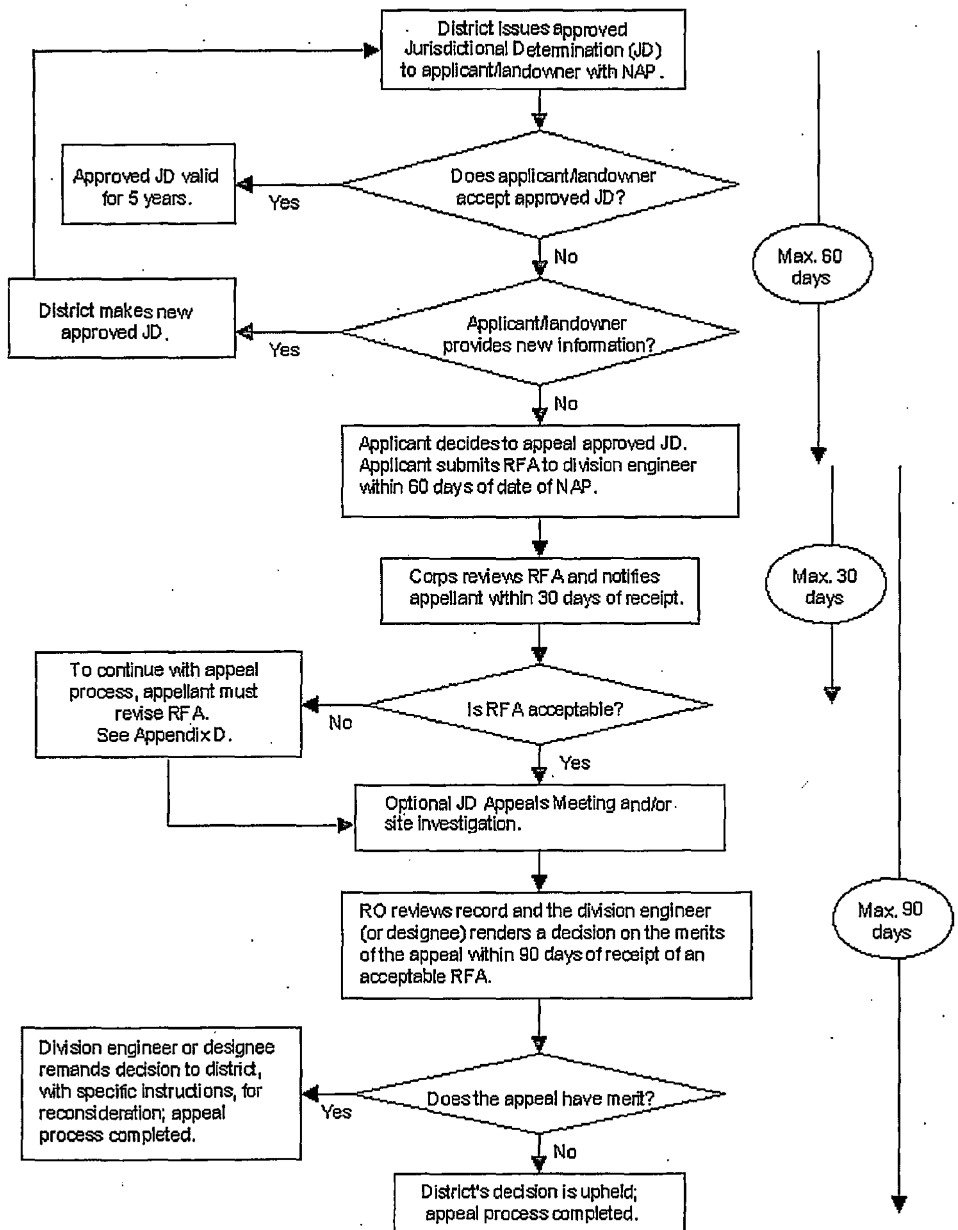
The Corps of Engineers' authority to regulate certain activities on and adjacent to the property in question is found in Section 10 of the Rivers and Harbors Act (Section 10), and Section 404 of the Clean Water Act (Section 404).

Under Section 10, a Corps permit is required for any structures or work in the navigable waters of the United States such as Lake Erie to what is called the Ordinary High Water Mark (OHWM). In Lake Erie, the OHWM extends to the elevation contour of 573.4 ft. IGLD 1985. In addition, a Section 10 permit is required for structures or work outside this limit if they affect the course, location, or condition of the waterbody as to its navigable capacity.

Section 404 requires a Corps permit for the discharge of dredged or fill material into navigable waters of the United States and in wetlands adjacent to those waters. The area of Corps jurisdiction under Section 404 extends to the OHWM, and to the upland boundary of any adjacent wetlands. Projects involving discharges typically include placement of fill material for homes and landscaping, impoundments, causeways, road fills, dams and dikes, riprap, groins, breakwaters, revetments, and beach nourishment. Section 404 also regulates discharges of dredged material incidental to certain activities such as grading, mechanized land clearing, ditching or other excavation activity, and the installation of certain pile-supported structures.

Based on a review of applicable topographic maps, National Wetland Inventory, county soil survey, and aerial photographs, the project area contains waters and/or wetlands within the jurisdiction of the Corps of Engineers. Any discharges of dredged and/or fill material into the waters in the proposed project area will require a Corps permit.

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

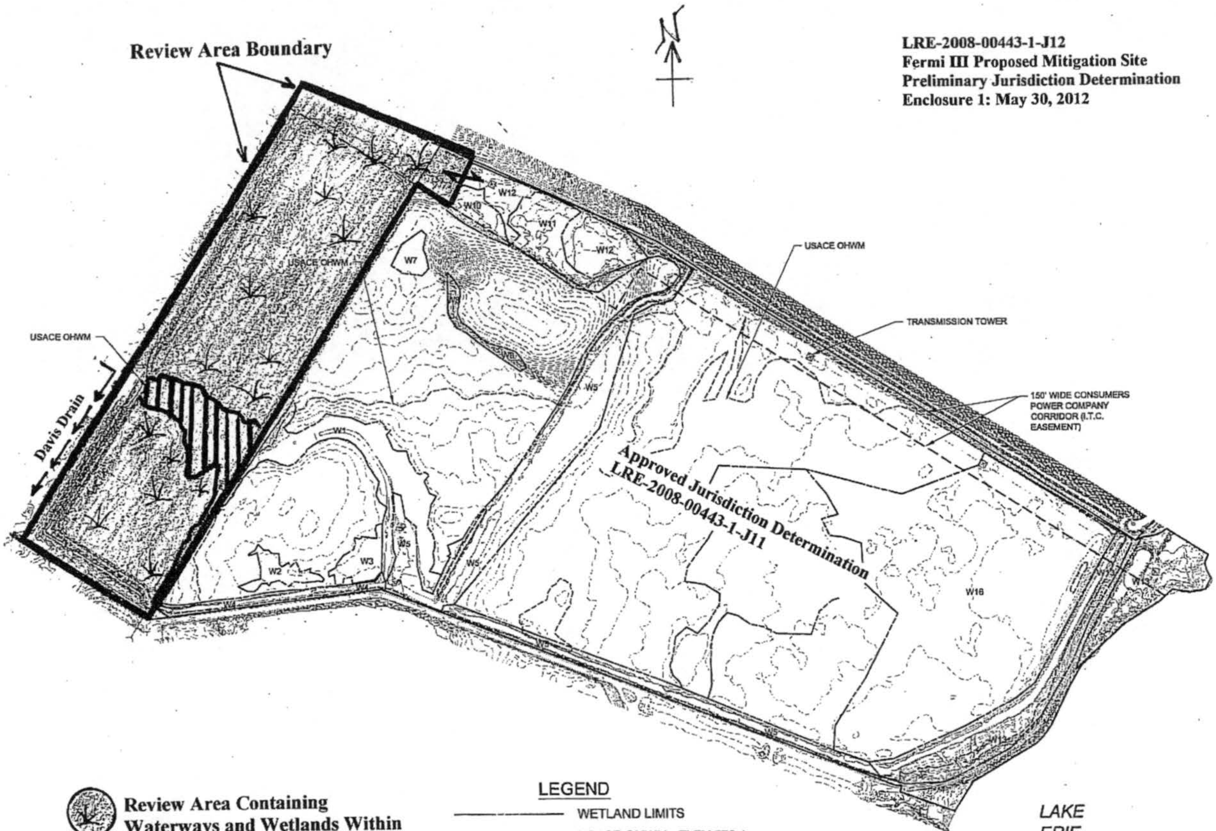
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Sabrina Miller REGULATORY OFFICE 477 MICHIGAN AVENUE, 6TH FLOOR DETROIT, MICHIGAN 48226-2550 (313) 226-7495	Appeal Review Officer U.S. Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Rm 10-524 Cincinnati, Ohio 45202-3222 Tel. (513) 684-6212 Fax. (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_______________________ Signature of appellant or agent.		

LRE-2008-00443-1-J12
Fermi III Proposed Mitigation Site
Preliminary Jurisdiction Determination
Enclosure 1: May 30, 2012



Review Area Containing Waterways and Wetlands Within The Corps' Regulatory Authority

Area Waterward of the Lake Erie OHWM (IGLD 1985 573.4 ft.)

LEGEND

WETLAND LIMITS
USACE OHWM - ELEV 573.4
APPROXIMATE BOUNDARY LINE
ELEV DATUM: IGLD 1985

OVERALL SITE PLAN

NO SCALE

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): May 30, 2012

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Randy Westmoreland, Detroit Edison Company, 2000 Second Avenue 37 WCB, Detroit 48226

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:Detroit District, Fermi III Mitigation, LRE-2008-00443-1-J12

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: Initial (lakeward most) proposed wetland mitigation site is covered under an approved jurisdiction determination LRE-2008-00443-1-J11. This PJD encompasses waters observed on an additional parcel west of the initial proposed wetland mitigation site. No waters were delineated by the applicant on this parcel nor was a Corps site inspection conducted. These waters include the historic bed of the Davis Drain waterward of the Corps OHWM of Lake Erie, waters and wetlands adjacent to the historic bed of the Davis Drain, and wetlands otherwise contiguous with and directly abutting Lake Erie, a Section 10 waterway.
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State:MI County/parish/borough: Monroe City: Monroe
Center coordinates of site (lat/long in degree decimal format): Lat. 41.87840° **N**, Long. -83.38938° **W**.

Universal Transverse Mercator:

Name of nearest waterbody: Lake Erie

Identify (estimate) amount of waters in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:
Wetlands: Approximately 15.5 acres.
Cowardin Class: Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:
Non-Tidal: Lake Erie

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: April 4, 2012

☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or

to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .

☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☒ U.S. Geological Survey Hydrologic Atlas:04100001.

☐ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:1:24,000; MI-STONEY POINT.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA Soil Survey of Monroe County, MI; 1981 Sheet 64; Shows the original course of the Davis Drain.

☒ National wetlands inventory map(s). Cite name: http://www.fws.gov/wetlands/Data/Mapper.html.

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): Corps aerial photograph library and online aerial photography sources from 1949 - 2009.

or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☒ Other information (please specify): The former bed of the Davis Drain on this parcel (conservation area west of the existing access road) runs from west to east and is waterward of the Ordinary High Water Mark of Lake Erie, 573.4ft. IGLD 1985. But not for the access road, the former bed of the Davis Drain and its adjacent wetlands are contiguous with Lake Erie as well as contiguous with wetlands identified on the Approved JD for the initial proposed mitigation site File Number LRE-2008-00443-1-J11 (Wetland 10, 11, 12 (MDEQ Wetland 1)), dated February 24, 2012. Historical maps and aerial photos show that this review area, before modifications to accommodate agriculture, is entirely Lake Erie coastal wetland marsh at the outlets of Davis Drain, LaPlaisance Creek and Plum Creek. The property served as an early port for the city of Monroe in the early 1800s (nautical maps show a railroad spur and pier labeled Monroe Docks 1849) prior to navigational improvements to the Rasin River and the develpoment of the Port of Monroe further north. Alterations to the property and surrounding properties and waterways after 1975 have excluded the full influence of Lake Erie to the OHWM and adjacent wetlands in these review areas.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

5/30/2012

Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Attachment 3-1 Cooperative Agreement Between DTE and USFWS

Attachment 3-1: Applicant, Agent/Contractor, and Property Owner Information
(6 pages following cover page)

- **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**
- **DRWIR Cooperative Agreement**
- **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**

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) Lagoona Beach Unit comprises 656 acres of the 1260 acre Fermi site. The U.S. Fish and Wildlife Service (USFWS) manages the DRIWR and has published a Comprehensive Conservation Plan[1] for the refuge. The Comprehensive Conservation Plan states that there are several options for acquisition of land for the refuge other than outright purchase of land. One of these alternative methods, a cooperative agreement, was used for acquisition of the Lagoona Beach Unit of the DRIWR on Fermi property. Detroit Edison has a 2003 Cooperative Agreement (see pages 2 through 6) with the USFWS for the onsite portion of the DRIWR that allows Detroit Edison and the USFWS to share management of the refuge areas, but that allows Detroit Edison to retain ownership and control of those areas. The agreement allows Detroit Edison to withdraw from or revise the agreement at any time. Detroit Edison expects to revise the agreement to reflect the approximately 637 acres expected to be available for inclusion in the refuge after construction of Fermi 3. This revision in the size of the Lagoona Beach Unit of the DRIWR is consistent with the 2003 Cooperative Agreement, the Comprehensive Conservation Plan, and land acquisition procedures for the refuge. Even though Fermi 3 will reduce the acreage that can be included in the DRIWR, Fermi 3 construction would be compatible with the plans and agreements governing the DRIWR.

[1] See http://www.fws.gov/midwest/planning/detroitriver/

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:

____

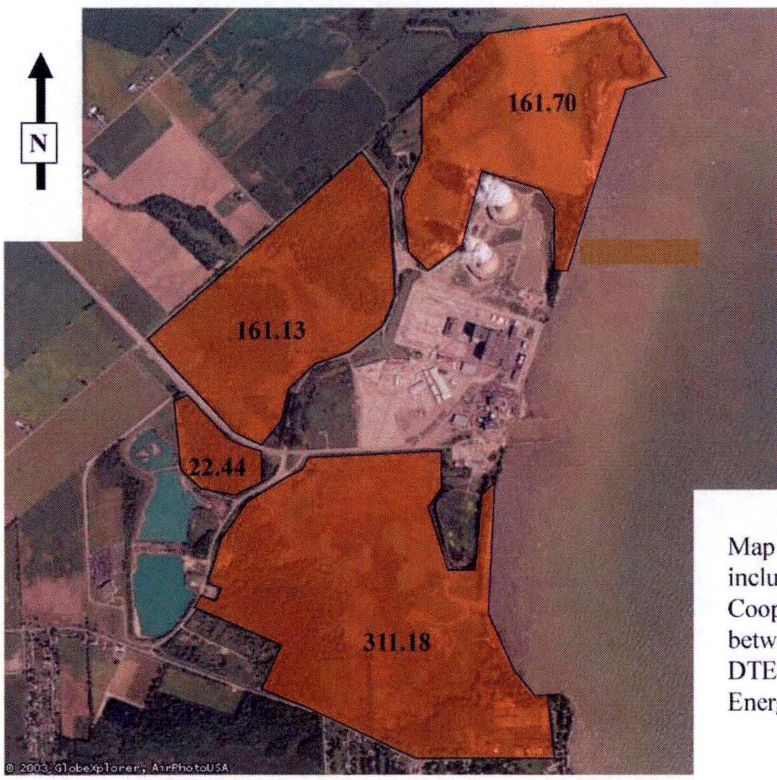
____

Date ____________

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

By: Steve Williams
Director
U.S. Fish and Wildlife Service

Attachment 1 to DRIWR Cooperative Agreement



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)

Corrected WRP005458 Approved Plans 2-2-17

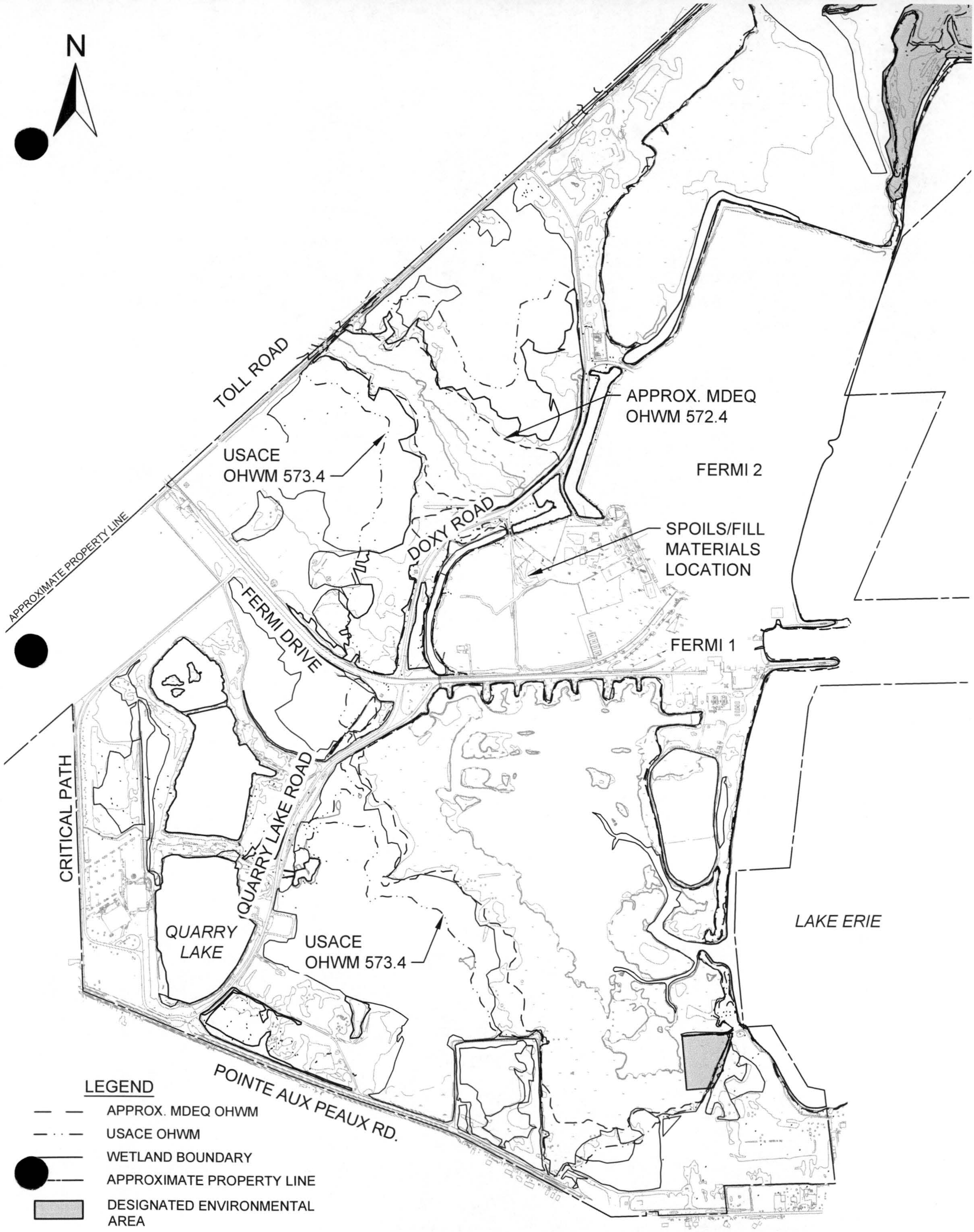


FIGURE 2-1 EXISTING SITE CONDITIONS

SCALE: 1"=1000'

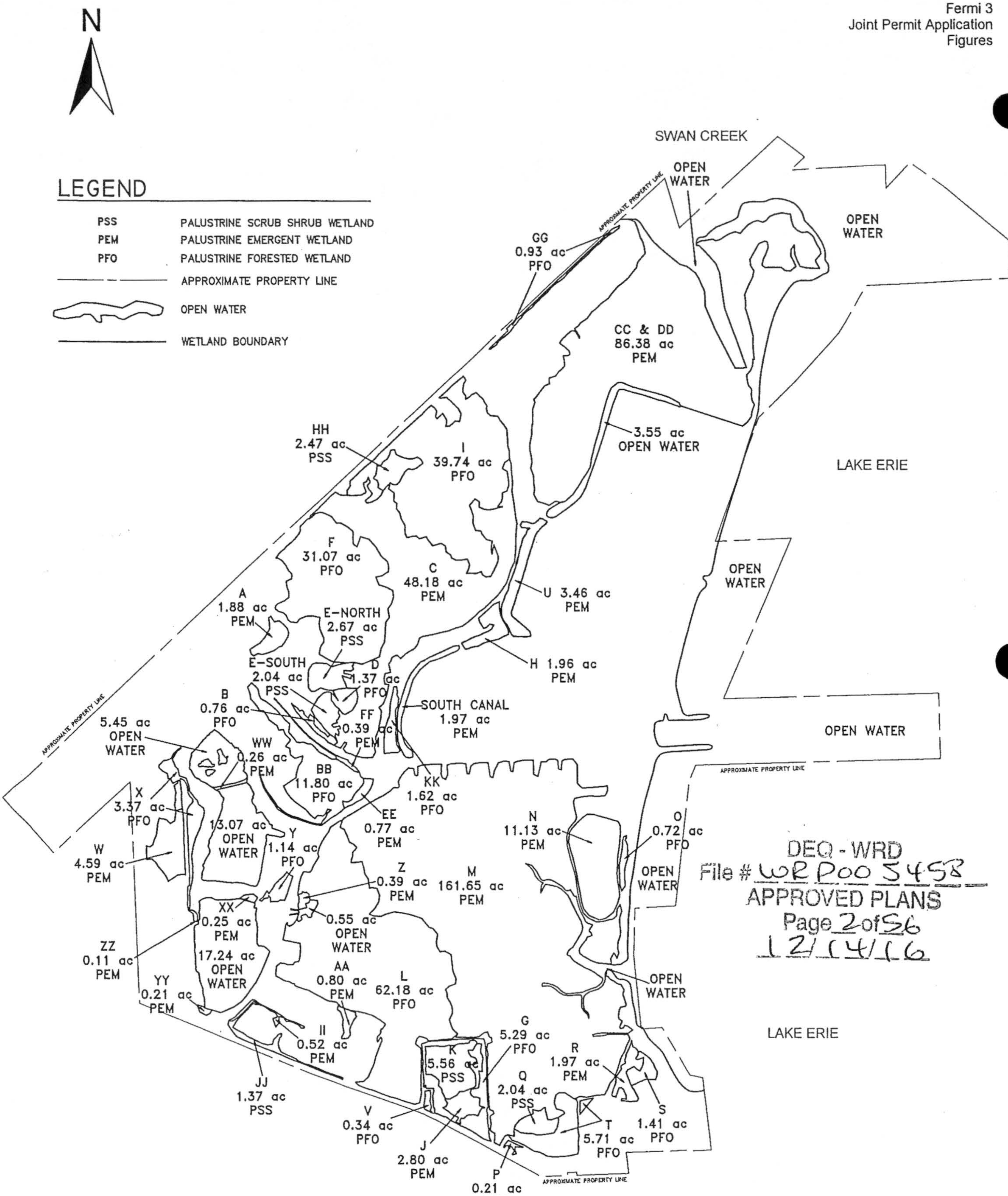


FIGURE 2-2 WETLAND DELINEATION MAP

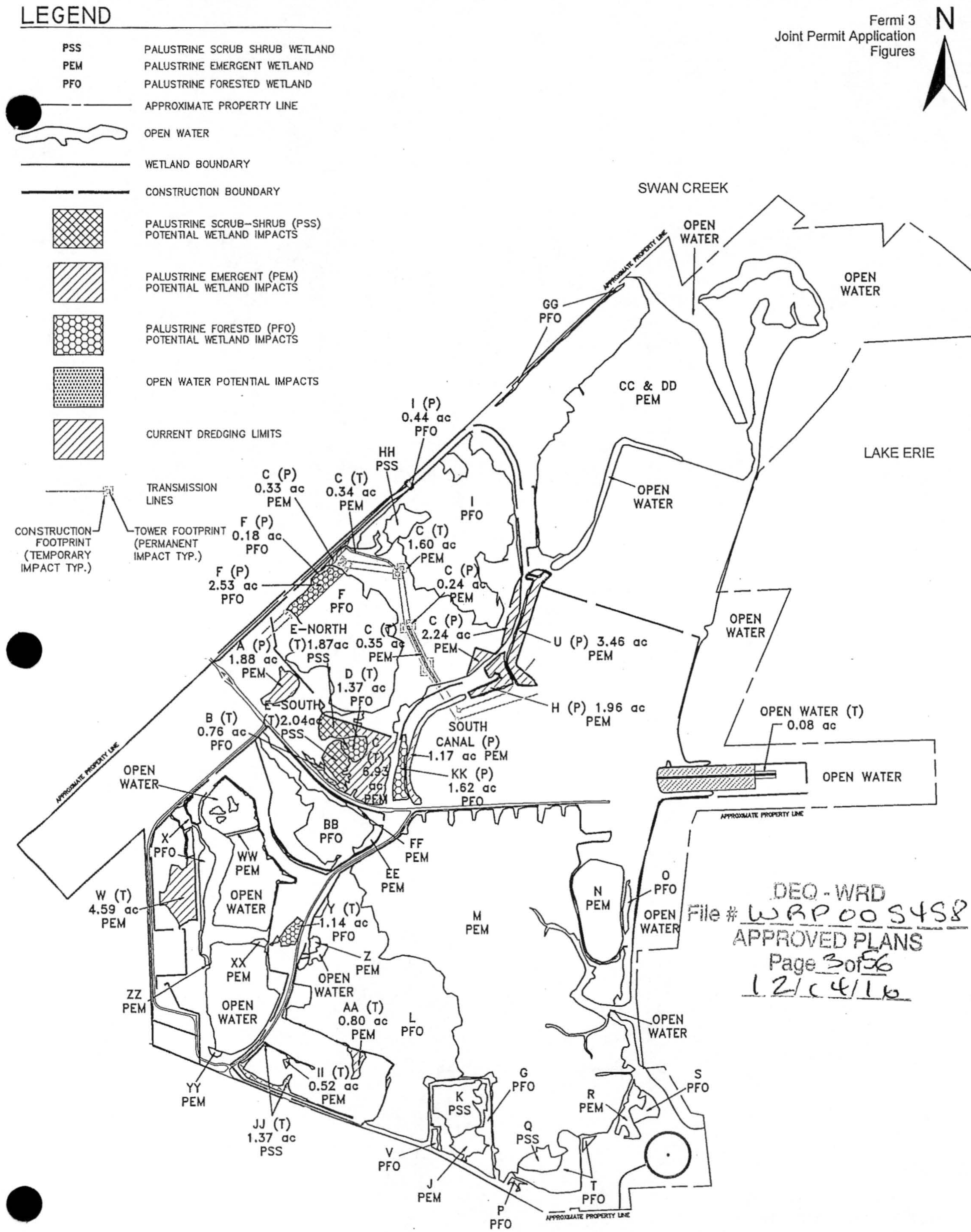


FIGURE 2-3 WETLAND IMPACT MAP

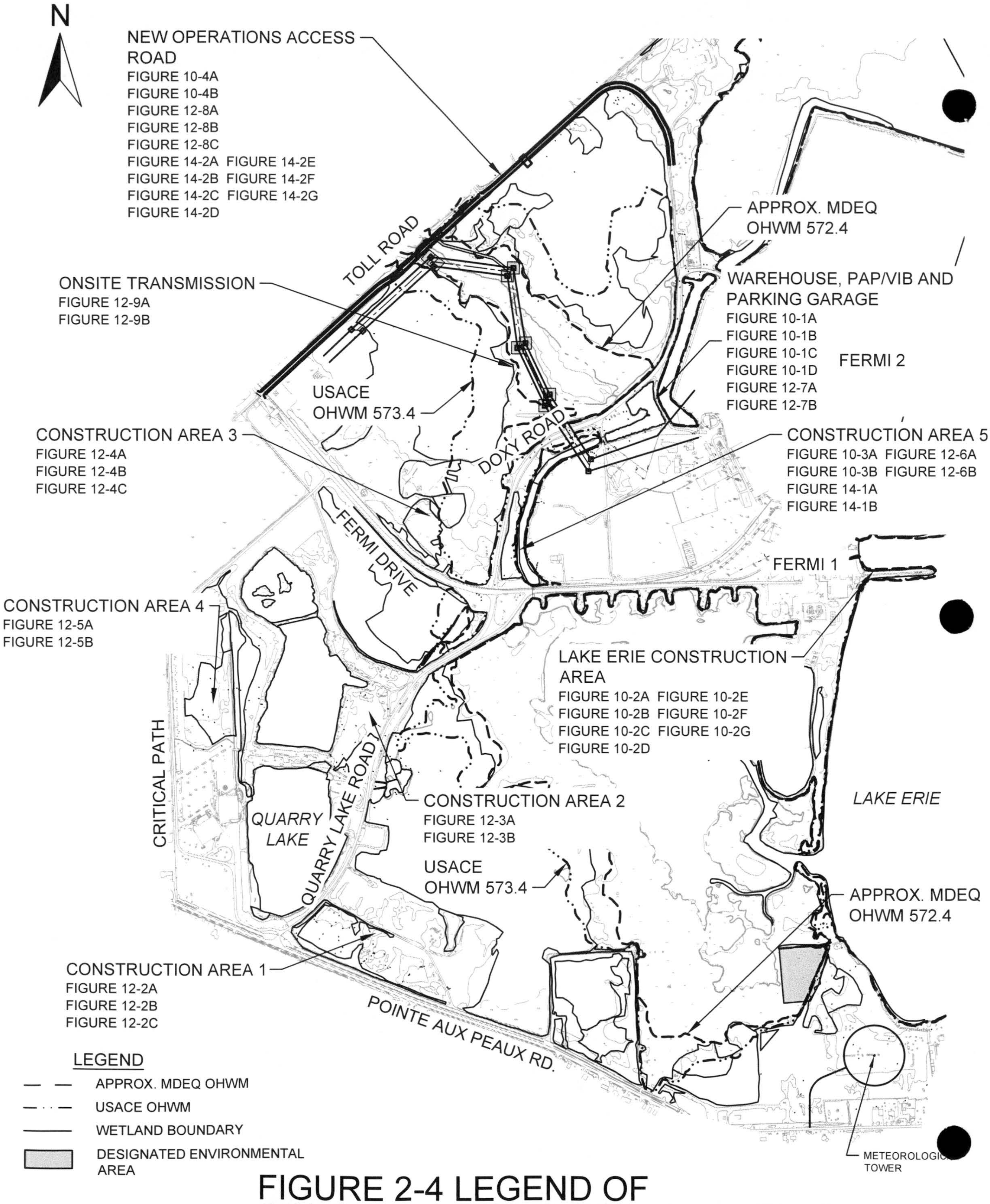
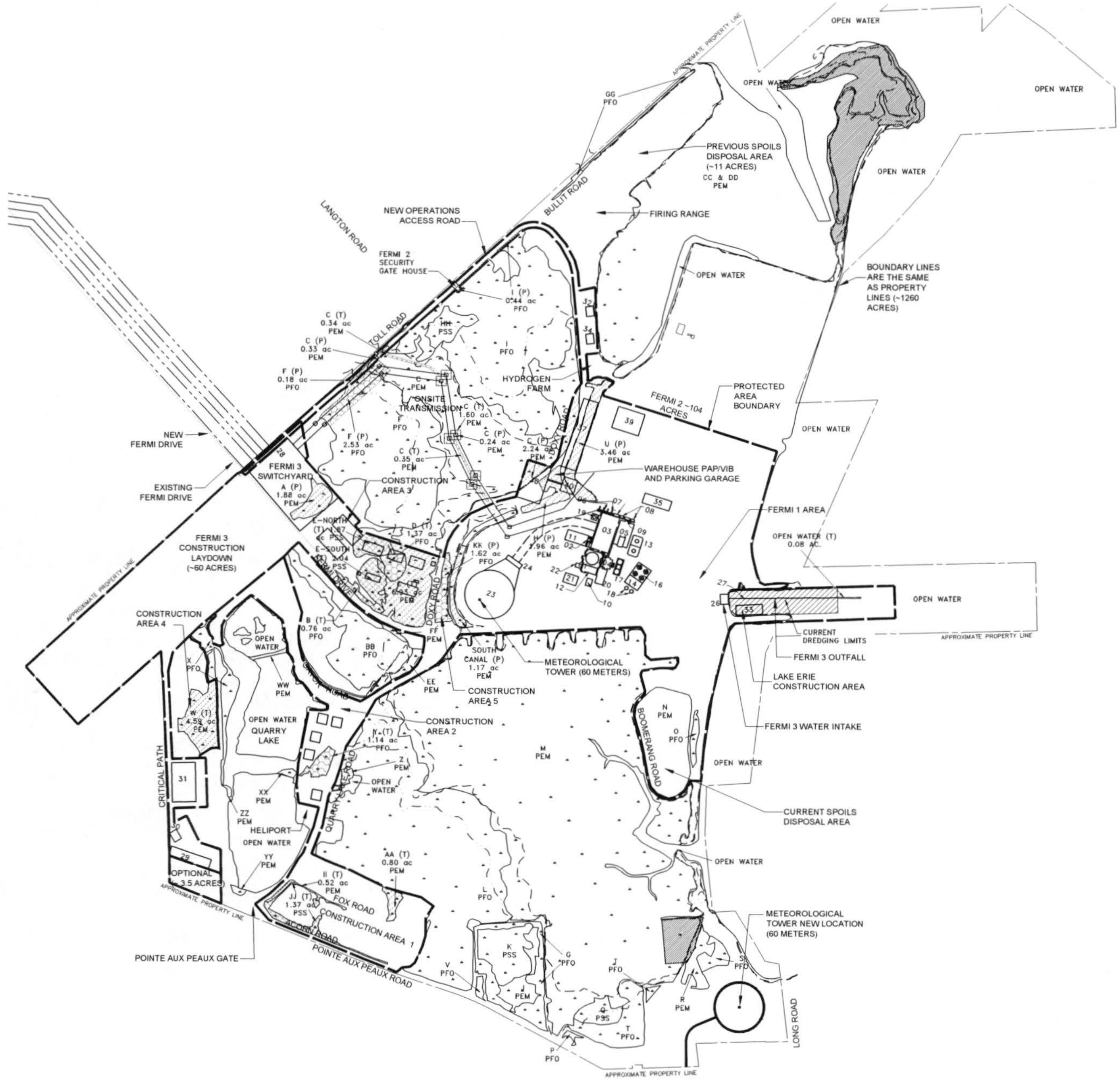
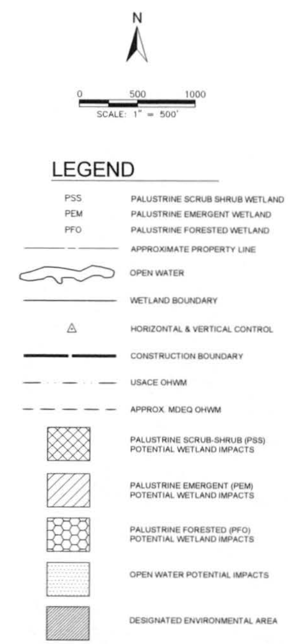


FIGURE 2-4 LEGEND OF CONSTRUCTION AREA LOCATIONS

SCALE: 1"=1000'





	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	NPHS COOLING TOWER
24	PUMPHOUSE
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

FIGURE 2-5 SITE PLAN

NO SCALE

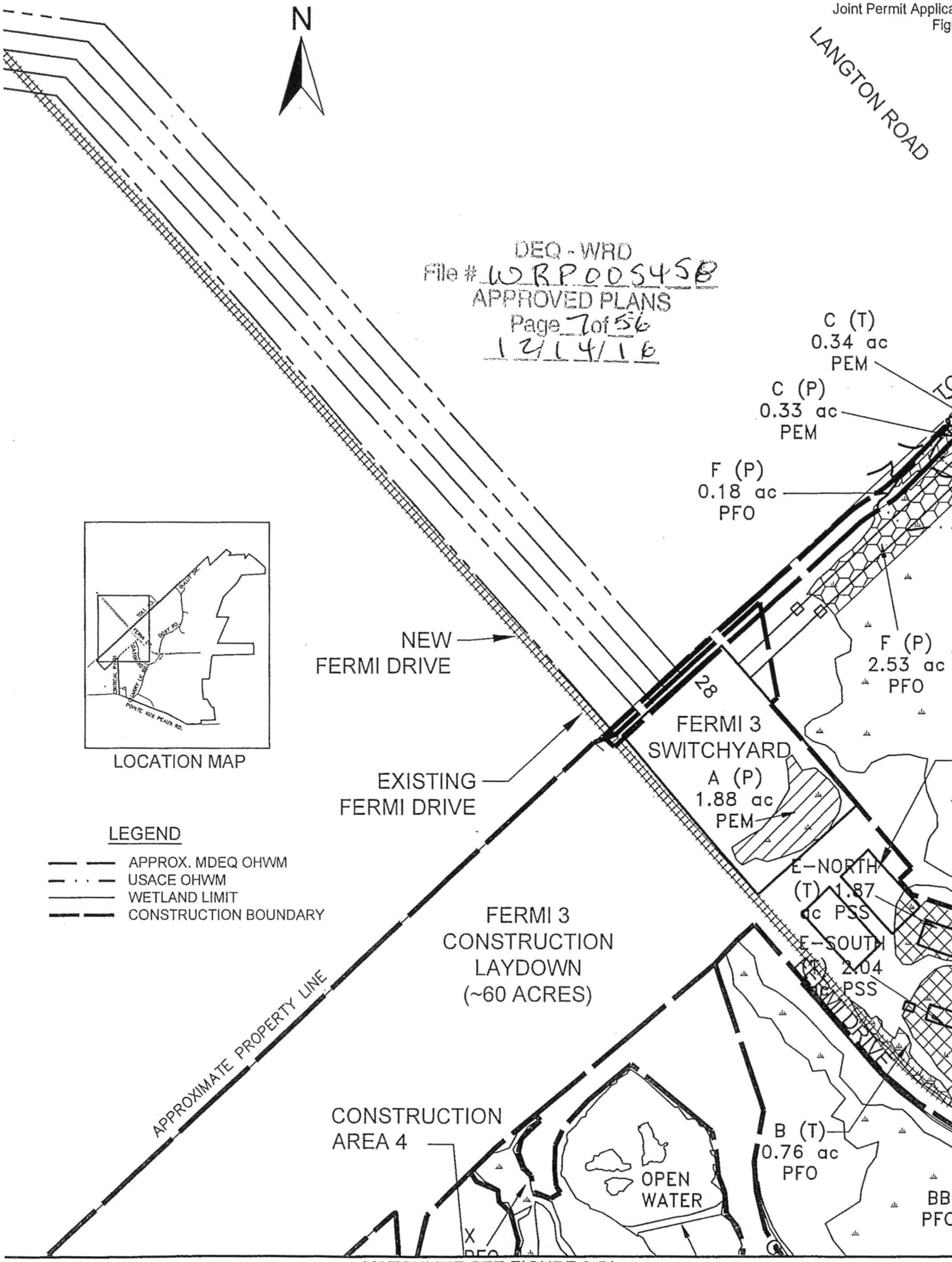
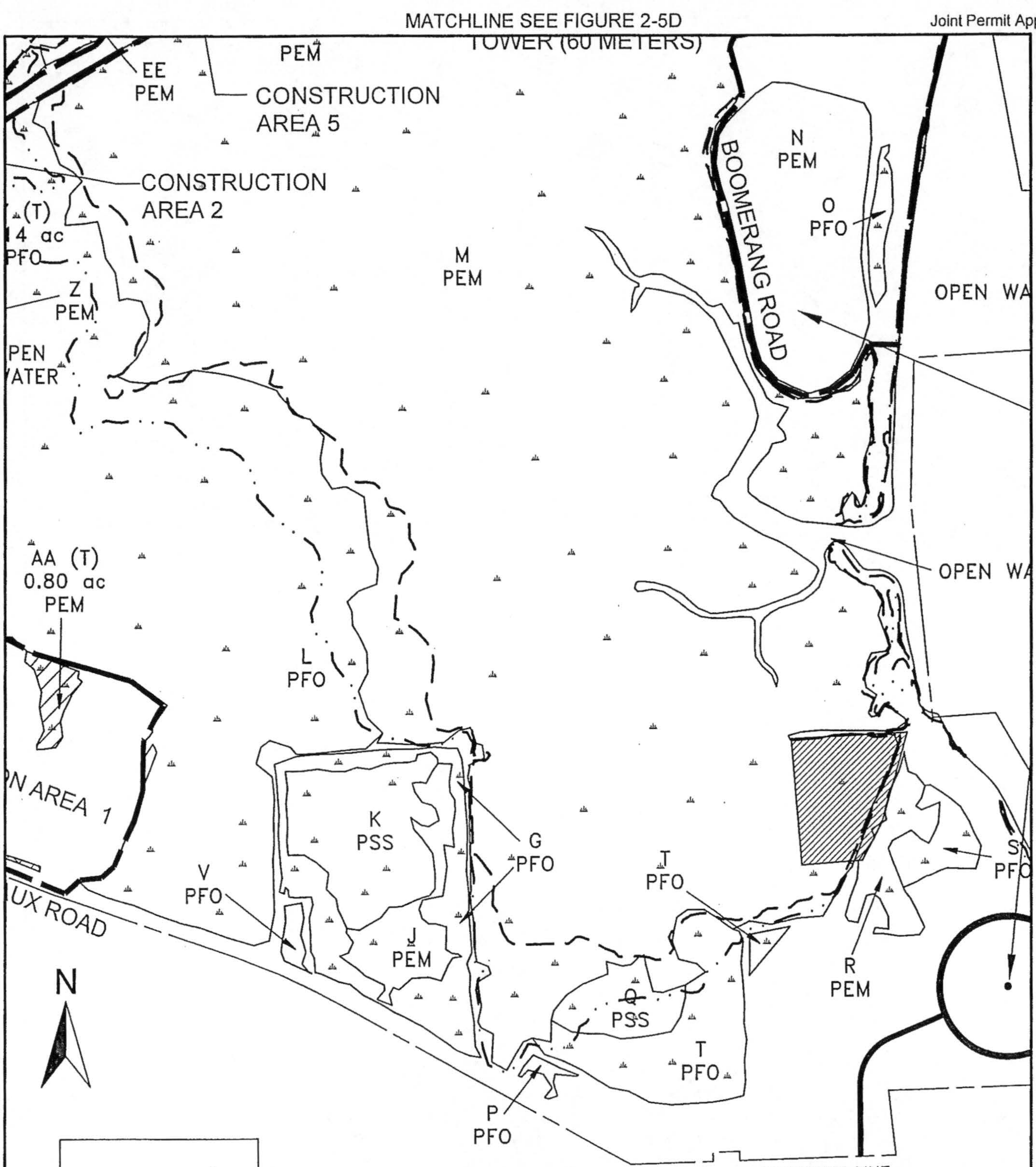
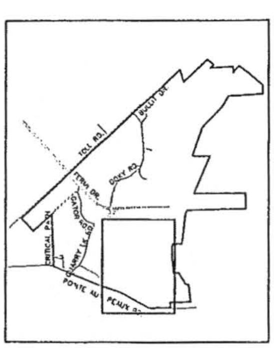


FIGURE 2-5B SITE PLAN

SCALE: 1"=500'





LOCATION MAP

LEGEND

- APPROX. MDEQ OHWM
- USACE OHWM
- WETLAND LIMIT
- CONSTRUCTION BOUNDARY
- DESIGNATED ENVIRONMENTAL AREA

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FIGURE 2-5C SITE PLAN

SCALE: 1"=500'

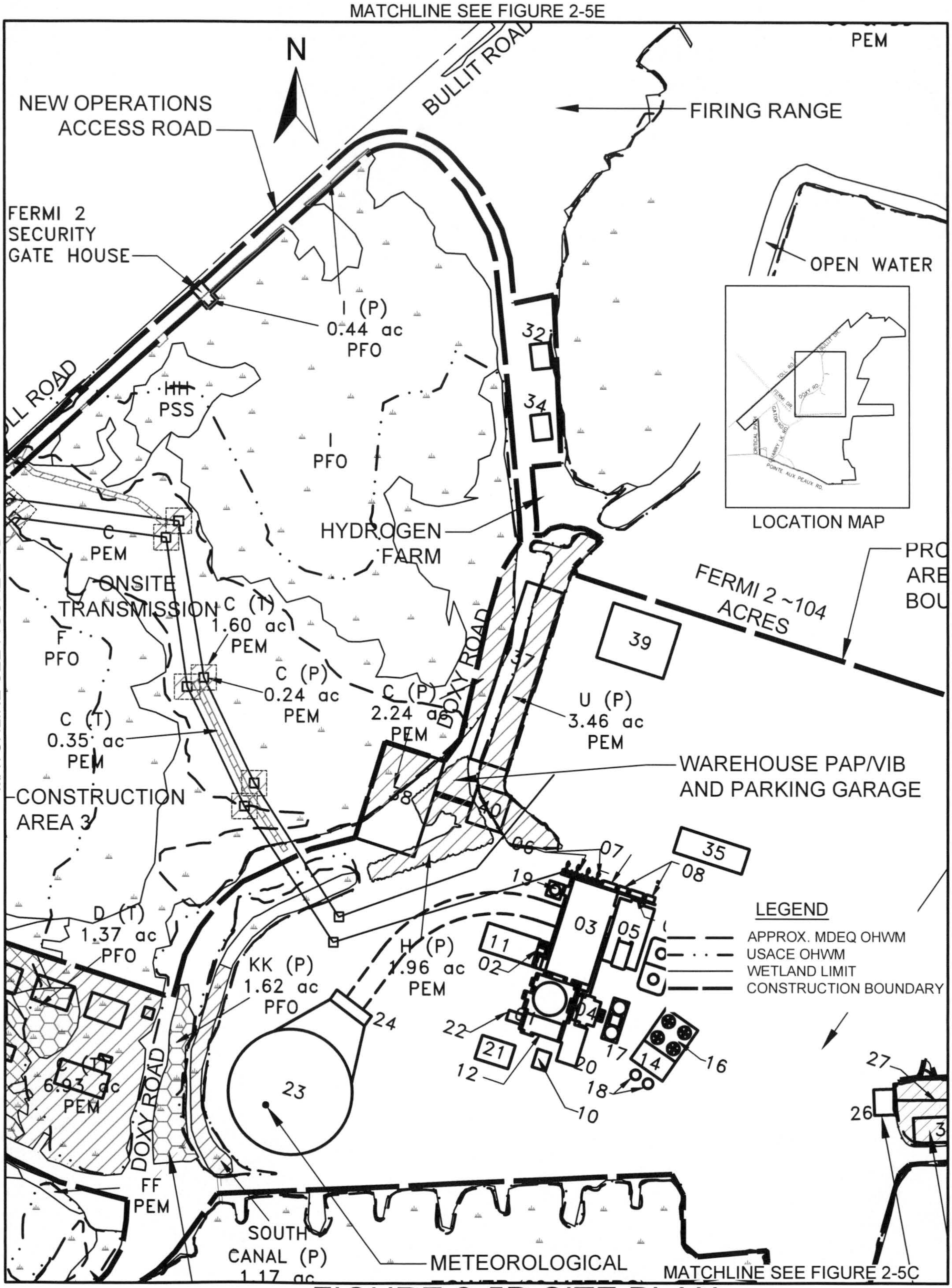
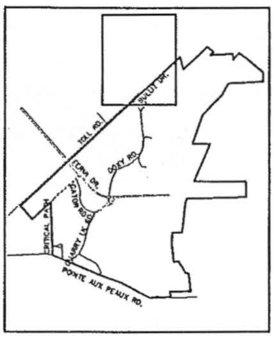


FIGURE 2-5D SITE PLAN

SCALE: 1"=500'

N



LOCATION MAP

LEGEND

- APPROX. MDEQ OHWM
- USACE OHWM
- WETLAND LIMIT
- CONSTRUCTION BOUNDARY

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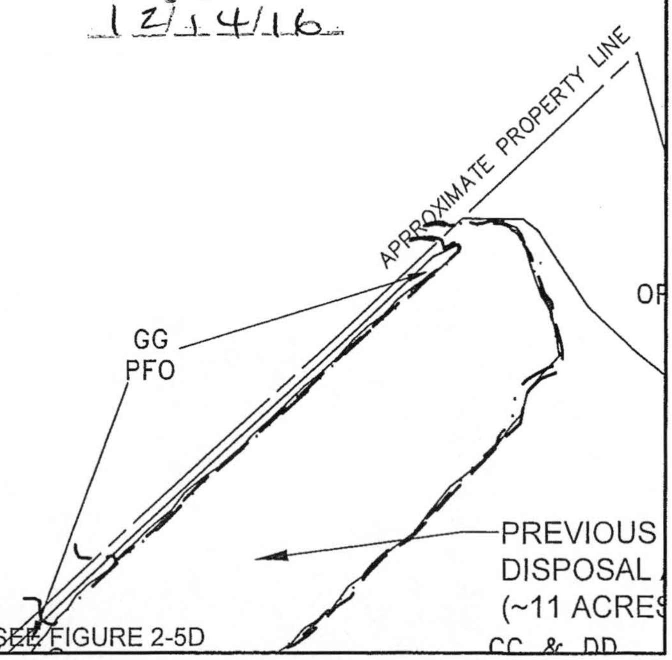
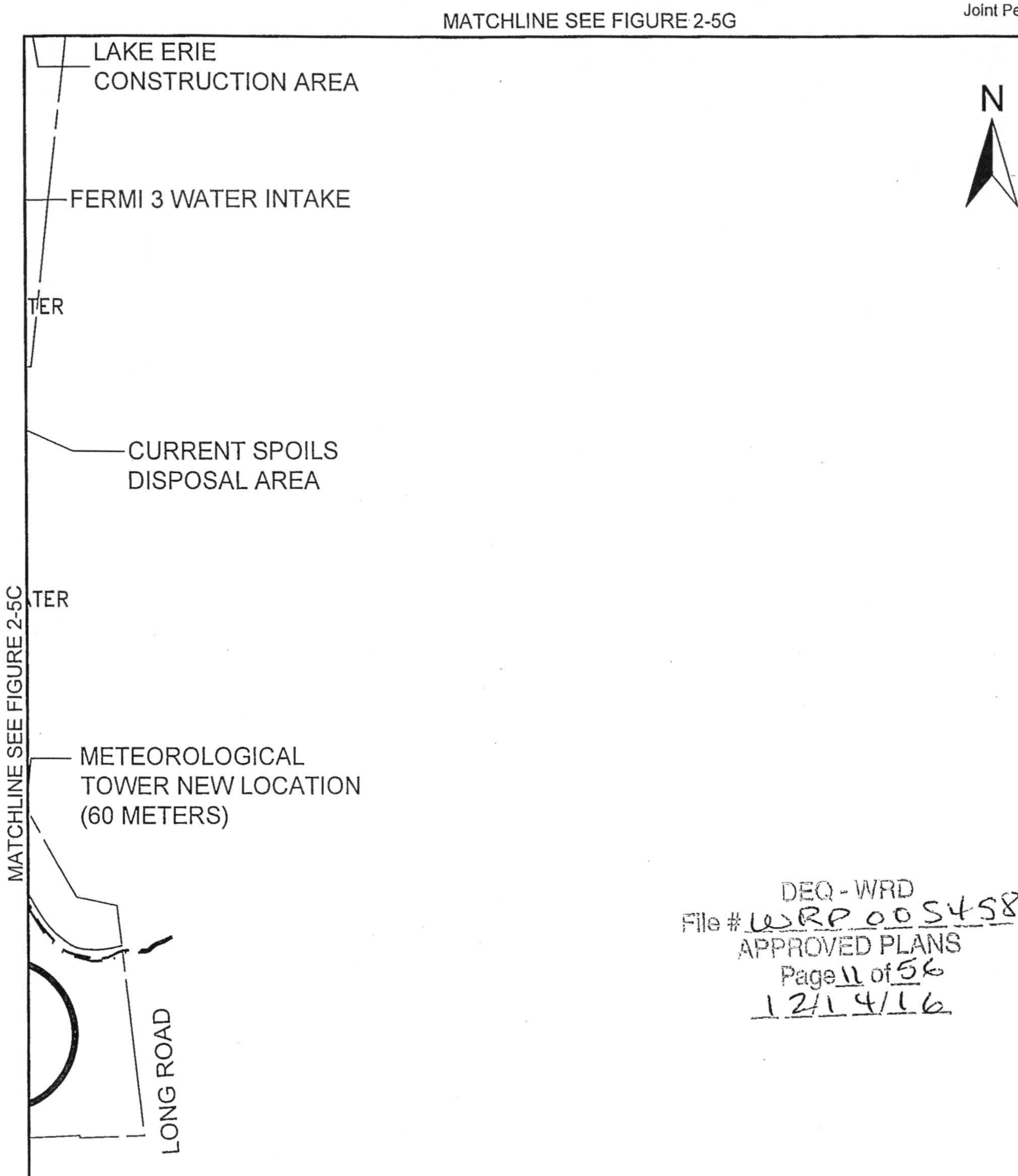


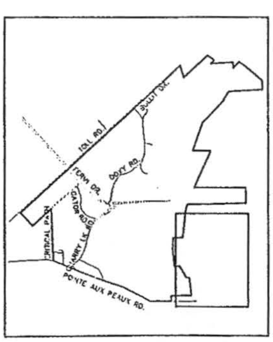
MATCHLINE SEE FIGURE 2-5H

MATCHLINE SEE FIGURE 2-5D

FIGURE 2-5E SITE PLAN

SCALE: 1"=500'





LOCATION MAP

LEGEND

- APPROX. MDEQ OHWM
- USACE OHWM
- WETLAND LIMIT
- CONSTRUCTION BOUNDARY

FIGURE 2-5F SITE PLAN

SCALE: 1"=500'

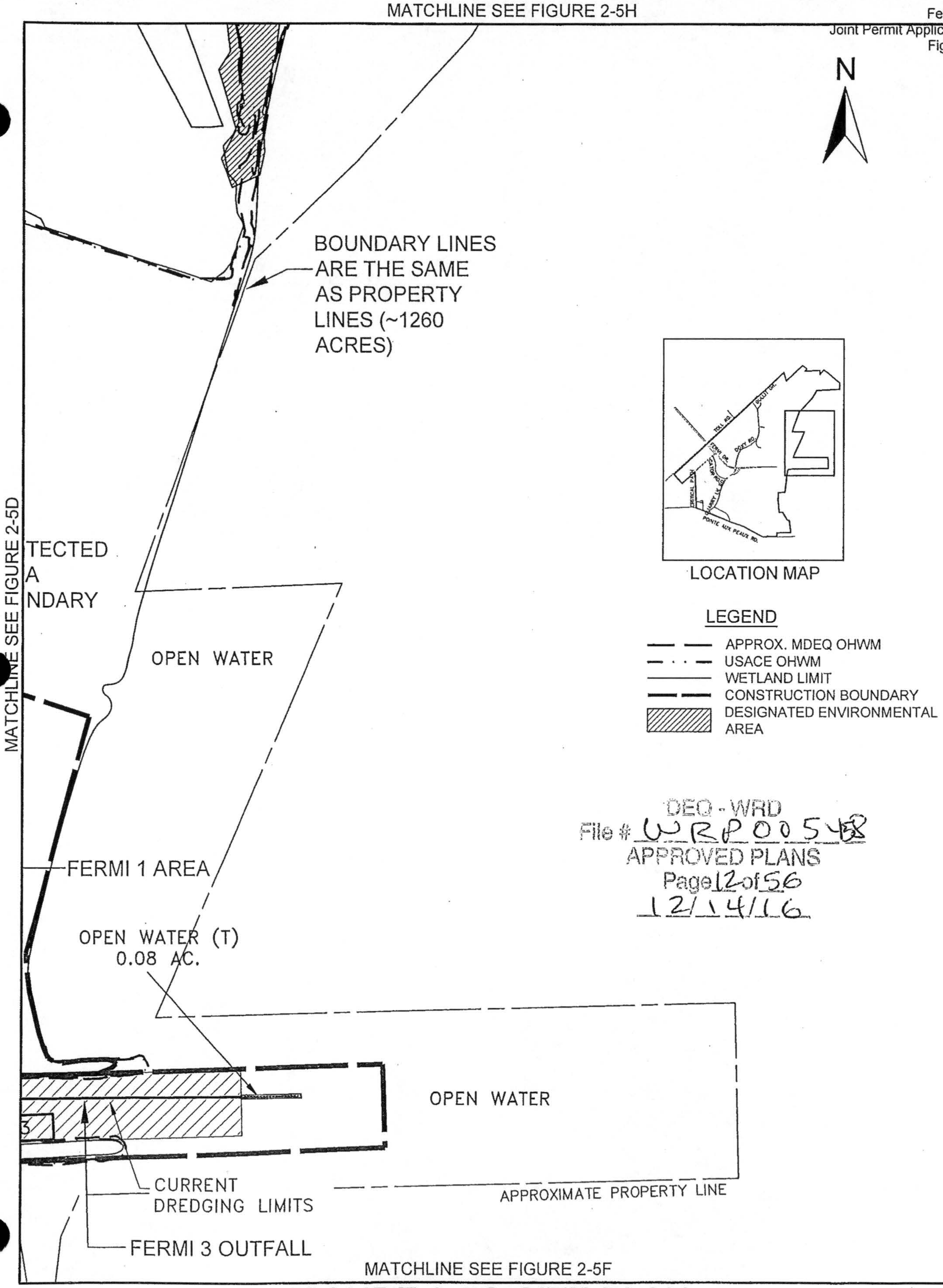


FIGURE 2-5G SITE PLAN

SCALE: 1"=500'

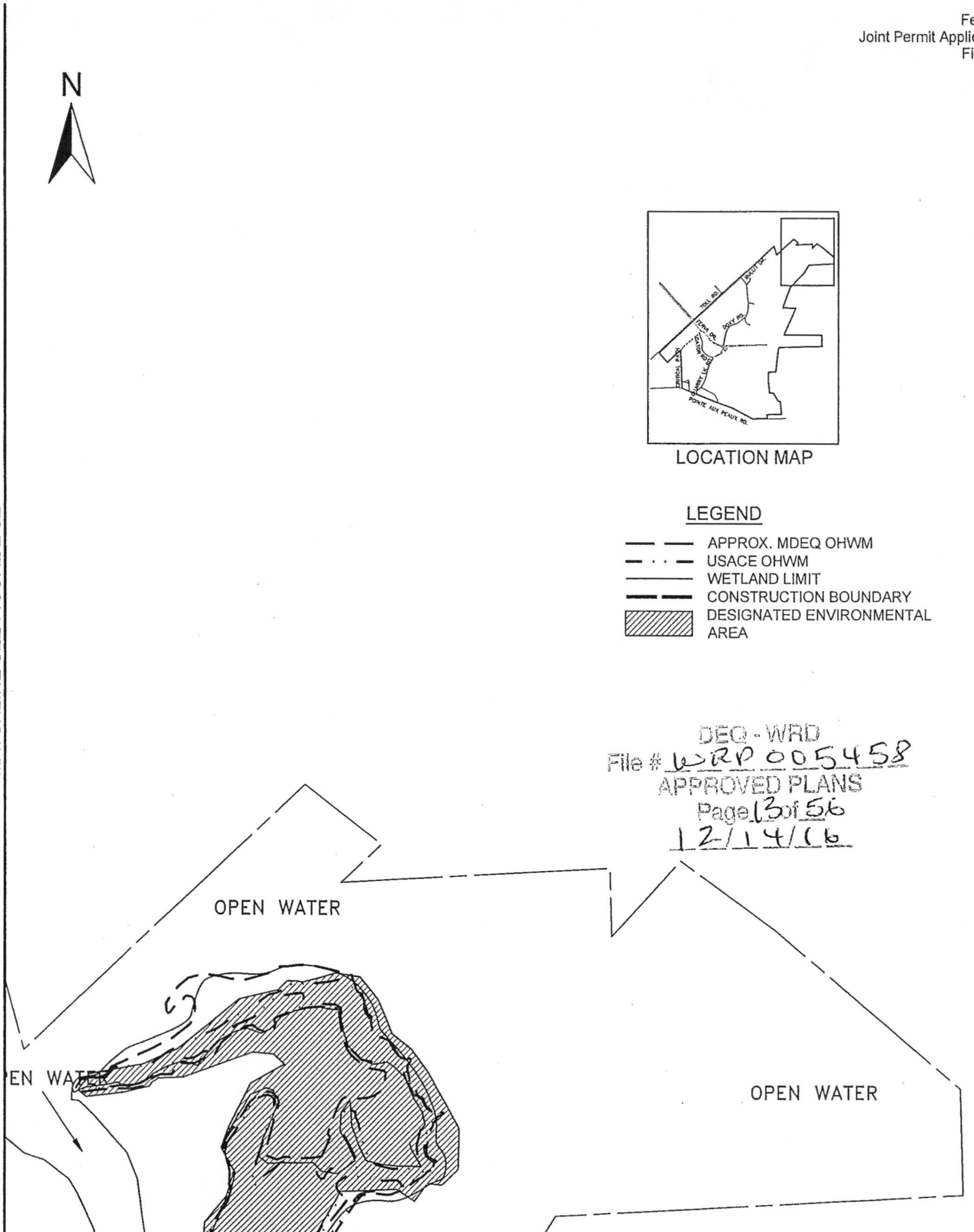
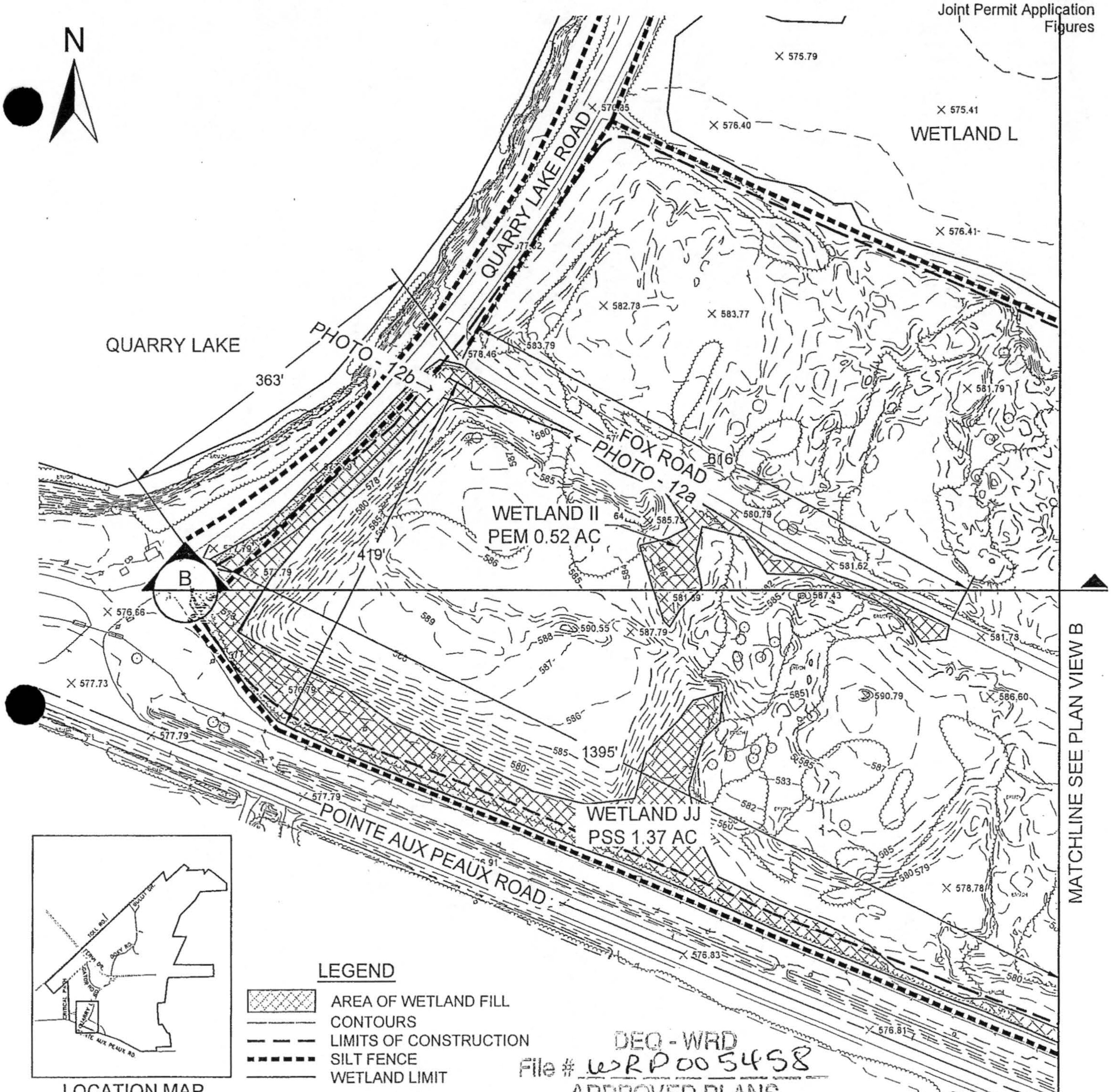


FIGURE 2-5H SITE PLAN

SCALE: 1"=500'



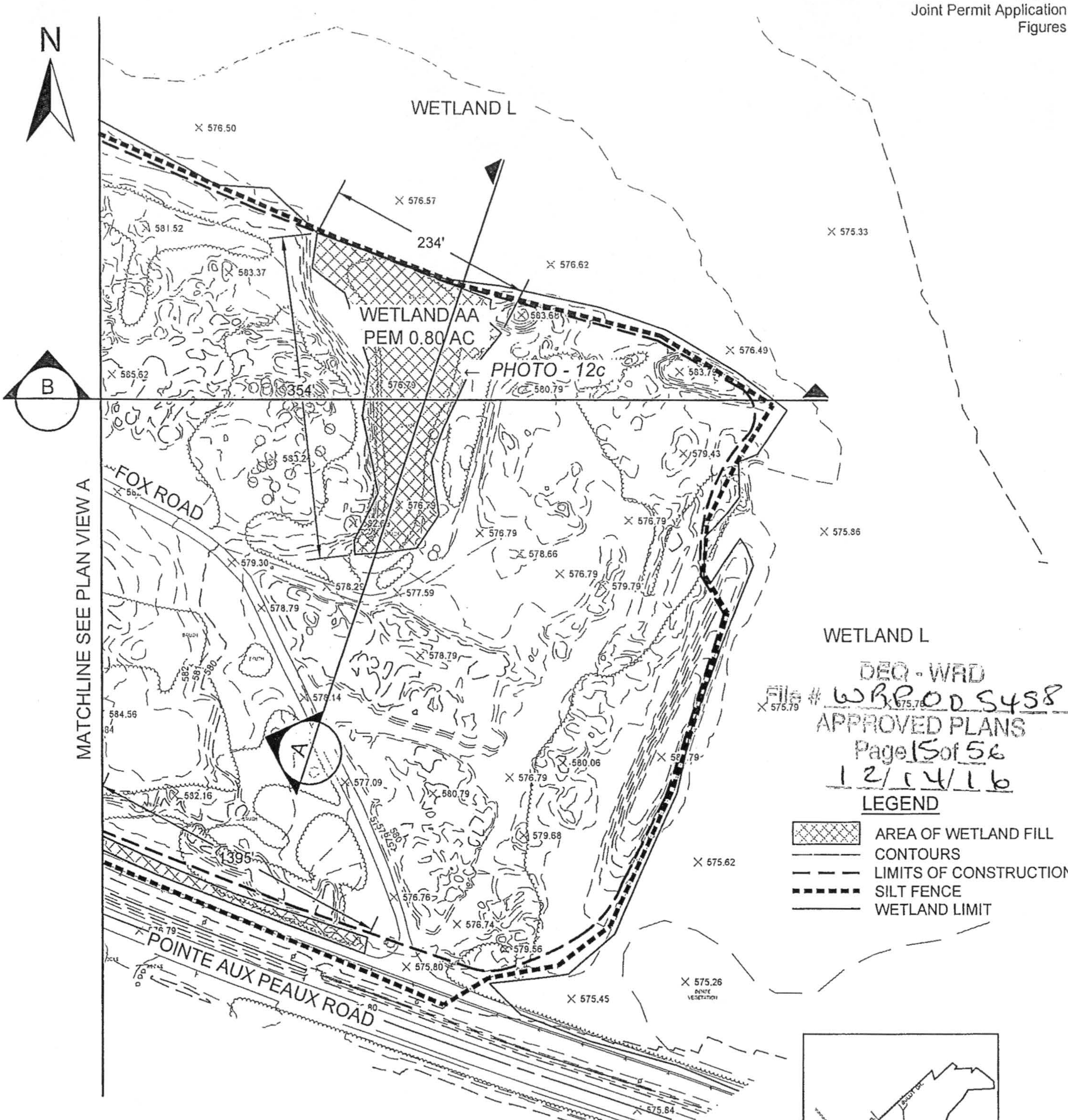
NOTE:
1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITY WILL BE USED FOR BACKFILL ONSITE. AFTER WHICH, THE AREA WILL BE USED TO STOCKPILE SPOILS FROM LOCATIONS ONSITE.
2. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND II
AREA = 0.52 acres
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = 1,675 CY
WETLAND EXCAVATION = 1,675 CY
WETLAND FILL = 1,746 CY

WETLAND JJ
AREA = 1.37 acres
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = 4,437 CY
WETLAND EXCAVATION = 4,437 CY
WETLAND FILL = 5,784 CY

FIGURE 12-2A CONSTRUCTION AREA 1 PLAN VIEW A

SCALE: 1"=150'



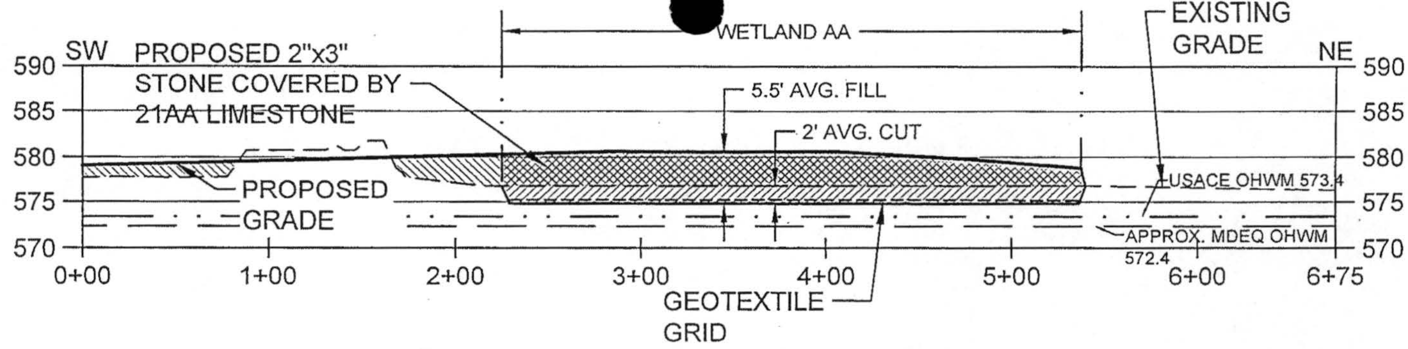
NOTE:

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
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = 2,568 CY
WETLAND EXCAVATION = 2,568 CY
WETLAND FILL = 6,593 CY

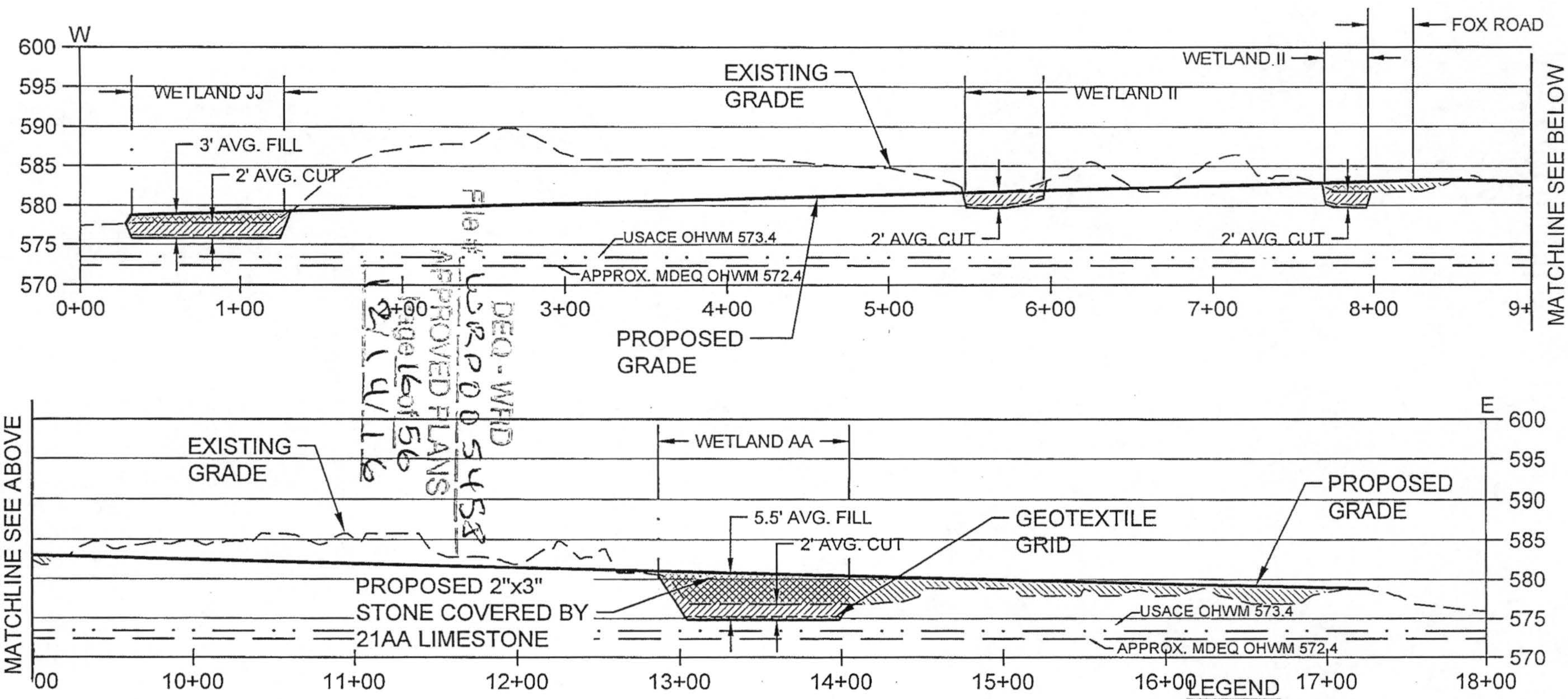
FIGURE 12-2B CONSTRUCTION AREA 1 PLAN VIEW B

SCALE: 1"=150'



A CONSTRUCTION AREA 1 SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)



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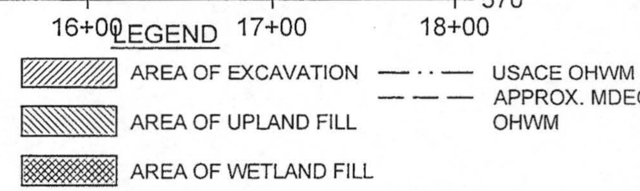
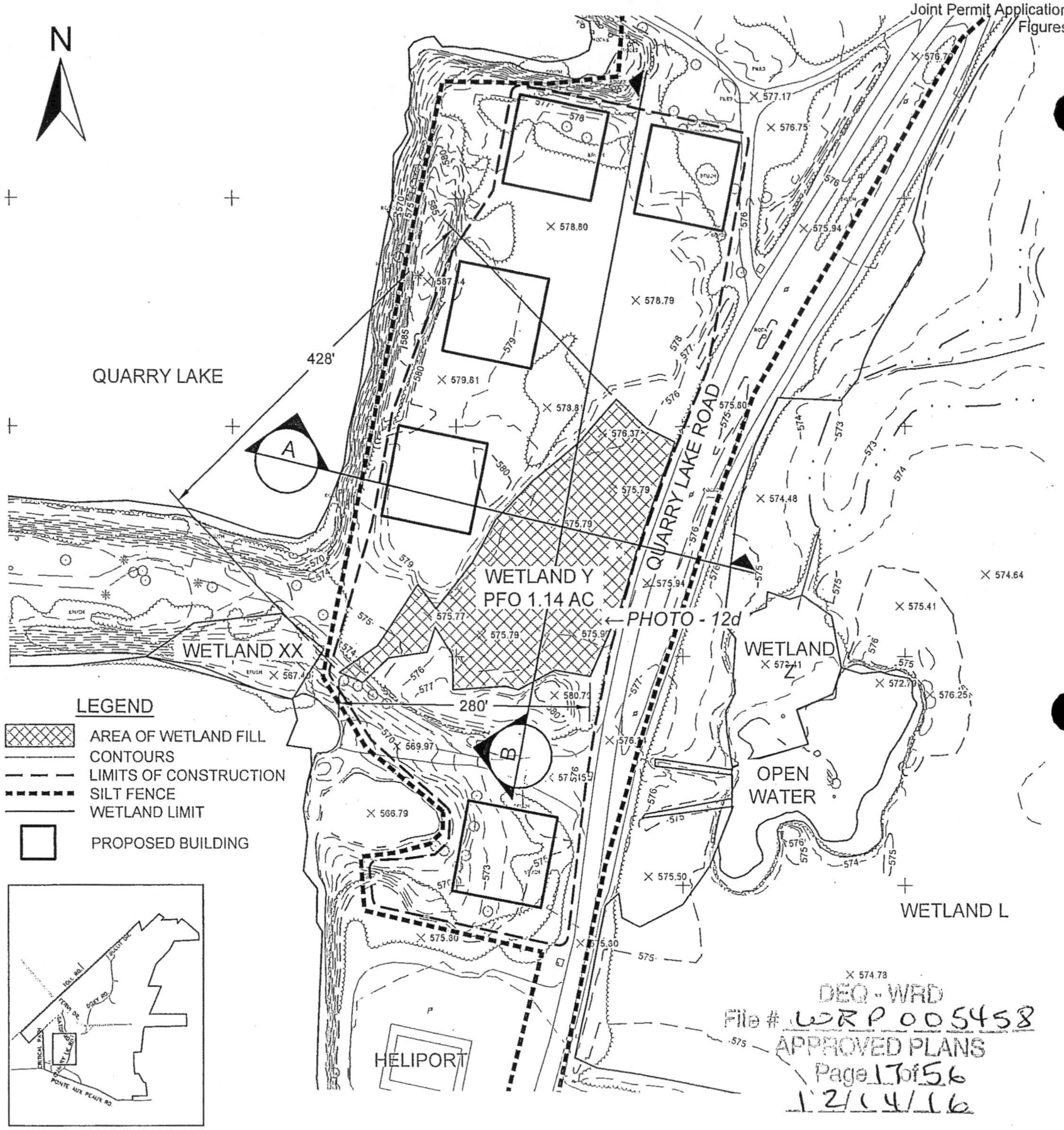


B CONSTRUCTION AREA 1 SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

FIGURE 12-2C CONSTRUCTION AREA 1 SECTION DETAILS



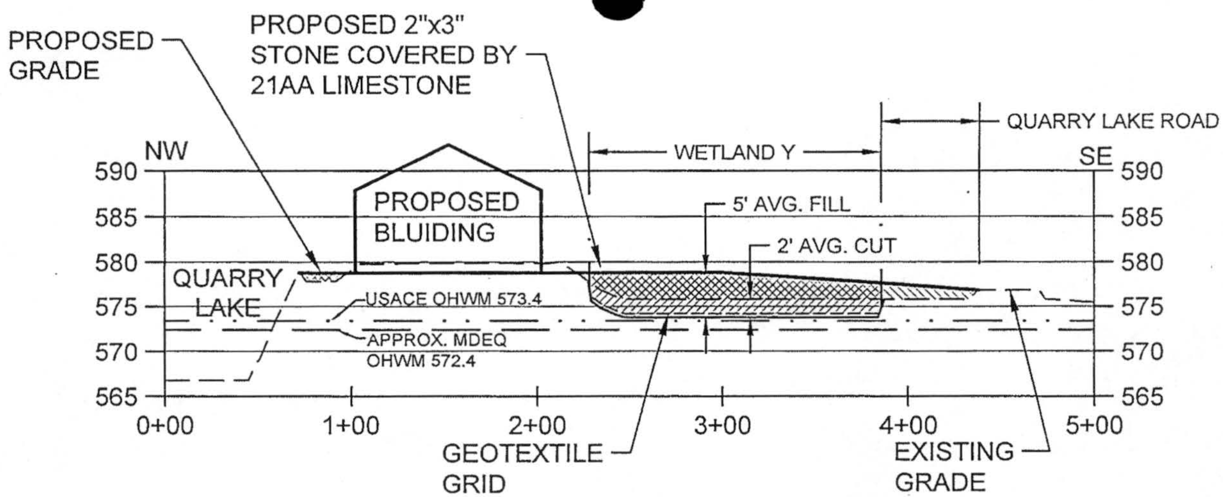
LOCATION MAP

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

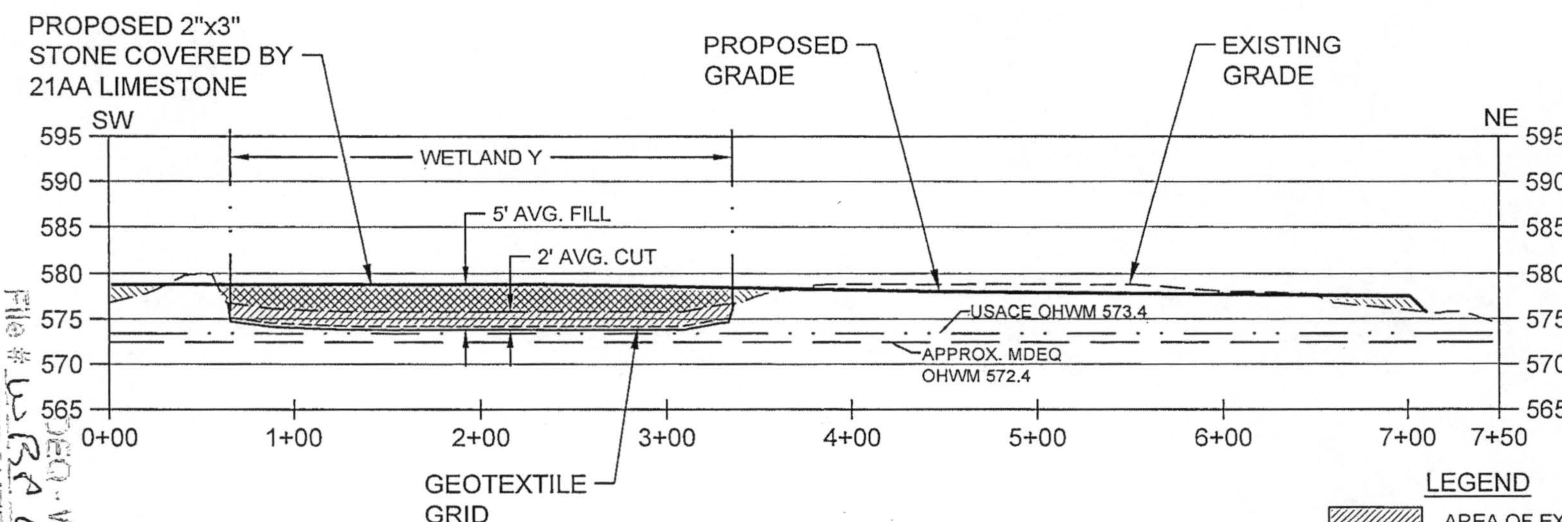
WETLAND Y
AREA = 1.14 acres
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = 3,570 CY
WETLAND EXCAVATION = 3,570 CY
WETLAND FILL = 7,905 CY

FIGURE 12-3A CONSTRUCTION AREA 2 PLAN VIEW

SCALE: 1"=150'



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)

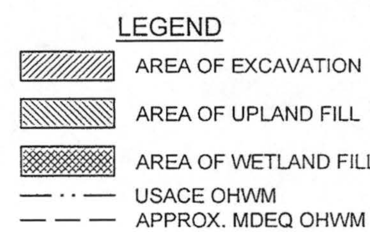
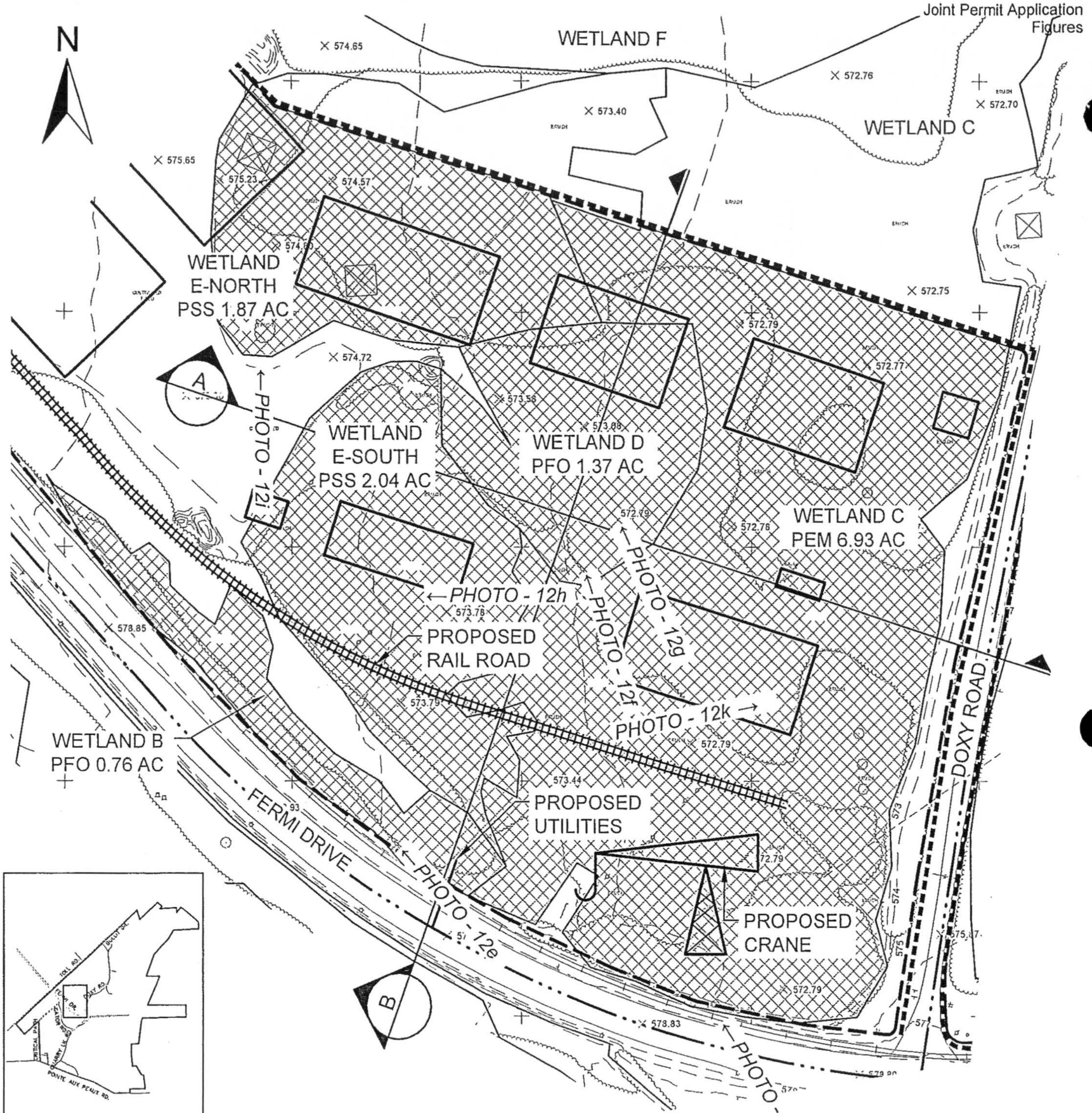


FIGURE 12-3B CONSTRUCTION AREA 2 SECTION DETAILS



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LEGEND

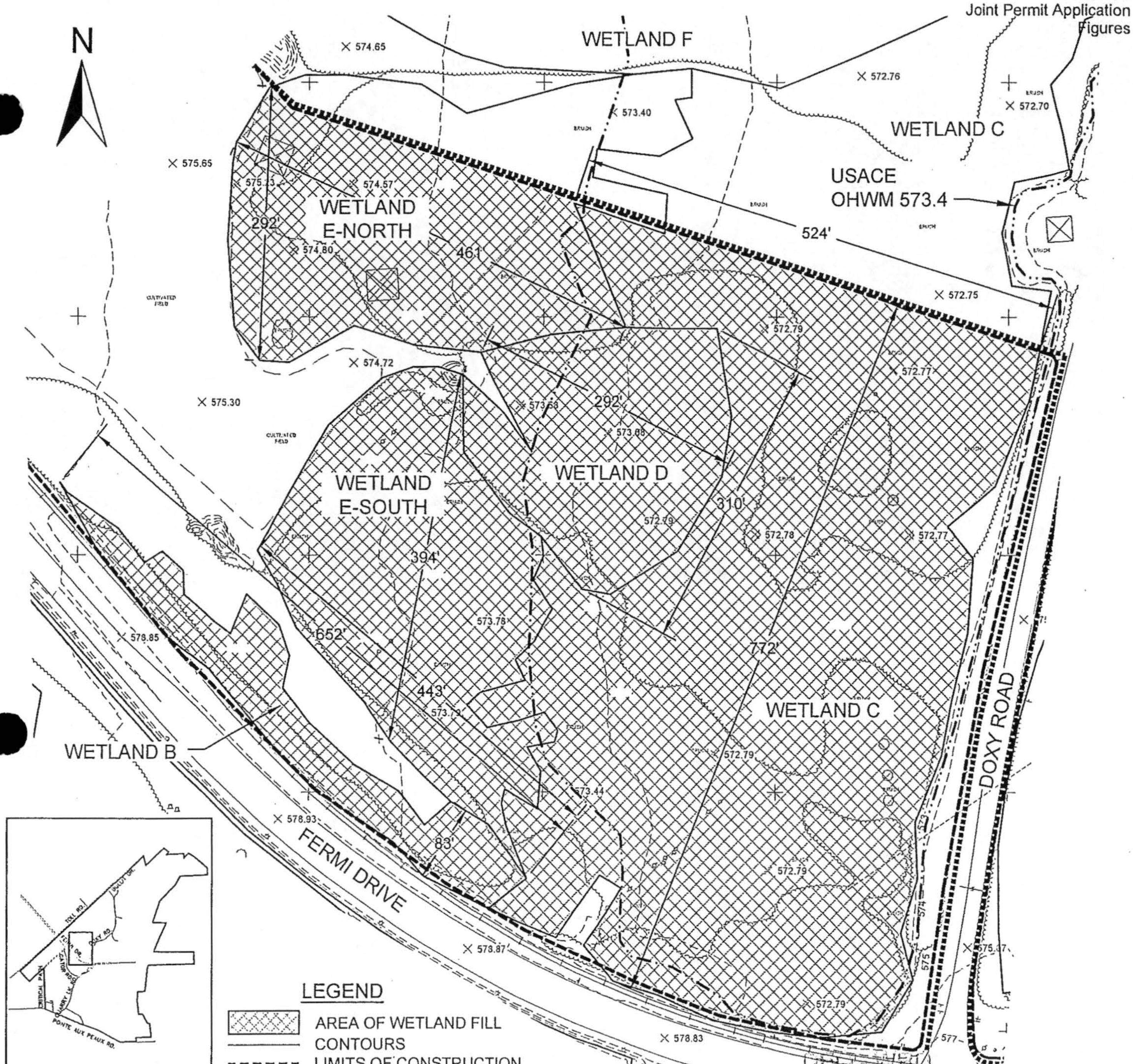
- AREA OF WETLAND FILL
- CONTOURS
- LIMITS OF CONSTRUCTION
- SILT FENCE
- WETLAND LIMIT
- PROPOSED BUILDING

NOTE:

1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITY WILL BE USED FOR SUBCONTRACTOR BUILDINGS AND GRAVEL PARKING.
2. SPOILS FROM EXCAVATION WILL BE PLACED IN CONSTRUCTION AREA 1.
3. UTILITIES SHALL BE PLACED WITHIN EXISTING IMPACT AREAS.
4. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.
5. BUILDINGS WILL HAVE 8" THICK CONCRETE SLAB BASE.

FIGURE 12-4A CONSTRUCTION AREA 3 PLAN VIEW A

SCALE: 1"=150'



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WETLAND B
AREA = 0.76 acres
USACE OHWM DREDGE = 4,276 CY
USACE OHWM EXCAVATION = 1,855 CY
WETLAND EXCAVATION = 6,131 CY
WETLAND FILL = 5,805 CY

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

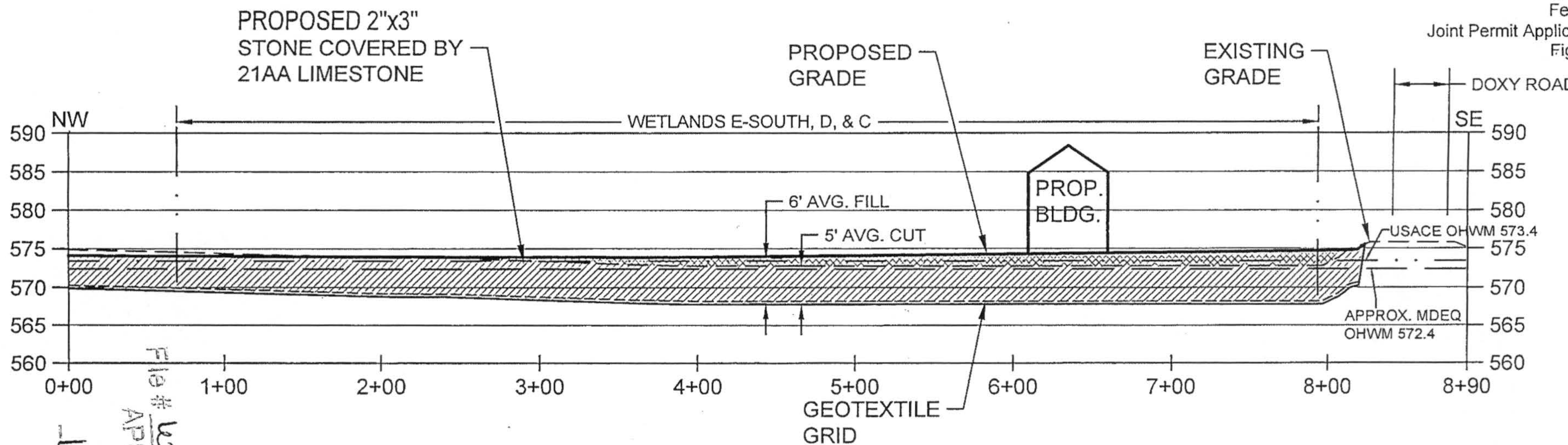
WETLAND D
AREA = 1.37 acres
USACE OHWM DREDGE = 11,039 CY
USACE OHWM EXCAVATION = NA
WETLAND EXCAVATION = 11,039 CY
WETLAND FILL = 12,341 CY

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

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

FIGURE 12-4B CONSTRUCTION AREA 3 PLAN VIEW B

SCALE: 1"=150'



A CONSTRUCTION AREA 3 SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

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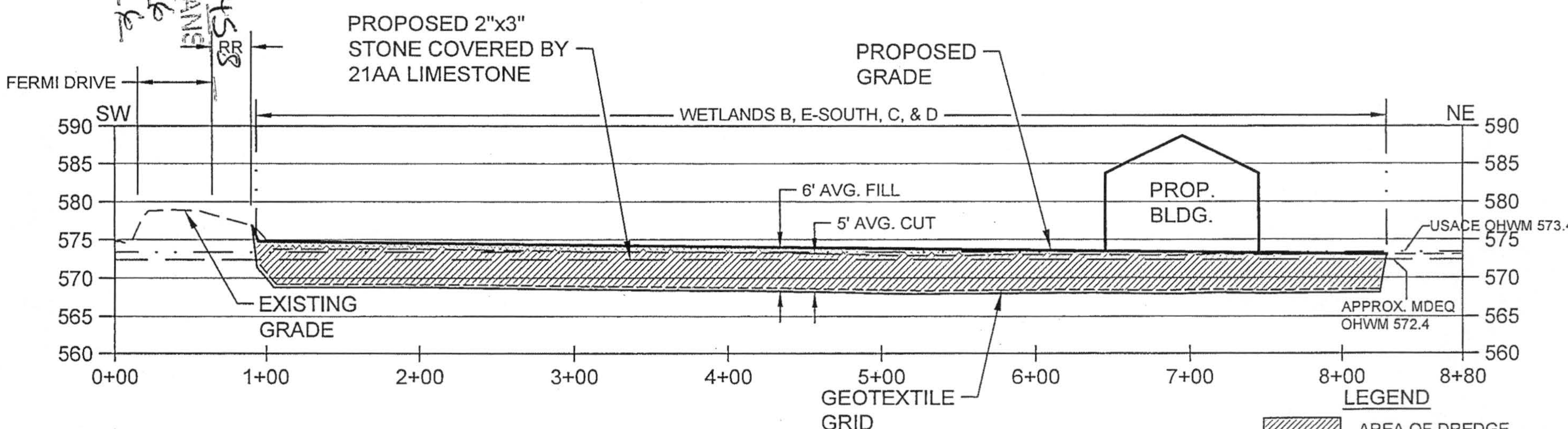


B CONSTRUCTION AREA 3 SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

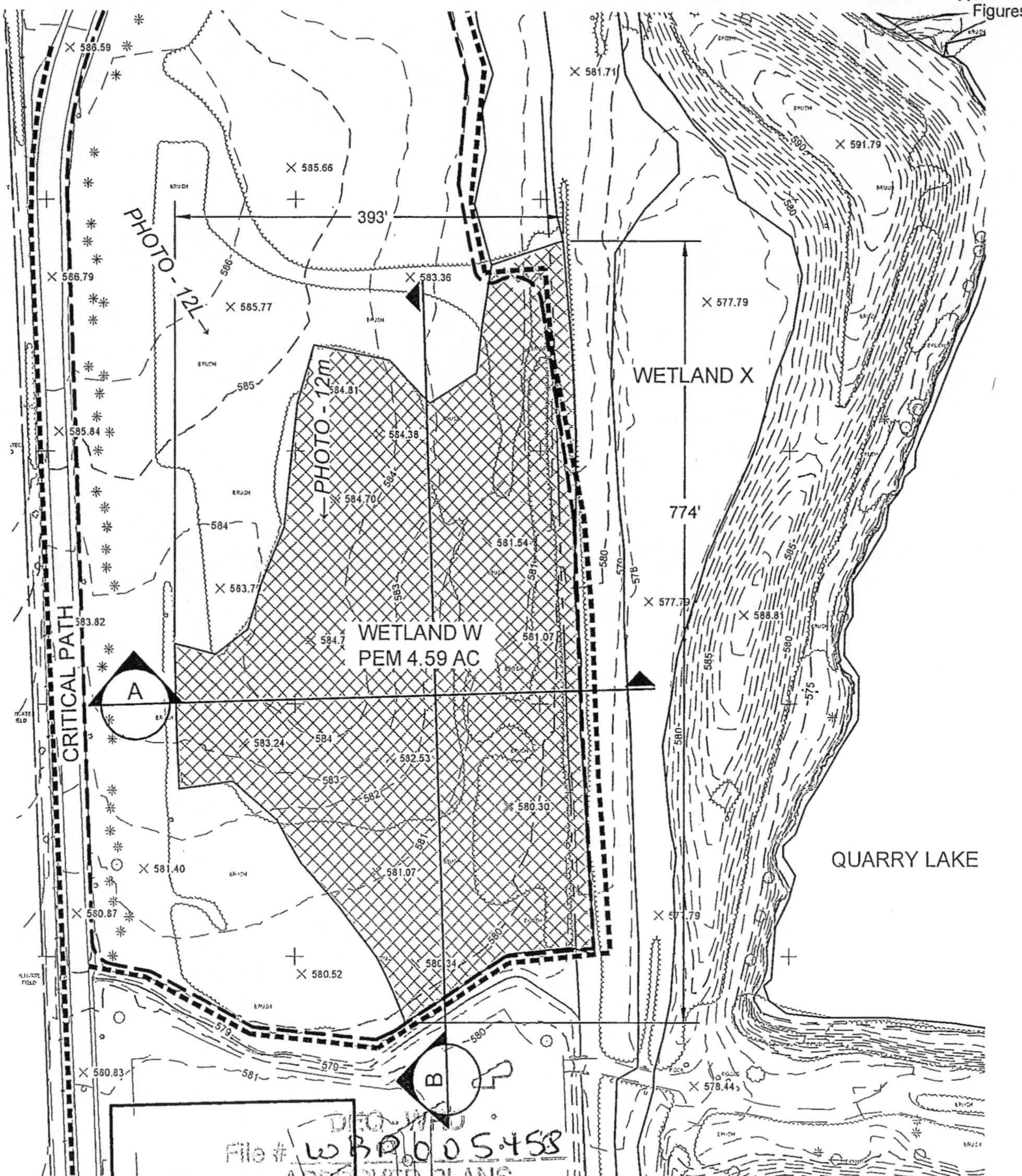
LEGEND

- AREA OF DREDGE
- AREA OF UPLAND FILL
- AREA OF WETLAND FILL
- USACE OHWM
- APPROX. MDEQ OHWM

NOTE: UTILITIES WILL BE ABOVE GEOTEXTILE FABRIC

FIGURE 12-4C CONSTRUCTION AREA 3 SECTION DETAILS

N



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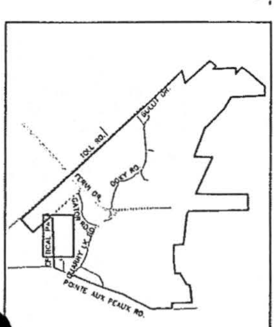
WETLAND W
AREA = 4.59 acres
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = 15,211 CY
WETLAND EXCAVATION = 15,211 CY
WETLAND FILL = 20,989 CY

NOTE:
1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITY WILL BE USED FOR SUBCONTRACTOR 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.

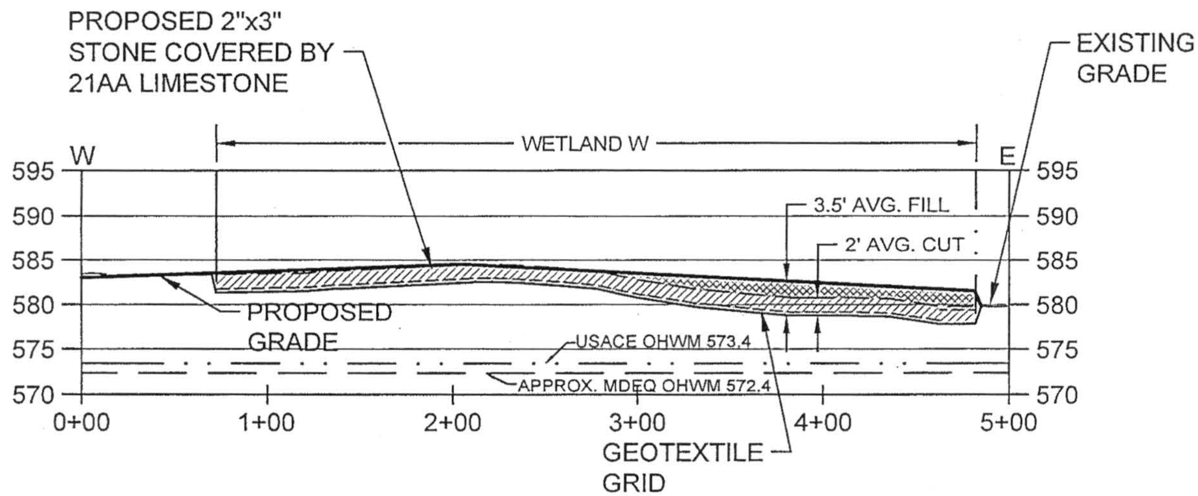
LEGEND
- AREA OF WETLAND FILL
- CONTOURS
- LIMITS OF CONSTRUCTION
- SILT FENCE
- WETLAND LIMIT
- PROPOSED BUILDING



LOCATION MAP

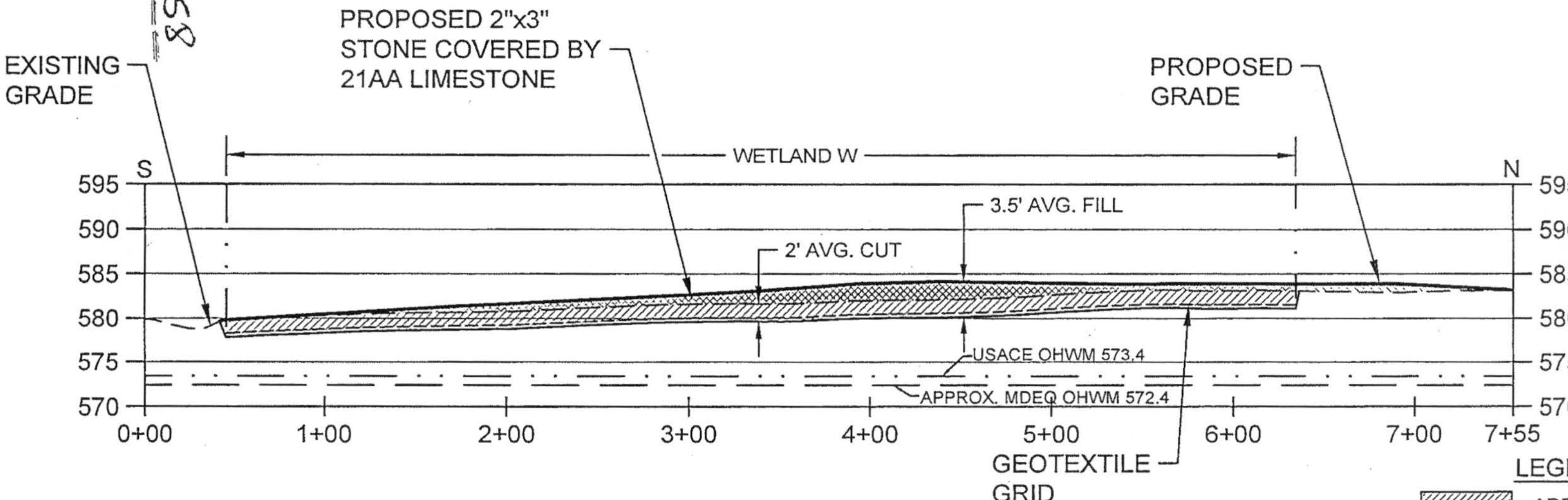
FIGURE 12-5A CONSTRUCTION AREA 4 PLAN VIEW

SCALE: 1"=150'



A CONSTRUCTION AREA 4 SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)



B CONSTRUCTION AREA 4 SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

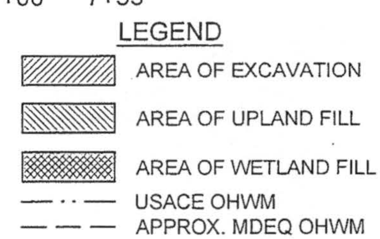


FIGURE 12-5B CONSTRUCTION AREA 4 SECTION DETAILS

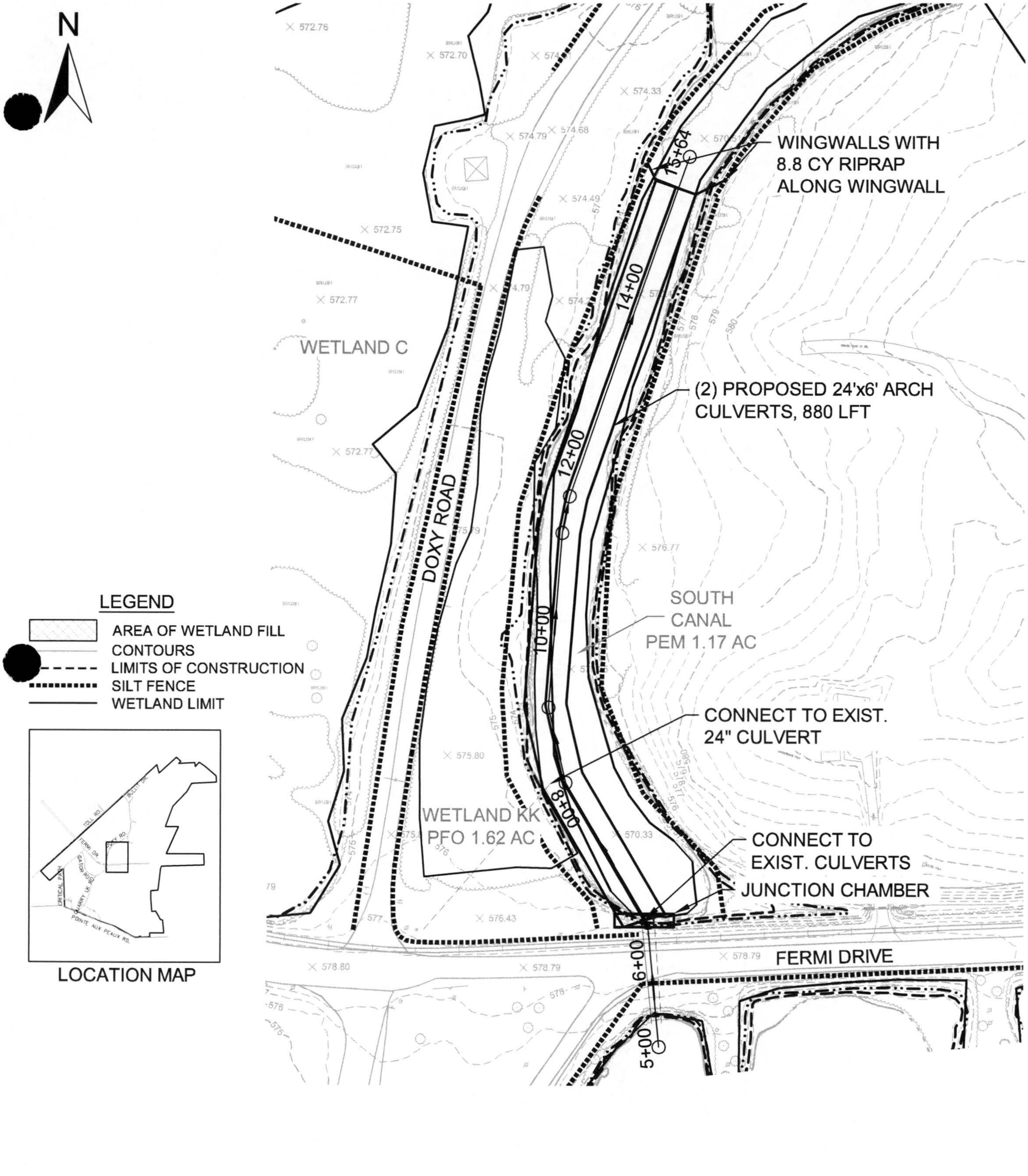


FIGURE 10-3A CONSTRUCTION AREA 5 PLAN VIEW

SCALE: 1"=150'

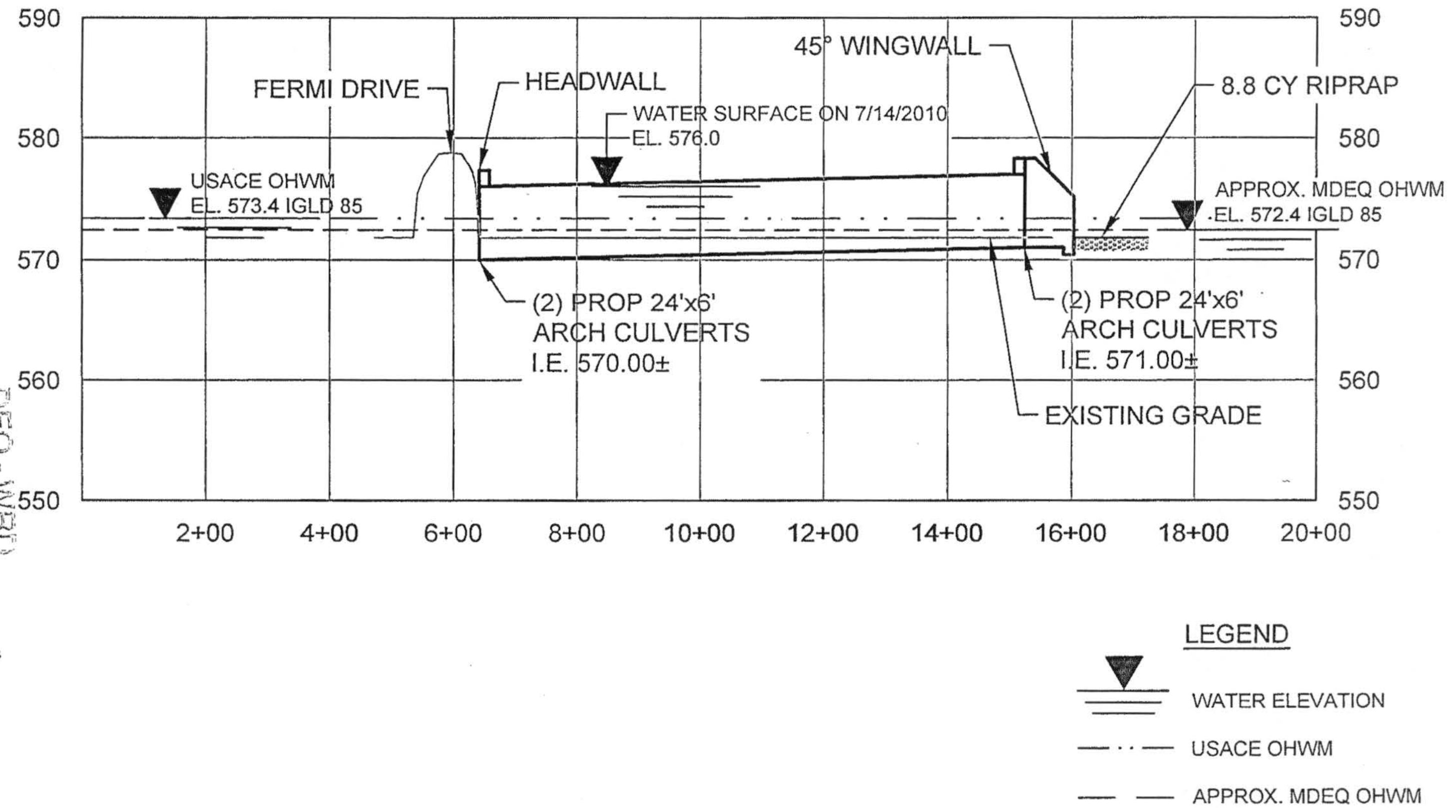


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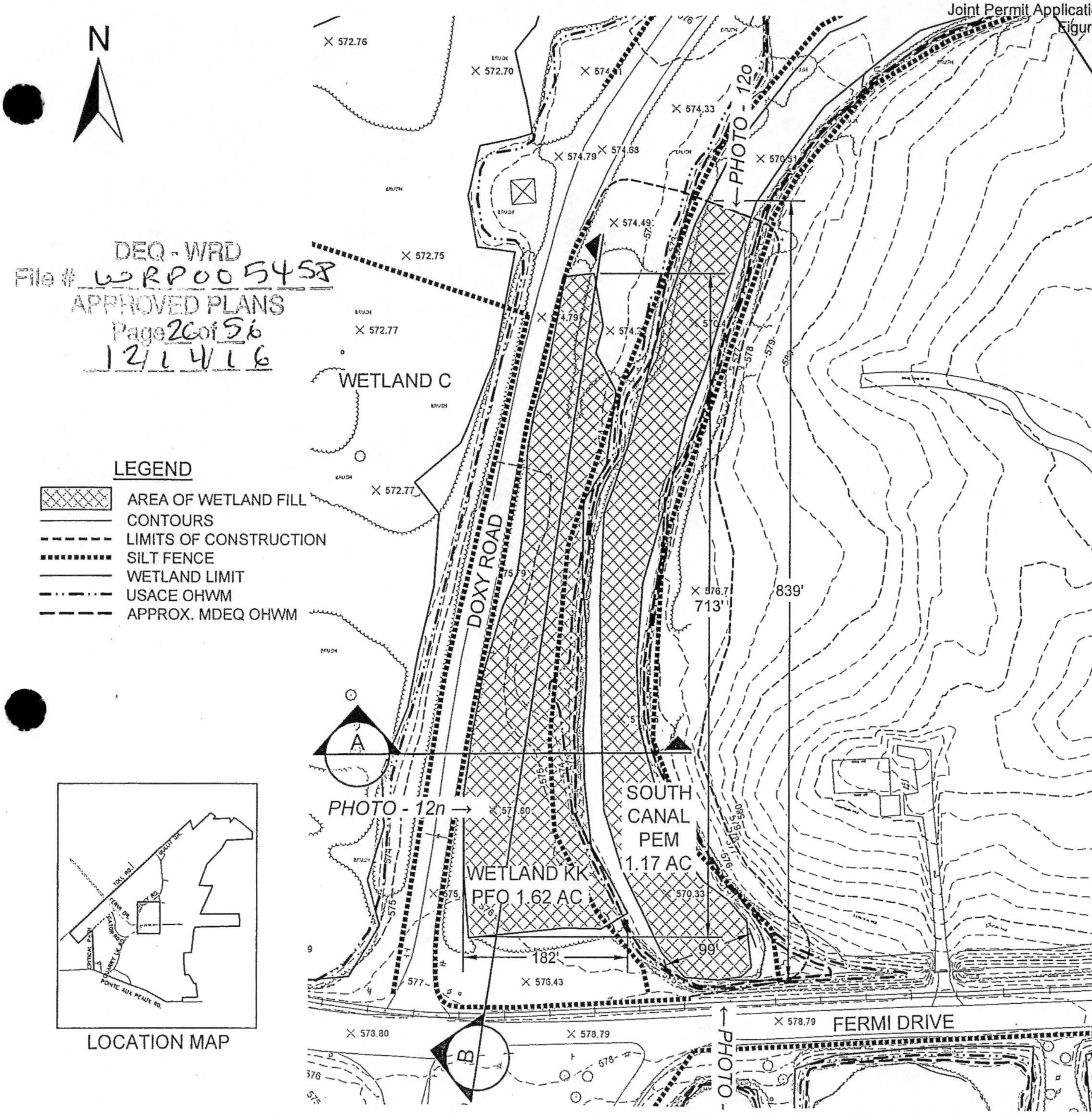
FIGURE 10-3B
CONSTRUCTION AREA 5 PROFILE OF PROPOSED SOUTH CANAL CULVERTS

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



NOTE:

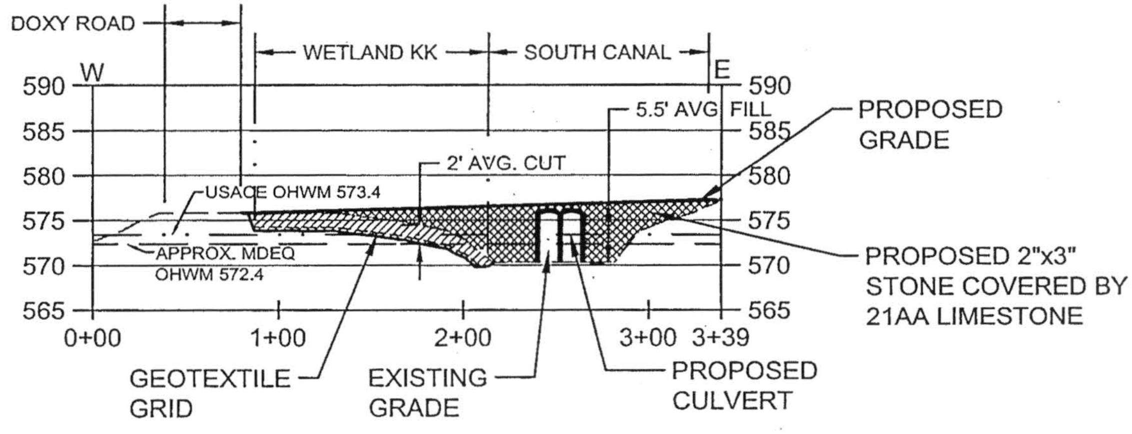
1. AREA WITHIN LIMITS OF CONSTRUCTION ACTIVITY WILL BE USED FOR LAYDOWN.
2. SPOILS FROM EXCAVATION WILL BE PLACED IN CONSTRUCTION AREA 1.
3. MECHANIZED LAND CLEARING WILL OCCUR WITHIN THE CONSTRUCTION FOOTPRINT.

WETLAND KK
AREA = 1.62 acres
USACE OHWM DREDGE = 2,065 CY
USACE OHWM EXCAVATION = 3,120 CY
WETLAND EXCAVATION = 5,185 CY
WETLAND FILL = 8,884 CY

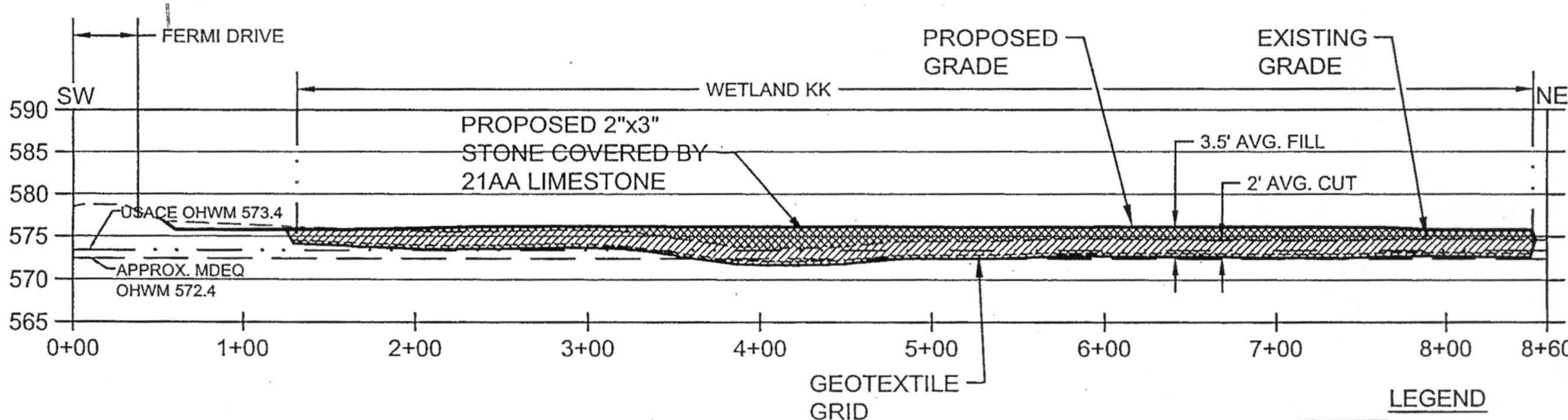
SOUTH CANAL
AREA = 1.17 acres
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = NA
WETLAND EXCAVATION = NA
WETLAND FILL = 11,342 CY

FIGURE 12-6A CONSTRUCTION AREA 5 PLAN VIEW

SCALE: 1"=150'



A CONSTRUCTION AREA 5 SECTION
SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)



B CONSTRUCTION AREA 5 SECTION
SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

LEGEND
- AREA OF EXCAVATION
- AREA OF UPLAND FILL
- AREA OF WETLAND FILL
- USACE OHWM
- APPROX. MDEQ OHWM

FIGURE 12-6B CONSTRUCTION AREA 5 SECTION DETAILS

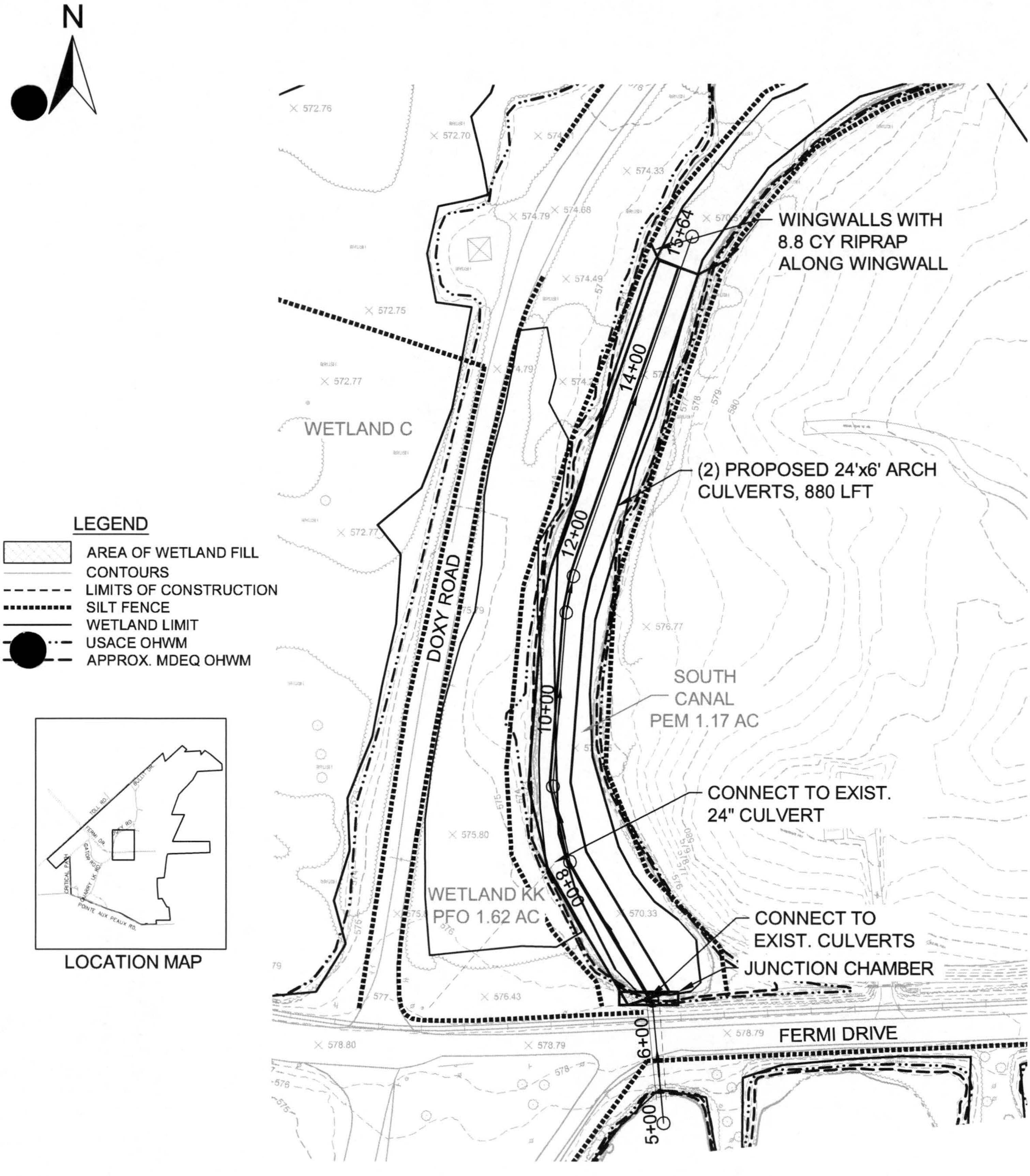


FIGURE 14-1A CONSTRUCTION AREA 5 PLAN VIEW

SCALE: 1"=150'

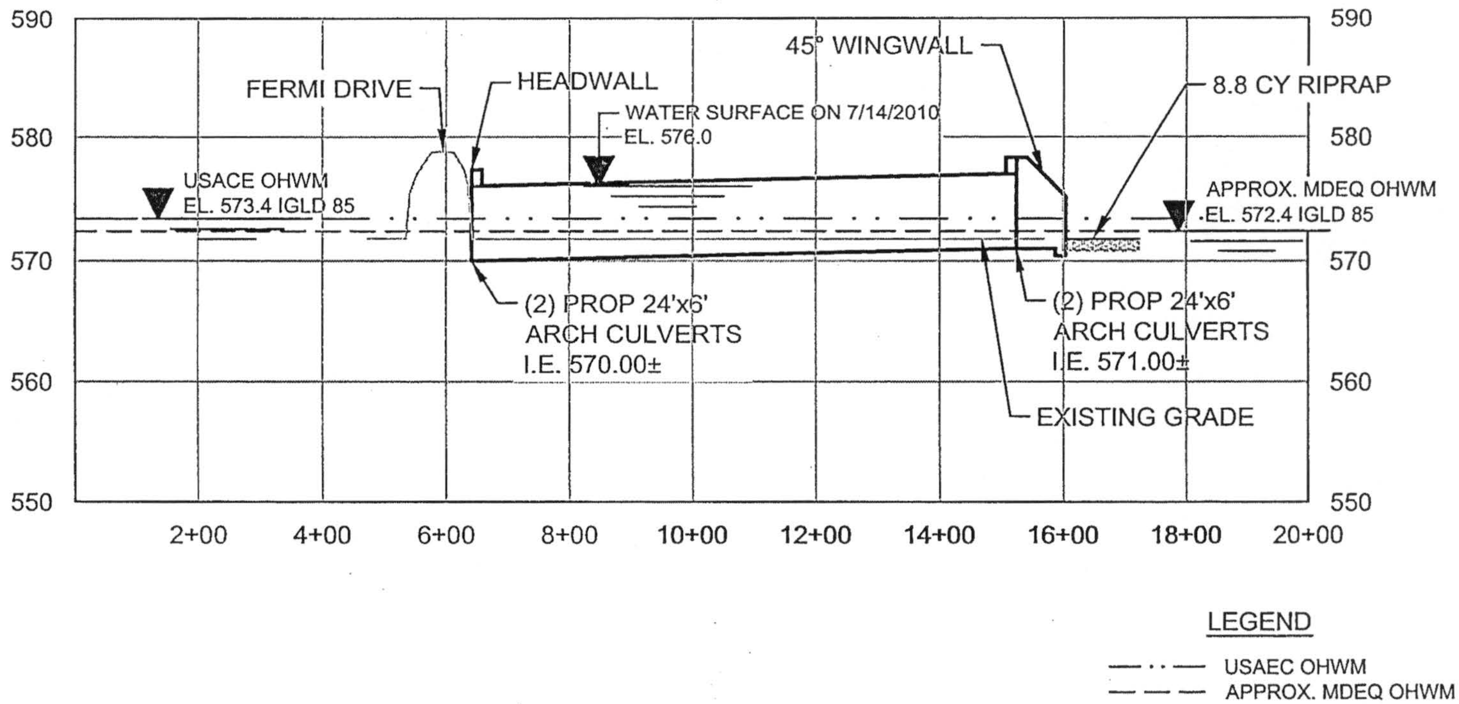


FIGURE 14-1B
CONSTRUCTION AREA 5 PROFILE OF PROPOSED SOUTH CANAL CULVERTS

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

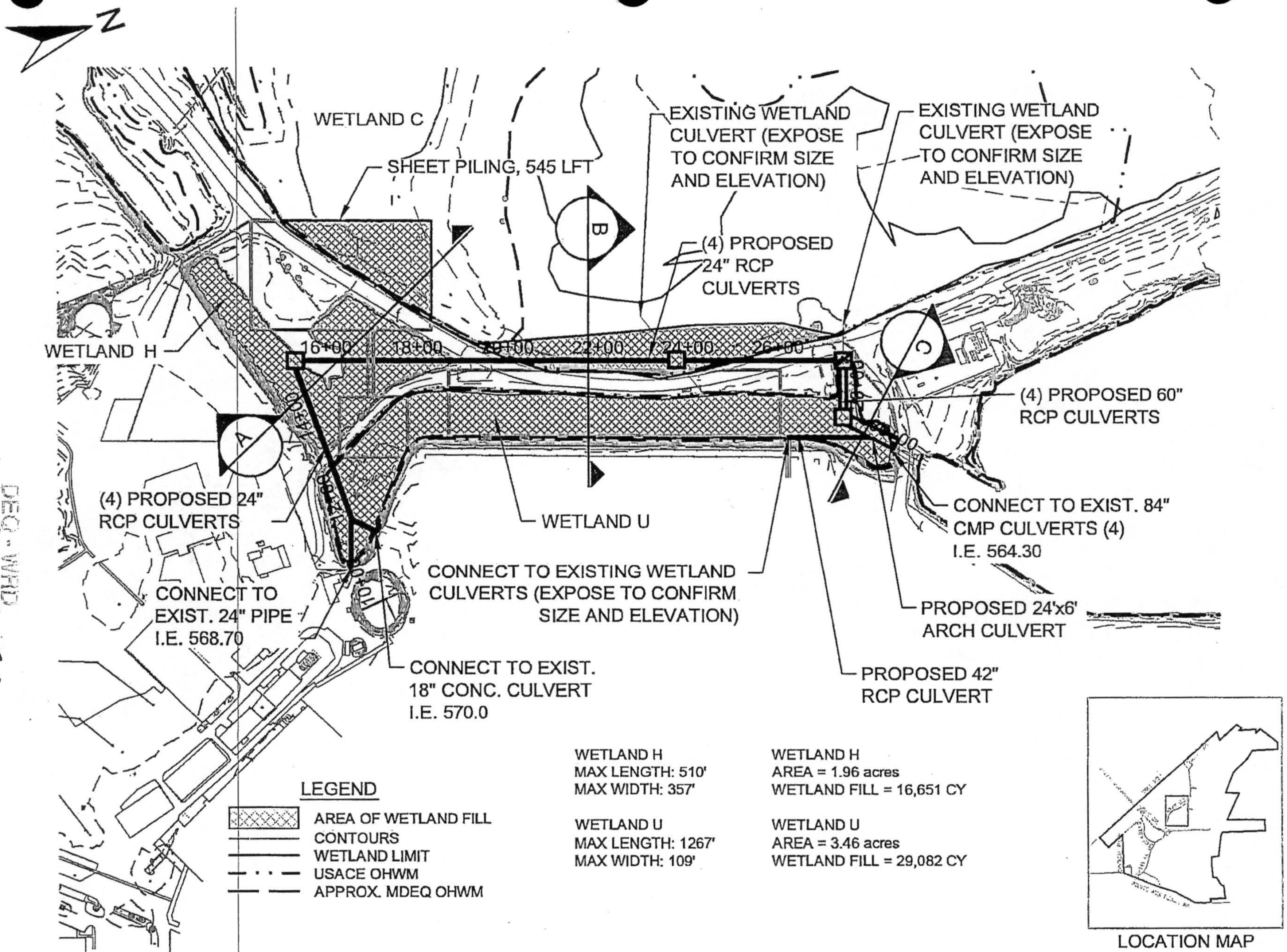
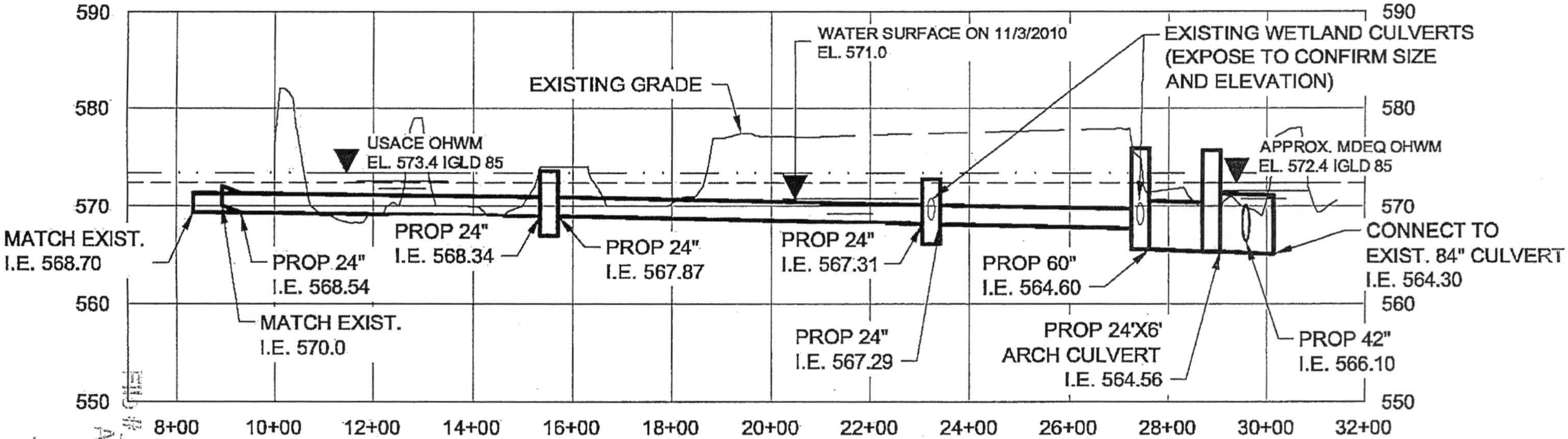


FIGURE 10-1A
WAREHOUSE, PAP/VIB PARKING GARAGE PLAN VIEW OF CULVERTS AT DOXY ROAD

SCALE: 1"=300'



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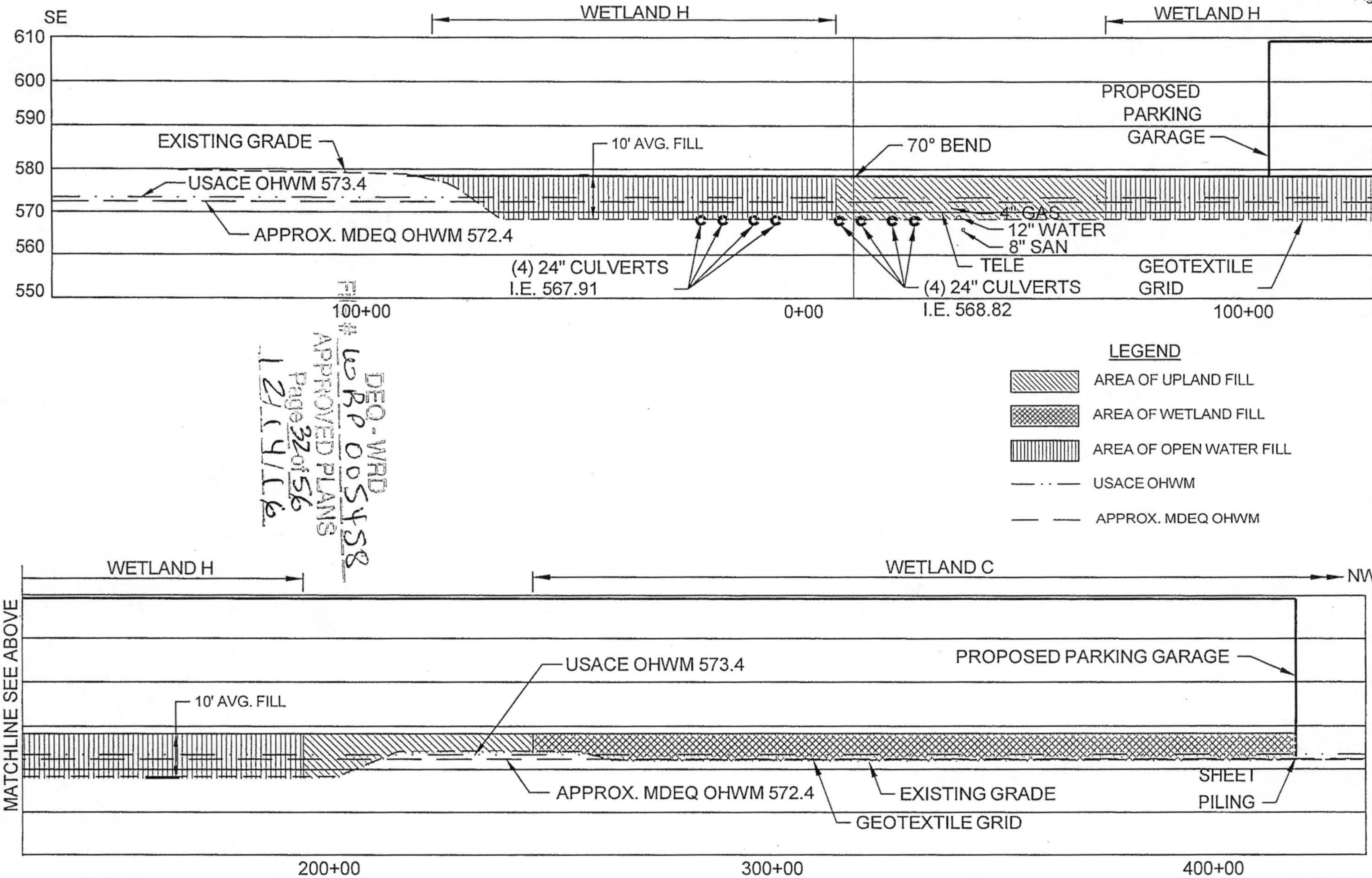
LEGEND

— · · — USACE OHWM
— — — APPROX. MDEQ OHWM

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

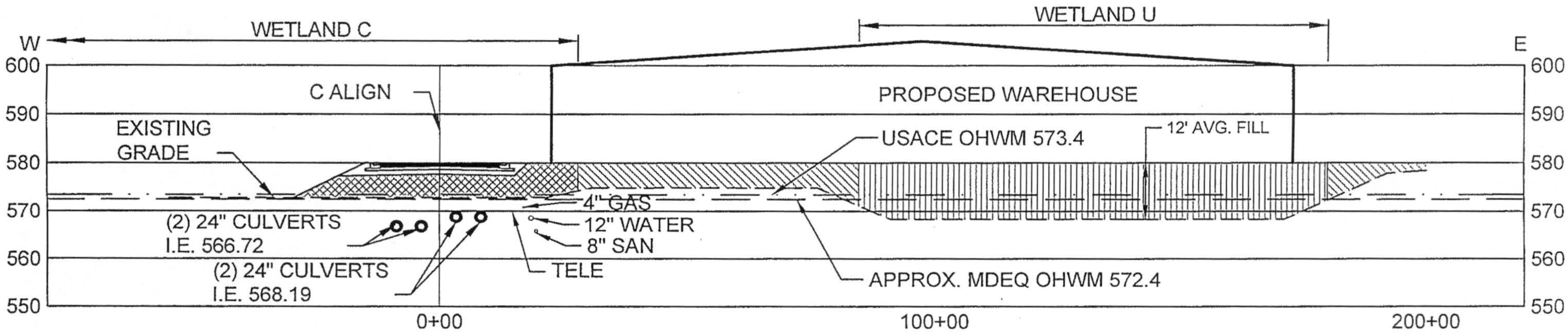
SCALE: 1"=300' HORZ.;1"=20' VERT. (IGLD 85 DATUM)



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



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B

CROSS SECTION OF PROPOSED (4) 24" CULVERTS AT DOXY ROAD STA 22+00

SCALE: 1"=30' (IGLD 85 DATUM)

LEGEND

- AREA OF UPLAND FILL
- AREA OF WETLAND FILL
- AREA OF OPEN WATER FILL
- USACE OHWM
- APPROX. MDEQ OHWM

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

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

WETLAND C
AREA = 2.24 acres
USACE OHWM DREDGE = 17,991 CY
USACE OHWM EXCAVATION = NA
WETLAND EXCAVATION = 17,991 CY
WETLAND FILL = 38,172 CY

WETLAND H
AREA = 1.96 acres
WETLAND FILL = 16,651 CY

WETLAND U
AREA = 3.46 acres
WETLAND FILL = 29,082 CY

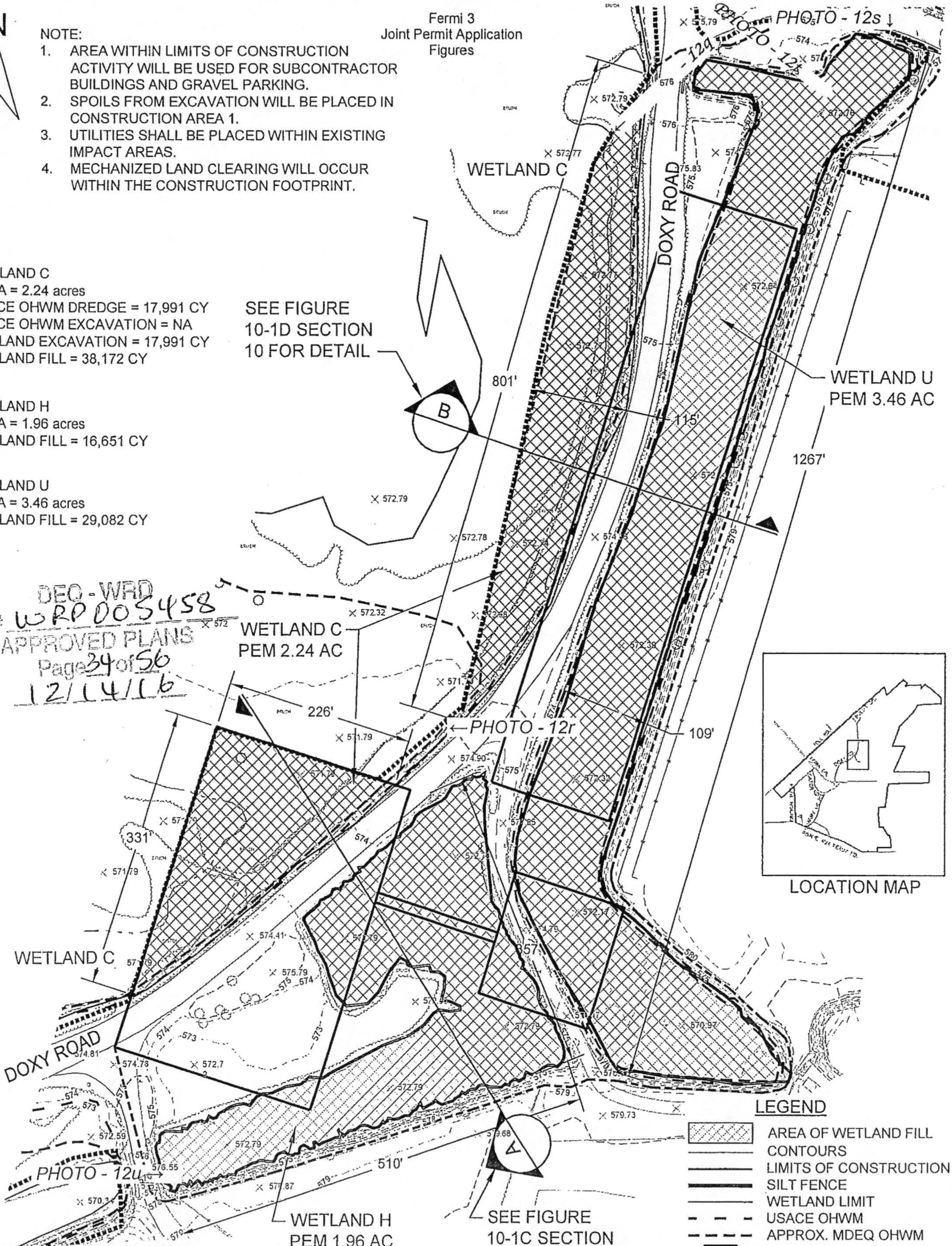
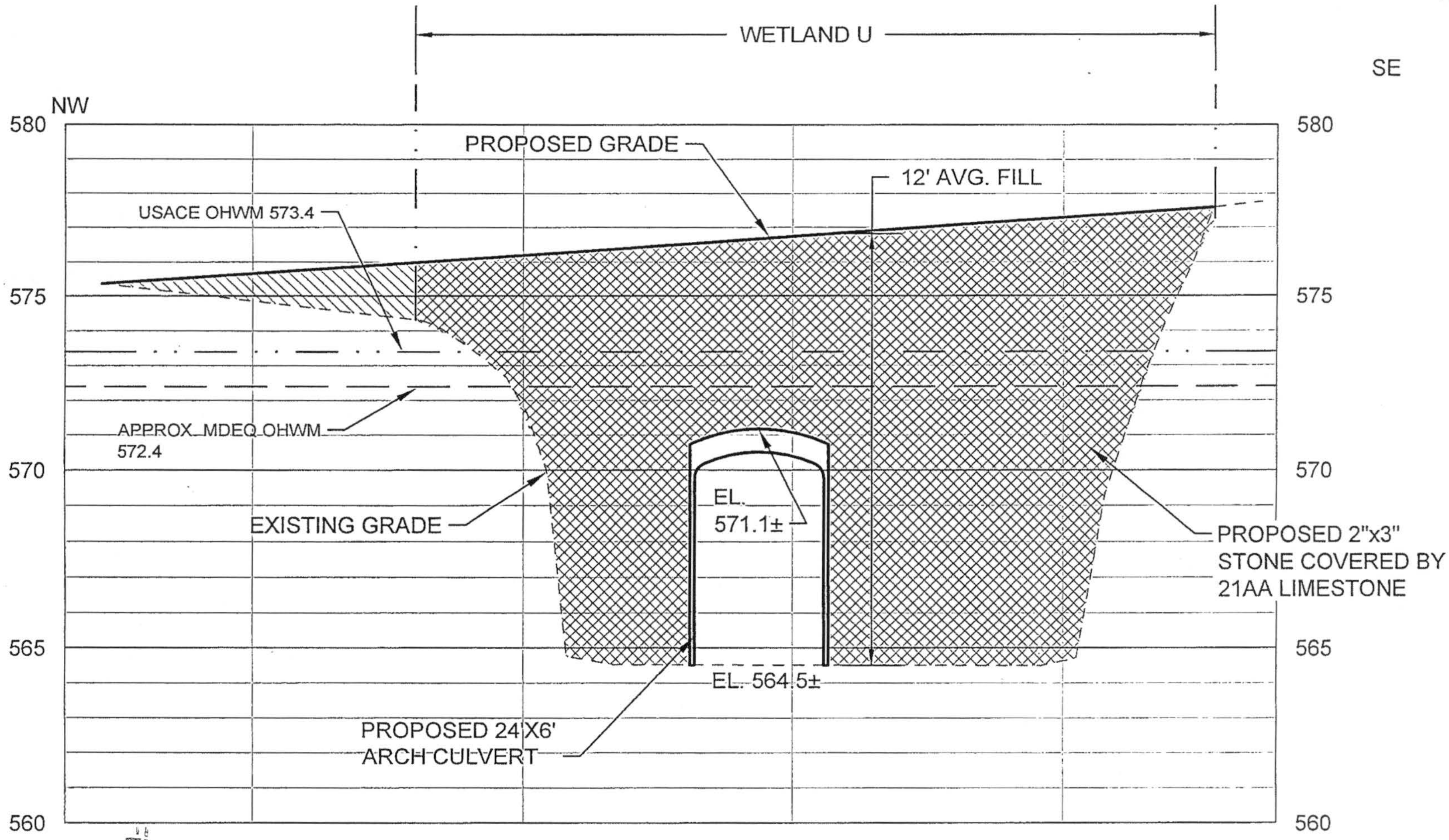


FIGURE 12-7A
WAREHOUSE, PAP/VIB AND PARKING GARAGE PLAN VIEW

SCALE: 1"=150'



C

CROSS SECTION OF PROPOSED 24'X6' CULVERT AT DOXY ROAD STA 29+75

SCALE: 1"=30' HORZ. 1"=3' VERT. (IGLD 85 DATUM)

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LEGEND

- AREA OF EXCAVATION
- AREA OF UPLAND FILL
- AREA OF WETLAND FILL
- USACE OHWM
- APPROX. MDEQ OHWM

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

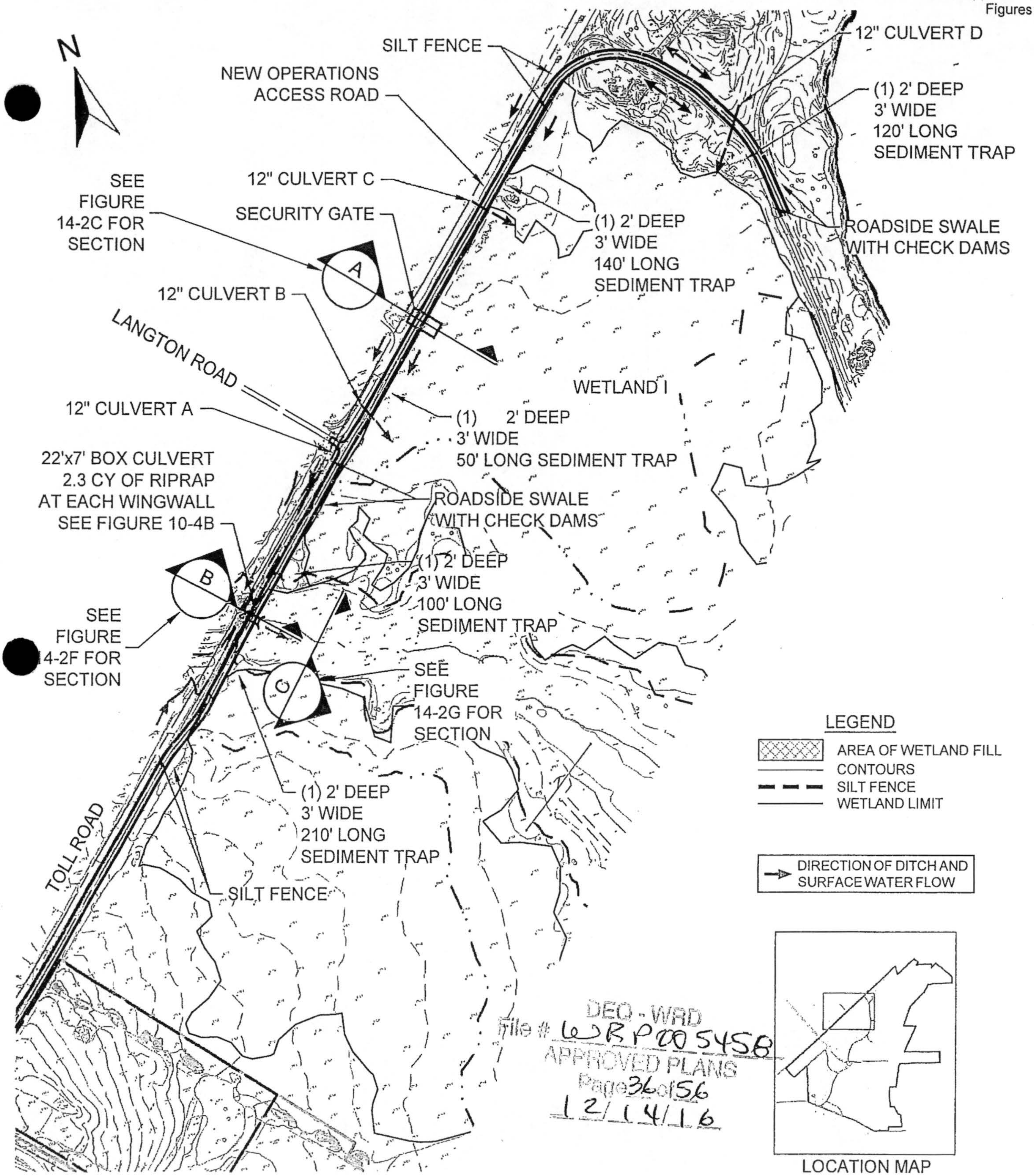
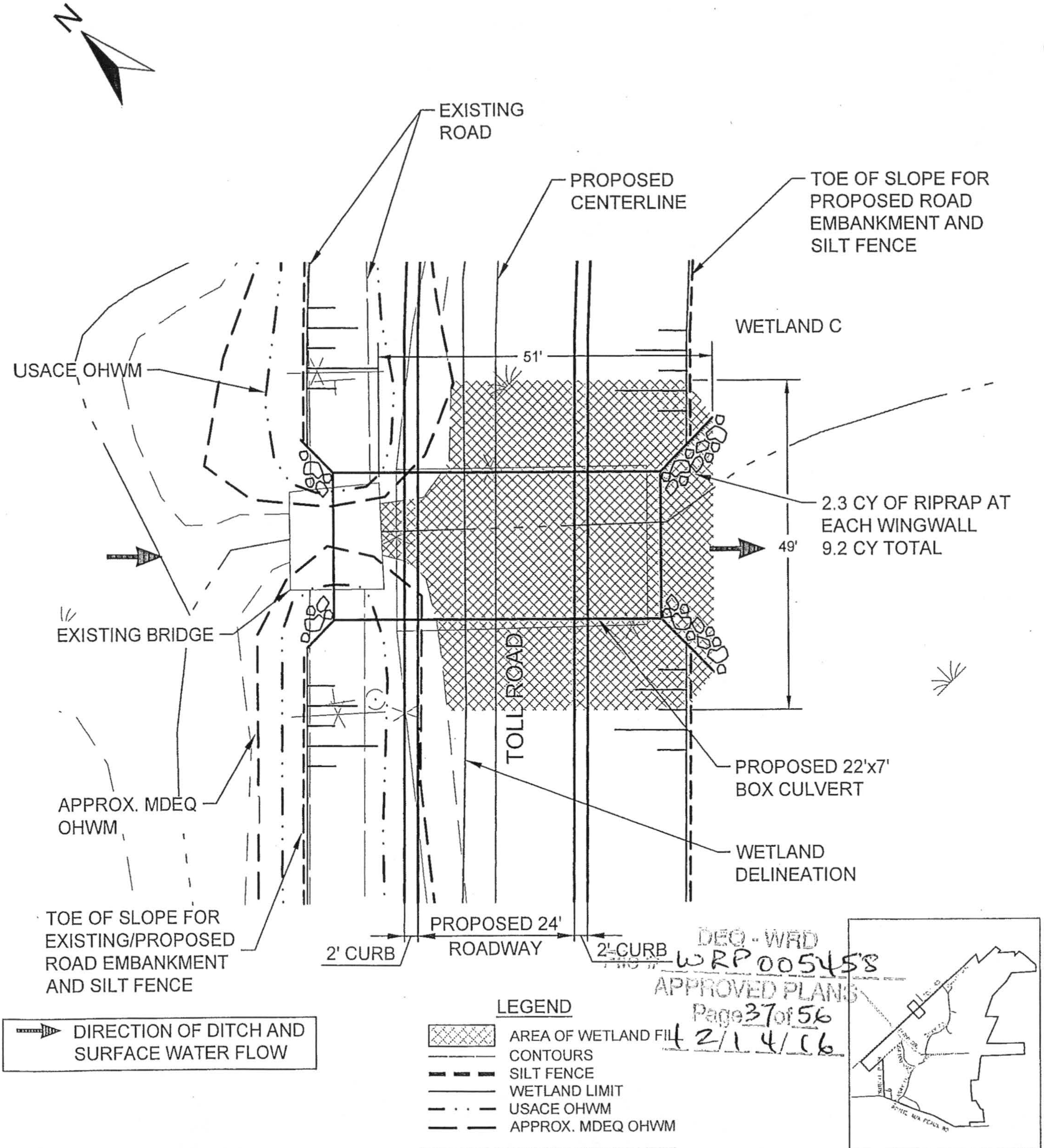


FIGURE 10-4A NEW OPERATIONS ACCESS ROAD PLAN VIEW

SCALE: 1"=500'

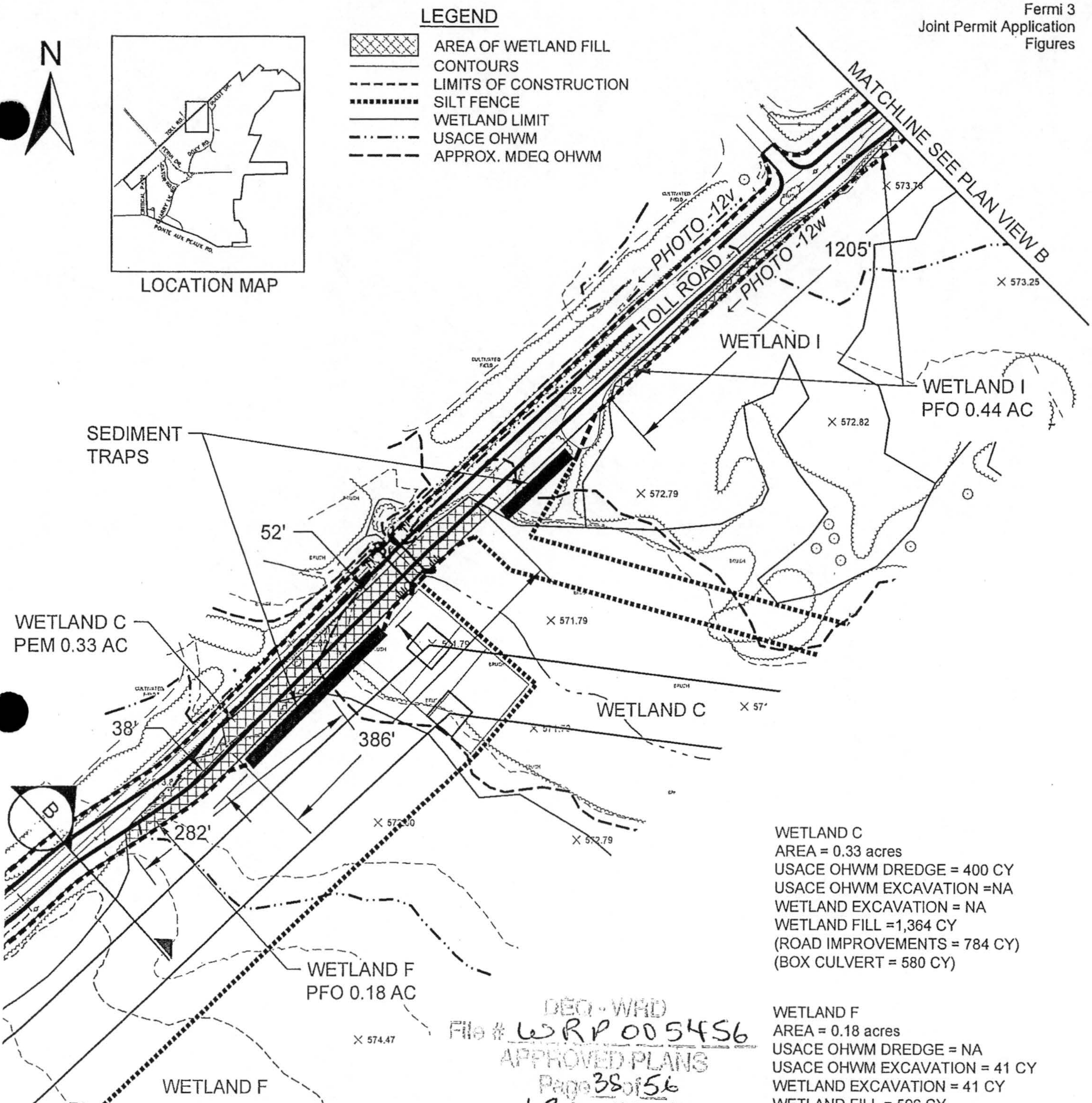


NOTE:
NO PROPOSED WETLAND IMPACTS ALONG NORTHWESTERLY EDGE OF ROAD.

WETLAND C IMPACTS, BOX CULVERT ONLY
USACE OHWM DREDGE = 400 CY
USACE WETLAND FILL = 580 CY
APPROX. MDEQ OHWM DREDGE = 340 CY
APPROX. MDEQ OHWM FILL = 580 CY

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

SCALE: 1"=20'



WETLAND C
AREA = 0.33 acres
USACE OHWM DREDGE = 400 CY
USACE OHWM EXCAVATION =NA
WETLAND EXCAVATION = NA
WETLAND FILL =1,364 CY
(ROAD IMPROVEMENTS = 784 CY)
(BOX CULVERT = 580 CY)

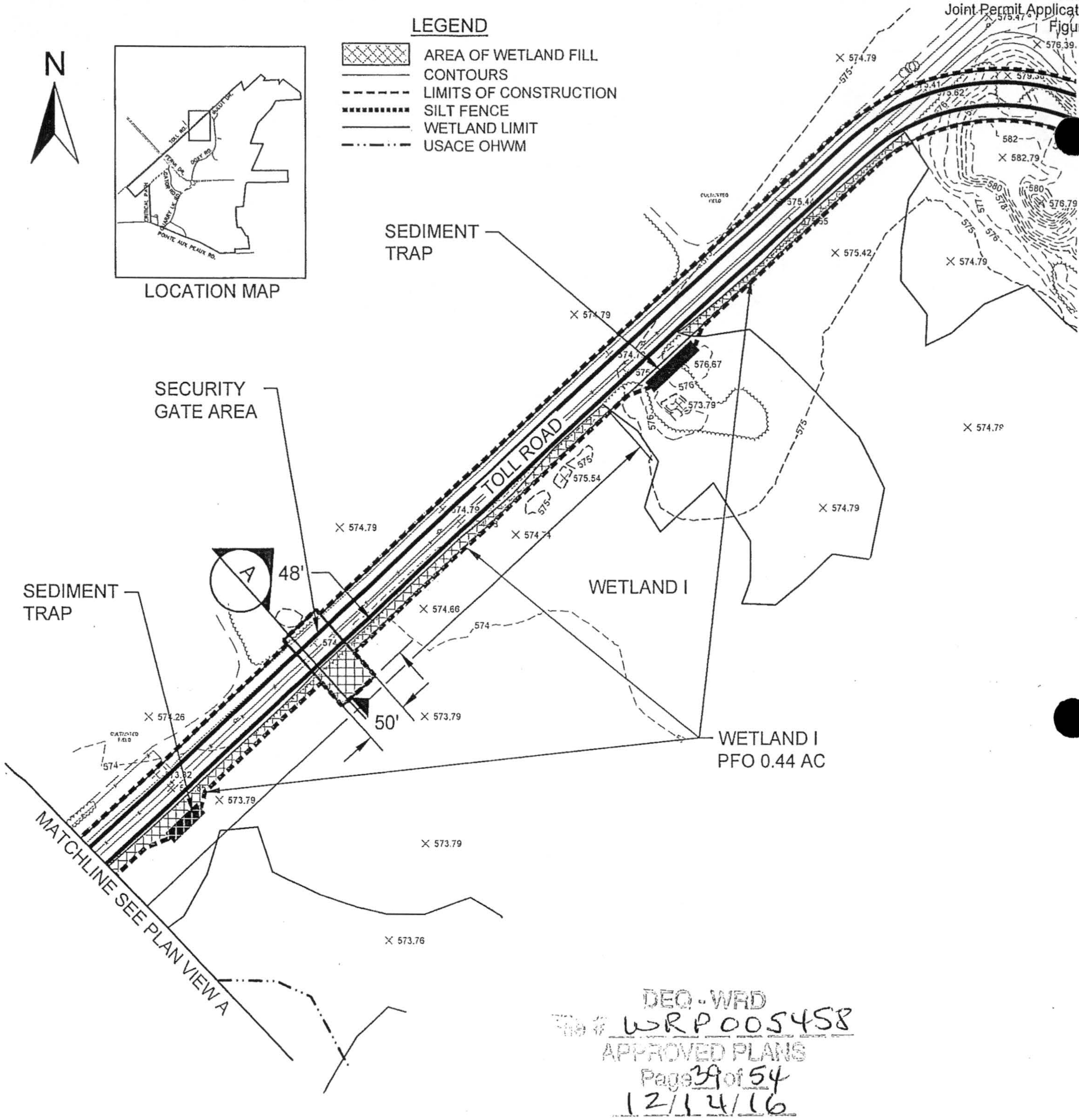
WETLAND F
AREA = 0.18 acres
USACE OHWM DREDGE = NA
USACE OHWM EXCAVATION = 41 CY
WETLAND EXCAVATION = 41 CY
WETLAND FILL = 596 CY

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

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

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

SCALE: 1"=150'



NOTE:

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

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

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

SCALE: 1"=150'

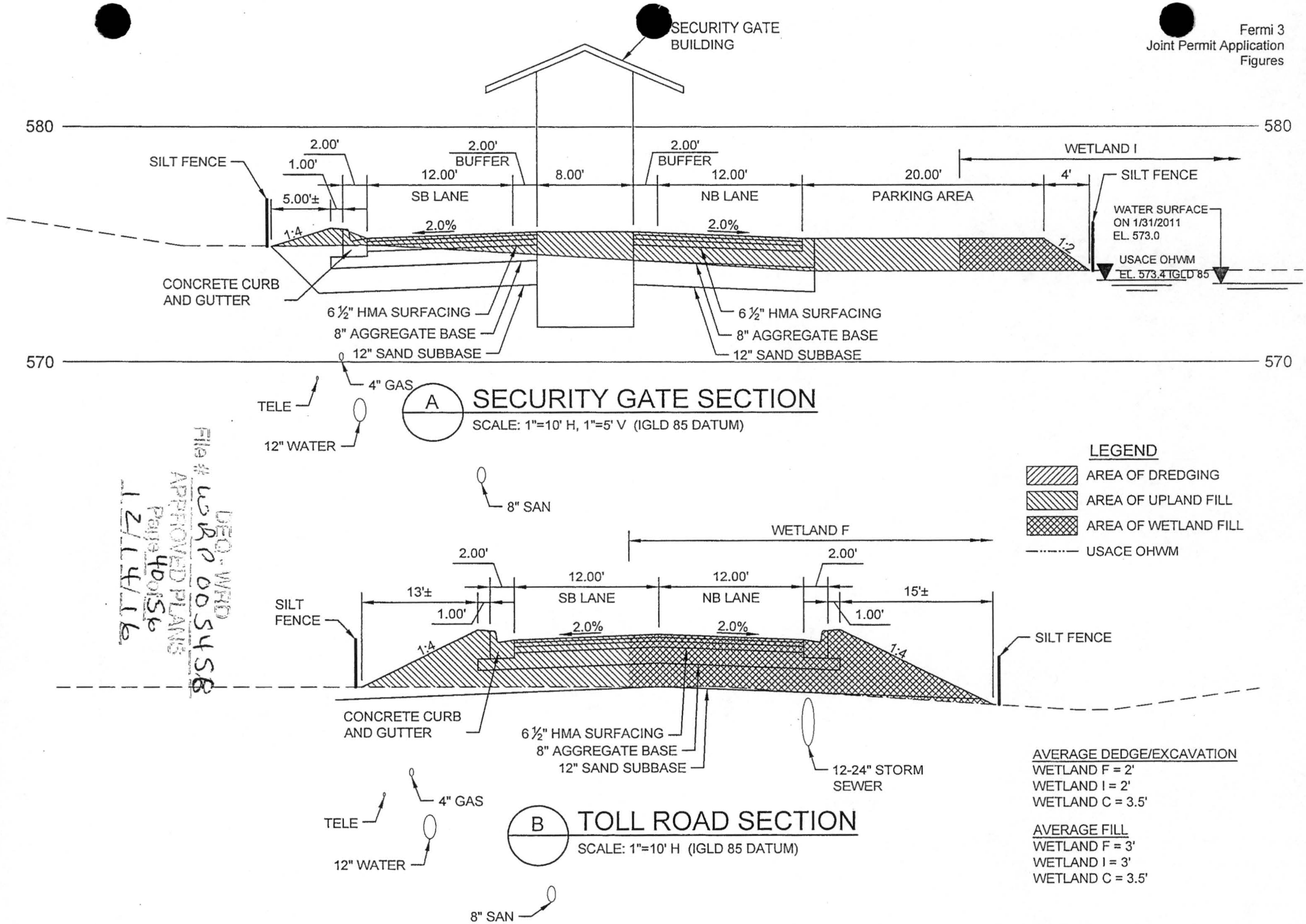


FIGURE 12-8C NEW OPERATIONS ACCESS ROAD SECTION DETAILS

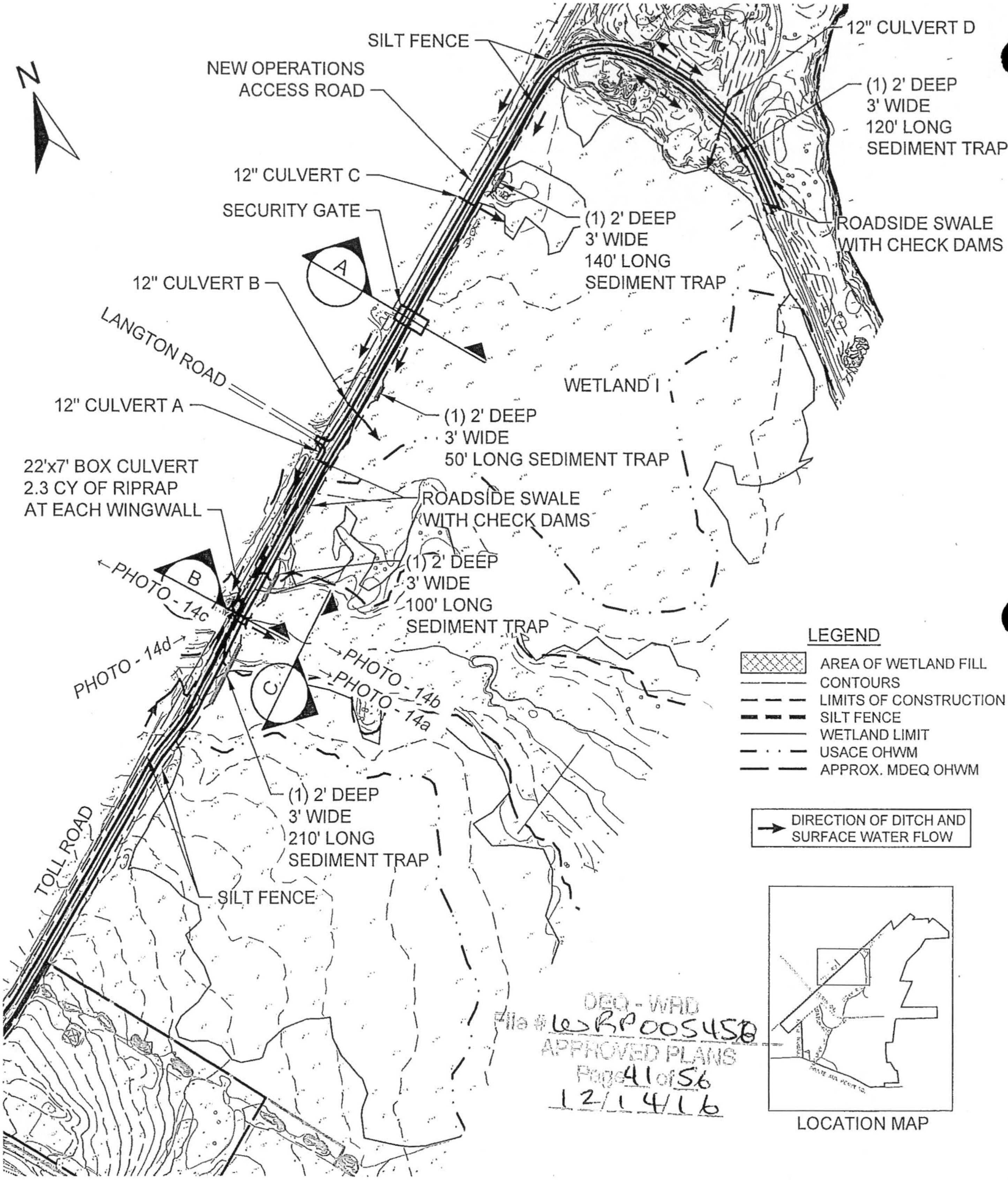
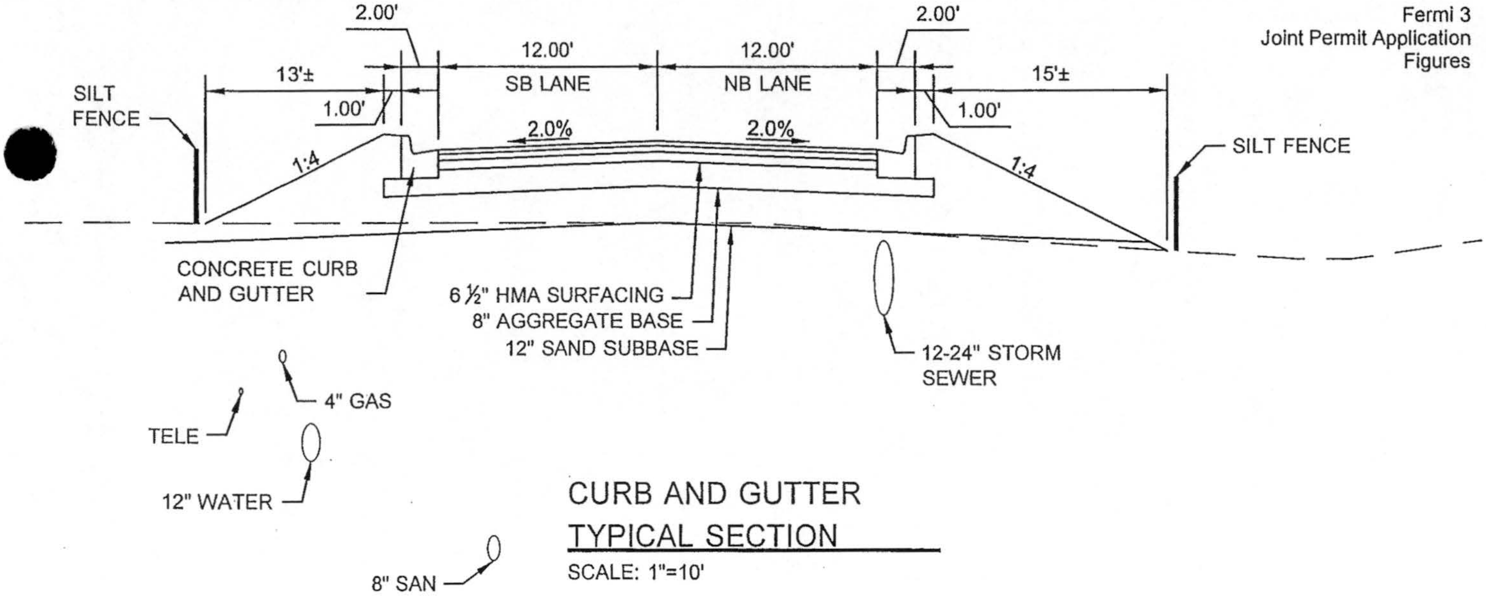
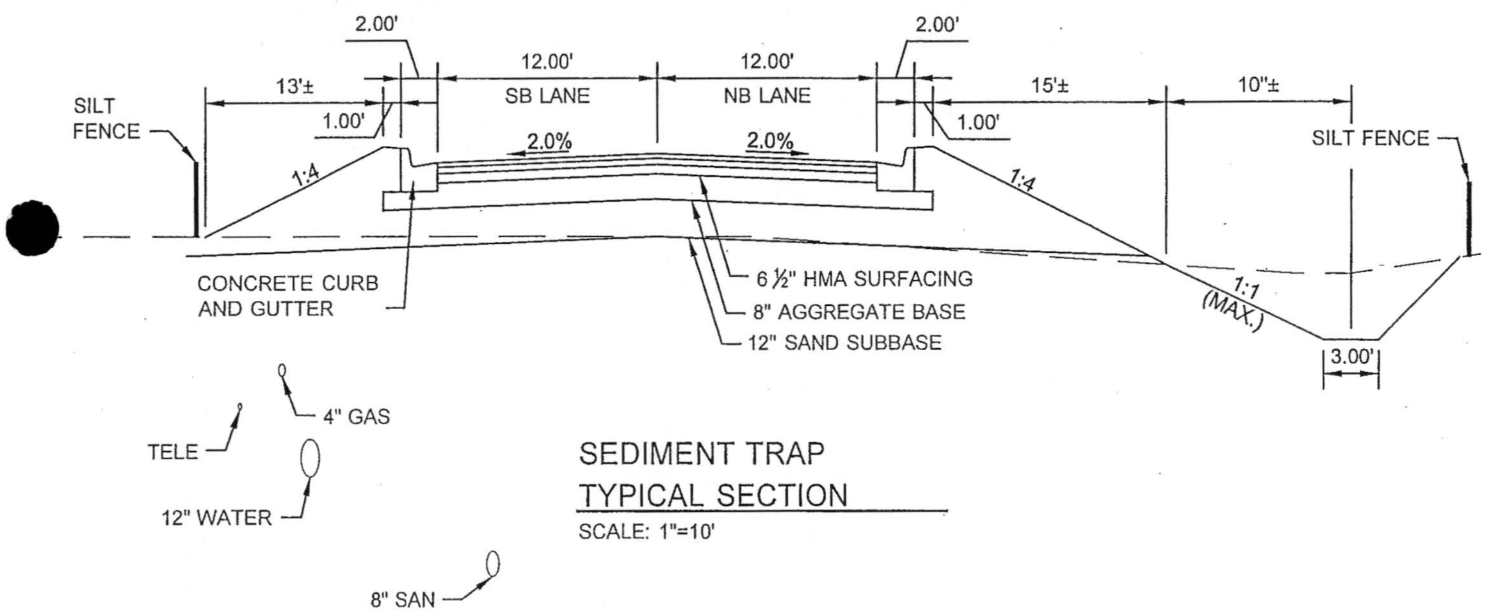


FIGURE 14-2A NEW OPERATIONS ACCESS ROAD PLAN VIEW

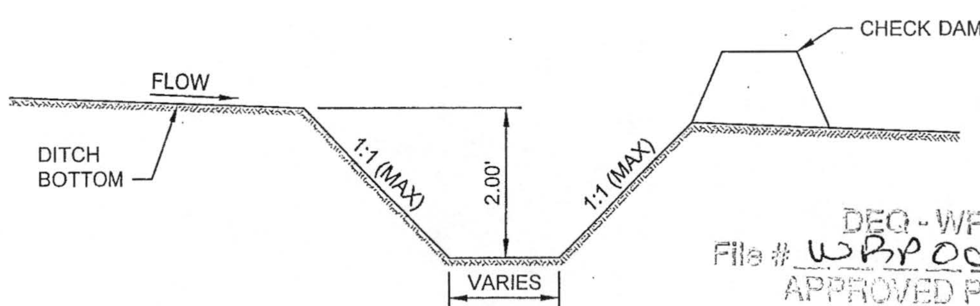
SCALE: 1"=500'



CURB AND GUTTER
TYPICAL SECTION
SCALE: 1"=10'

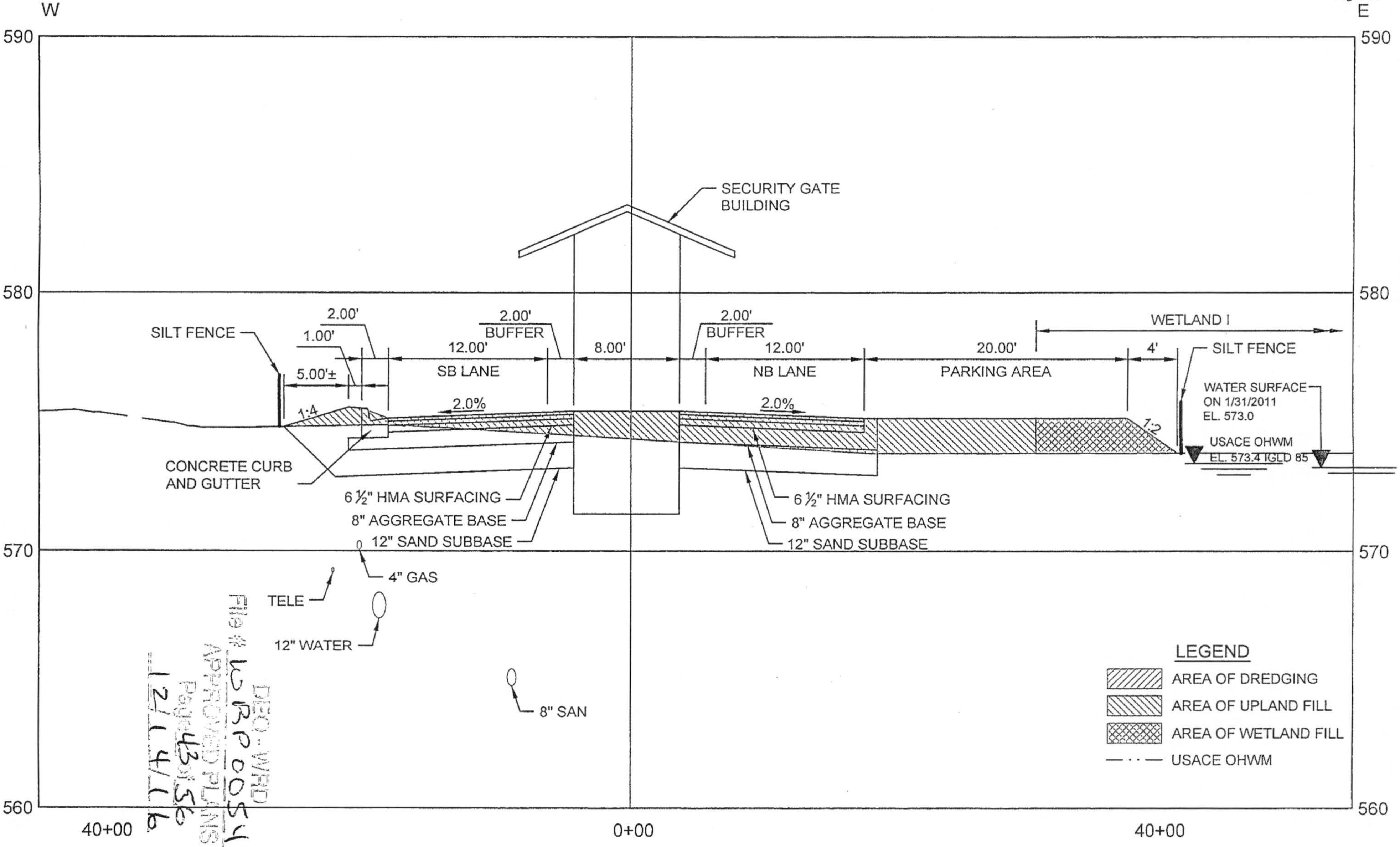


SEDIMENT TRAP
TYPICAL SECTION
SCALE: 1"=10'



TYPICAL SEDIMENT TRAP
DETAIL PROFILE
SCALE: 1"=5'

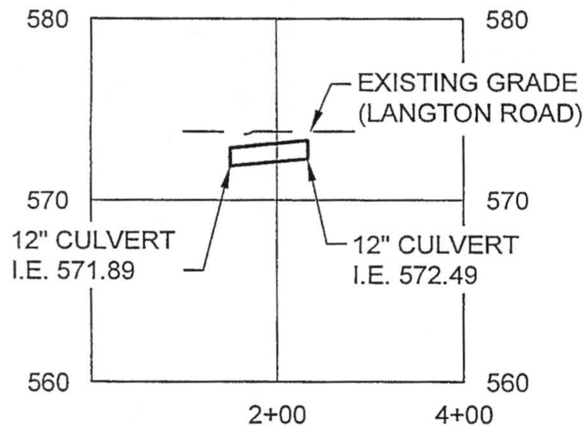
FIGURE 14-2B NEW OPERATIONS ACCESS ROAD
TYPICAL SECTION FOR CURB AND GUTTER
TYPICAL SECTION AND DETAIL PROFILE SEDIMENT TRAP



A SECURITY GATE SECTION

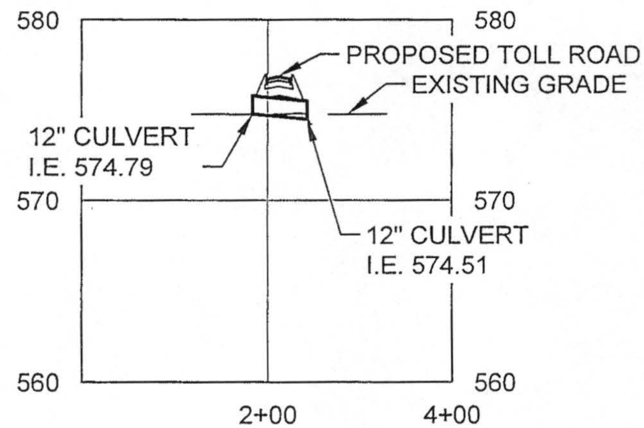
SCALE: 1"=10' HORZ.; 1"=5' VERT. (IGLD 85 DATUM)

FIGURE 14-2C NEW OPERATIONS ACCESS ROAD SECURITY GATE SECTION 'A' DETAILS



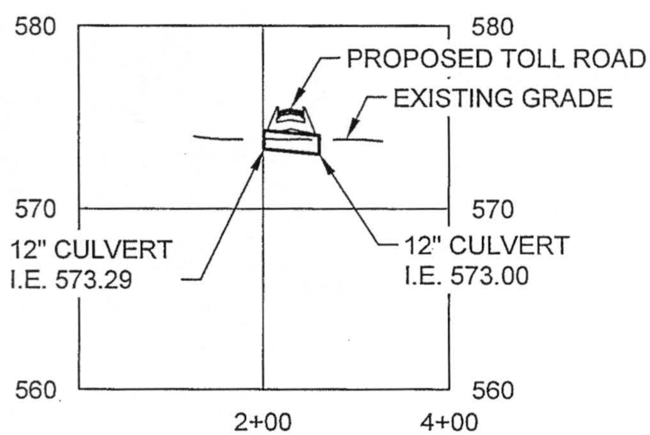
PROFILE OF PROPOSED CULVERT A
(LOOKING NORTHWEST)

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



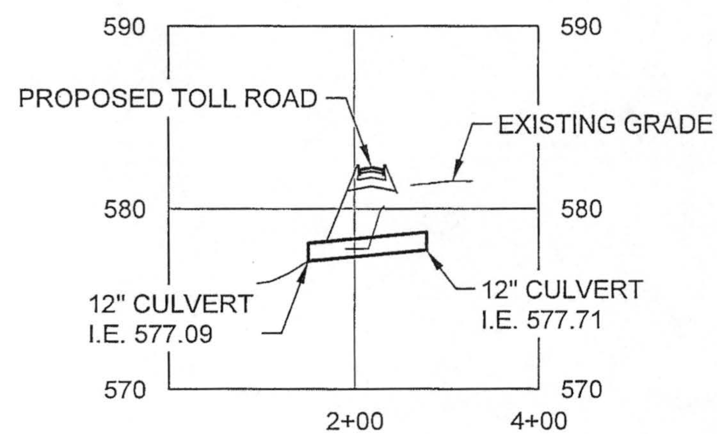
PROFILE OF PROPOSED CULVERT C
(LOOKING EAST)

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



PROFILE OF PROPOSED CULVERT B
(LOOKING EAST)

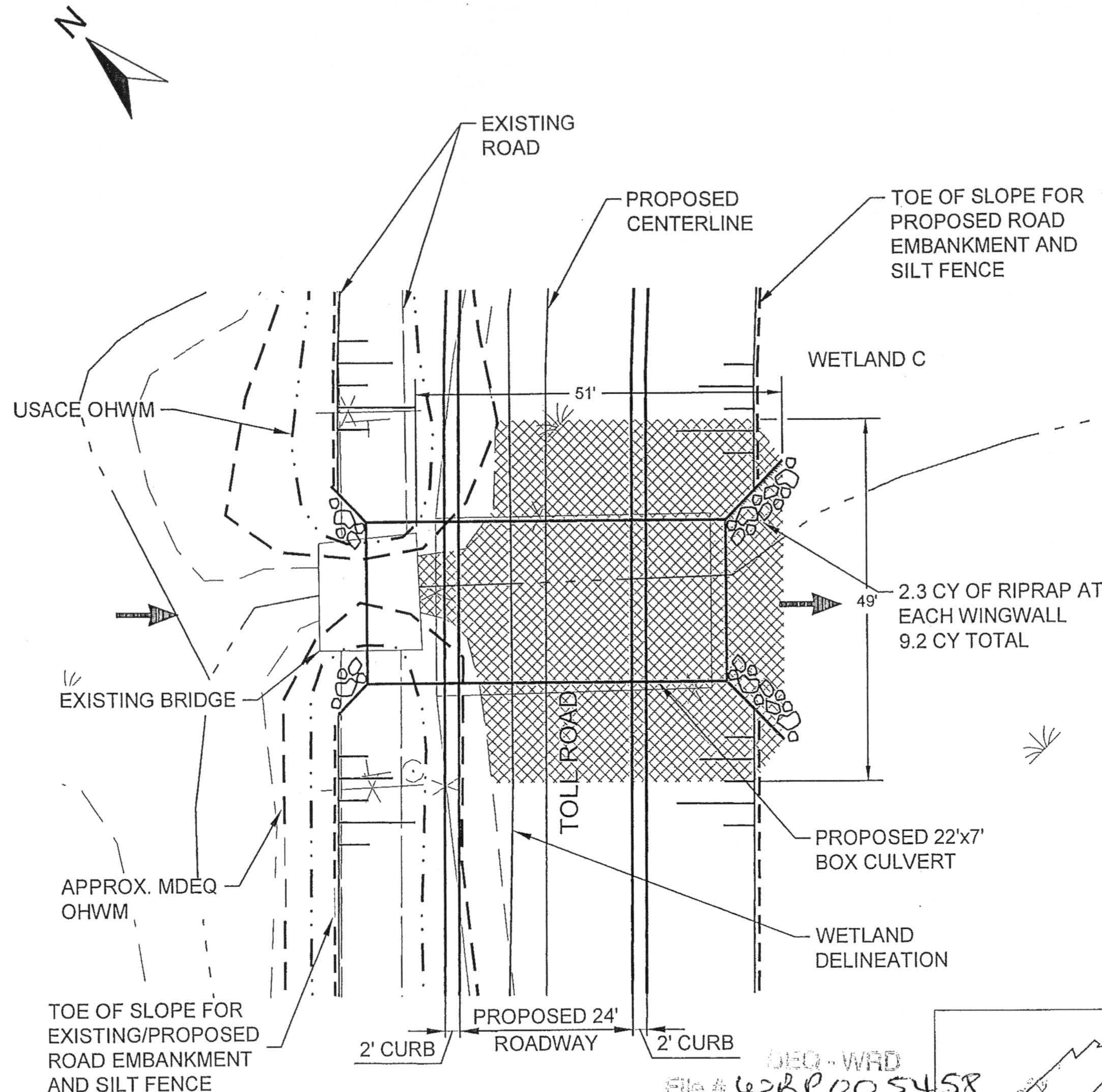
SCALE: 1"=200' HORZ.;1"=20' VERT. (IGLD 85 DATUM)



PROFILE OF PROPOSED CULVERT D
(LOOKING NORTHWEST)

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

FIGURE 14-2D NEW OPERATIONS ACCESS ROAD PROFILE OF PROPOSED CULVERTS A - D



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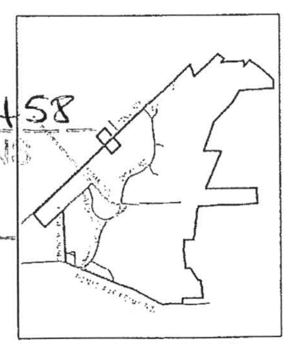
DIRECTION OF DITCH AND SURFACE WATER FLOW

LEGEND

- AREA OF WETLAND FILL
- CONTOURS
- SILT FENCE
- WETLAND LIMIT
- USACE OHWM
- APPROX. MDEQ OHWM



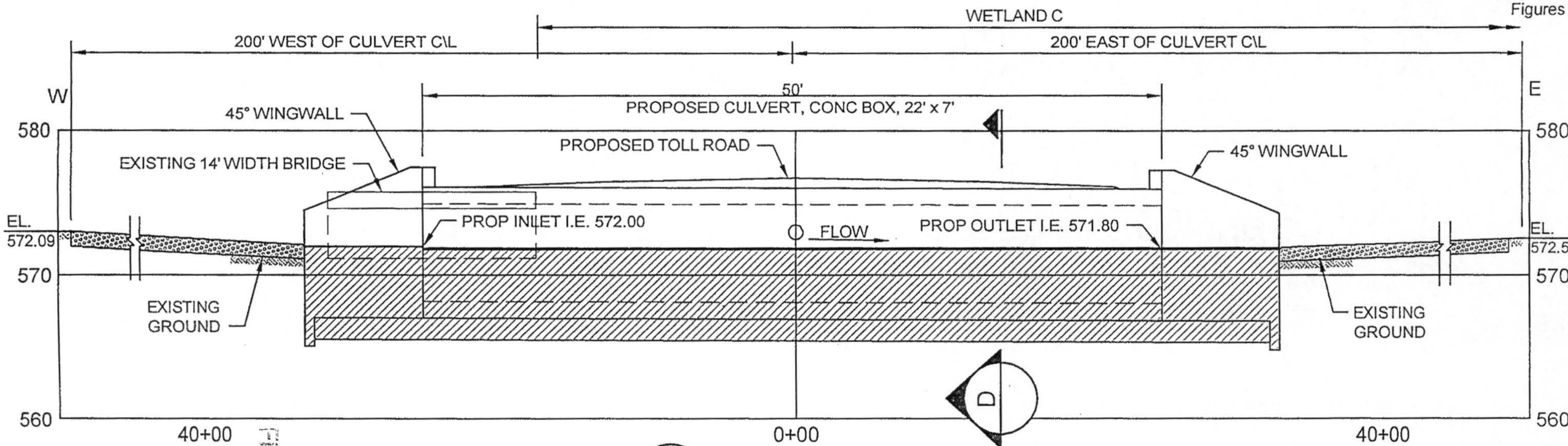
LOCATION MAP

NOTE:
NO PROPOSED WETLAND IMPACTS ALONG NORTHWESTERLY EDGE OF ROAD.

WETLAND C IMPACTS, BOX CULVERT ONLY
USACE OHWM DREDGE = 400 CY
USACE WETLAND FILL = 580 CY
APPROX. MDEQ OHWM DREDGE = 340 CY
APPROX. MDEQ OHWM FILL = 580 CY

FIGURE 14-2E
NEW OPERATIONS ACCESS ROAD 22'x7' BOX CULVERT PLAN VIEW

SCALE: 1"=20'
Revision 1



B ELEVATION
SCALE: 1"=10' (IGLD 85 DATUM)

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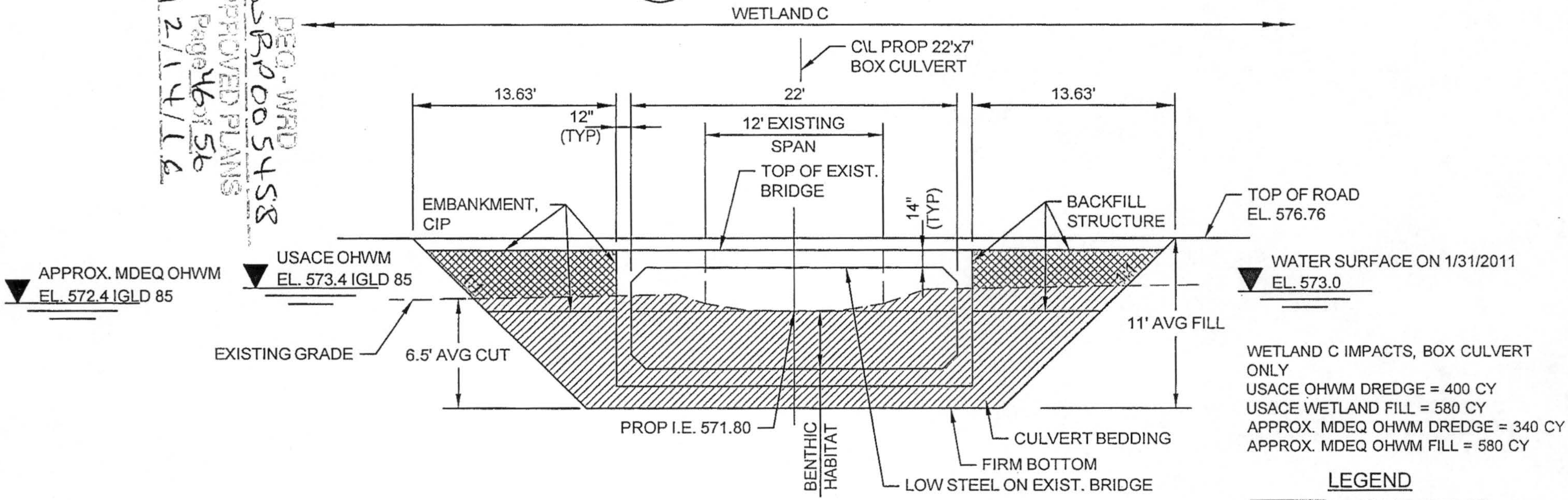
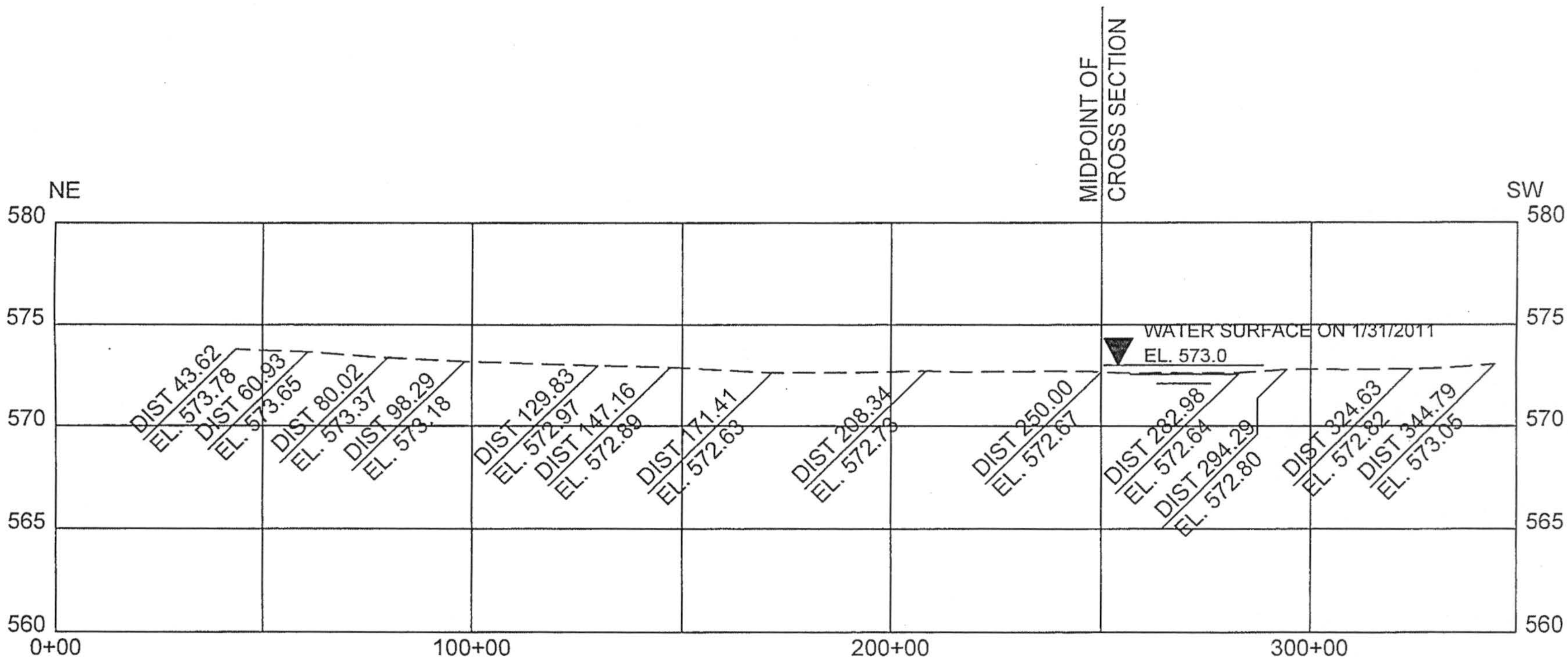


D SECTION VIEW (LOOKING WEST)
SCALE: 1"=10' (IGLD 85 DATUM)

FIGURE 14-2F NEW OPERATIONS ACCESS ROAD ELEVATION 'B' AND SECTION 'D' DETAILS



C

STREAM CROSS SECTION
200 FEET DOWNSTREAM OF PROPOSED TOLL ROAD (LOOKING DOWNSTREAM)

SCALE: 1"=40' HORZ.; 1"=5' VERT. (IGLD 85 DATUM)

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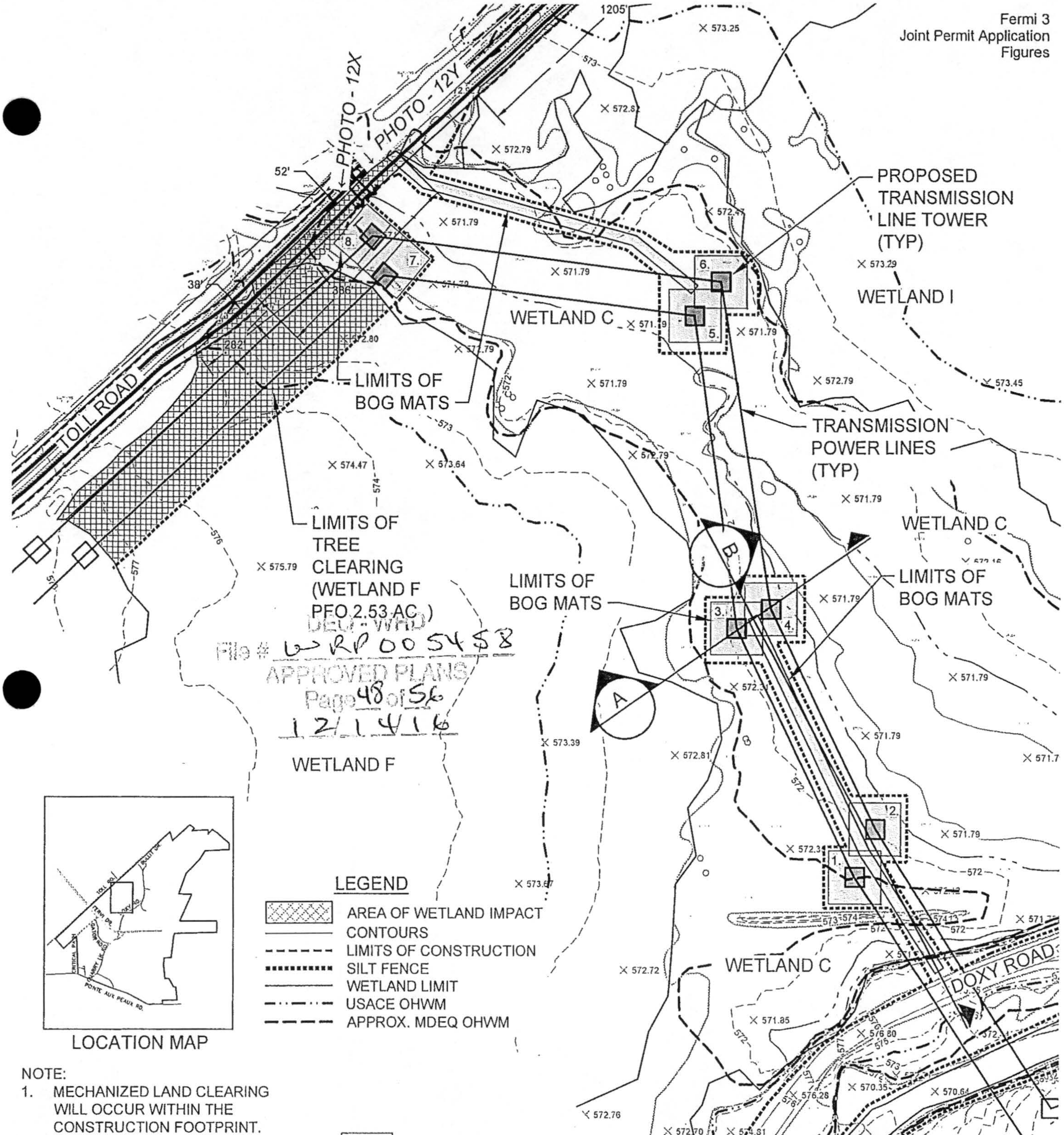
FIGURE 14-2G NEW OPERATIONS ACCESS ROAD SECTION 'C' DETAILS



NOTE:

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

WETLAND C
AREA = 0.24 acres
USACE OHWM DREDGE = 768 CY
USACE OHWM EXCAVATION = NA
WETLAND EXCAVATION = 768 CY
WETLAND FILL = 768 CY

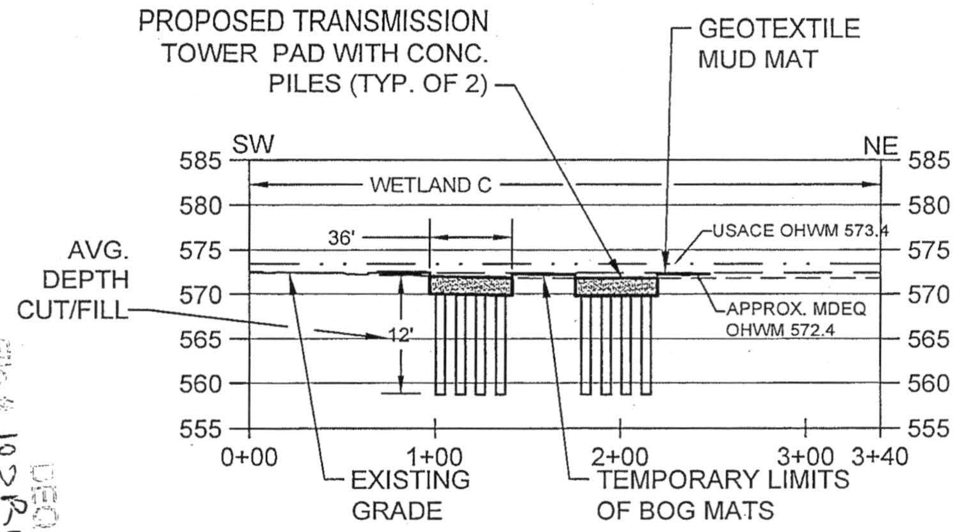
TEMPORARY (T) TOWER FOOTPRINT = 0.2 X 8 TOWERS = 1.60 ACRES
(T) LIMITS OF BOG MATS FOOTPRINT = 0.34 ACRES
(T) LIMITS OF BOG MATS FOOTPRINT = 0.35 ACRES
TOTAL TEMPORARY IMPACTS = 2.29 ACRES

36' 36'
PERMANENT (P) TOWER FOOTPRINT = 0.03 X 8 TOWERS = 0.24 ACRES
(P) OVERHEAD TRANSMISSION LINE CLEARANCE FOOTPRINT = 2.53 ACRES

N

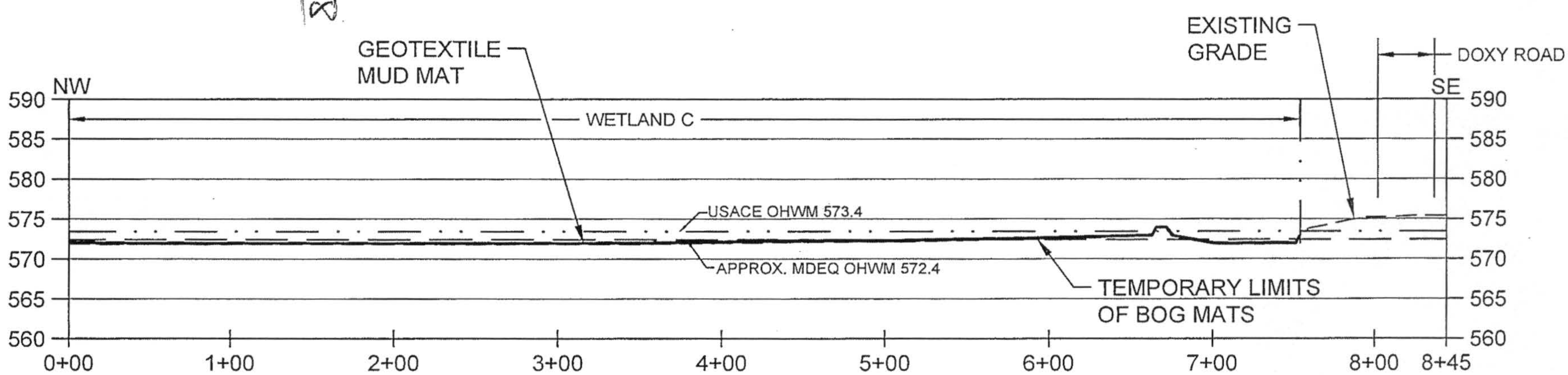
FIGURE 12-9A ONSITE TRANSMISSION PLAN VIEW

SCALE: 1"=250'



(A) ONSITE TRANSMISSION SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)



(B) ONSITE TRANSMISSION SECTION

SCALE: 1"=100' H, 1"=20' V (IGLD 85 DATUM)

LEGEND

—·· — USACE OHWM
— — — APPROX. MDEQ OHWM

FIGURE 12-9B ONSITE TRANSMISSION SECTION DETAILS

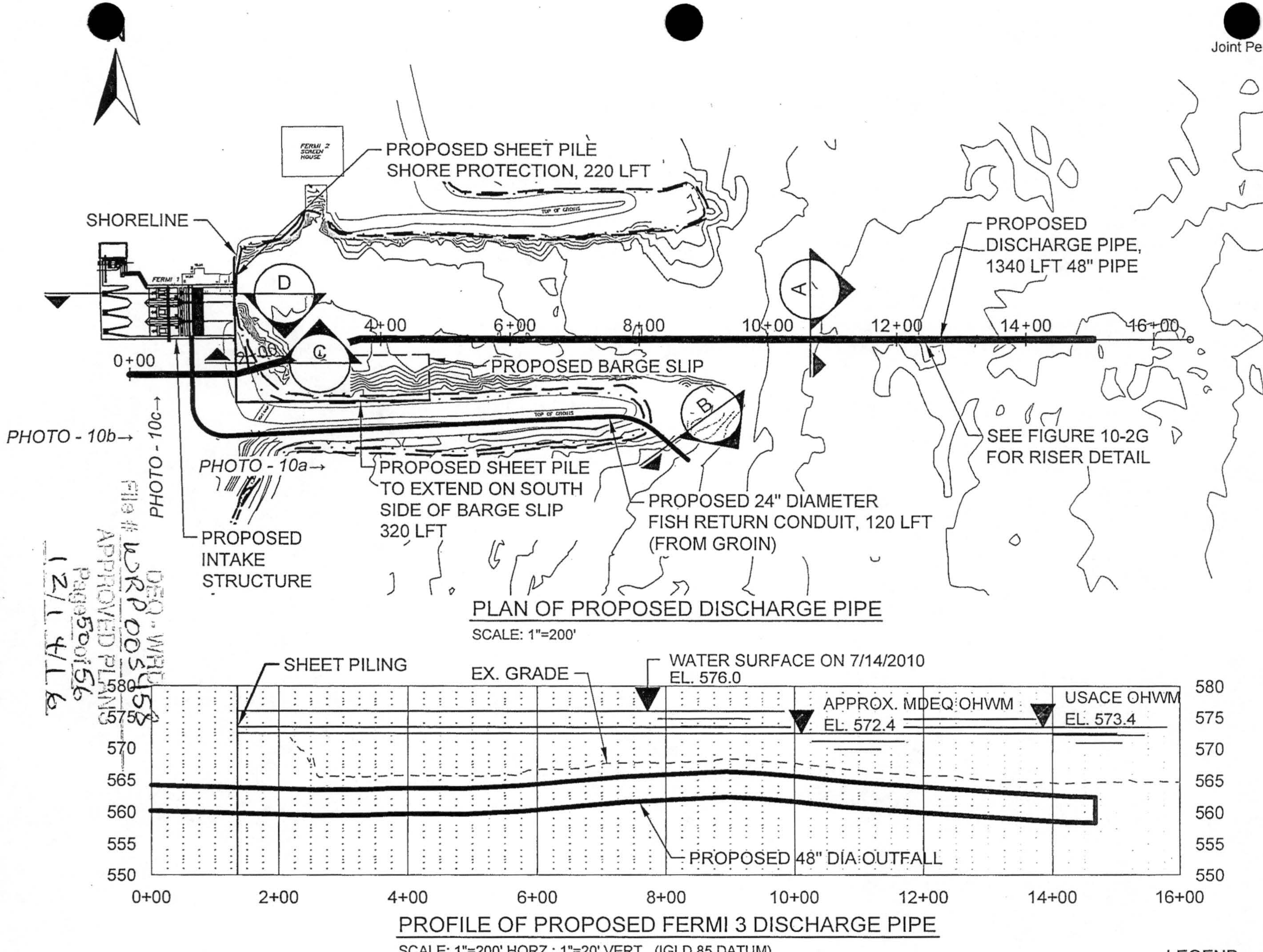
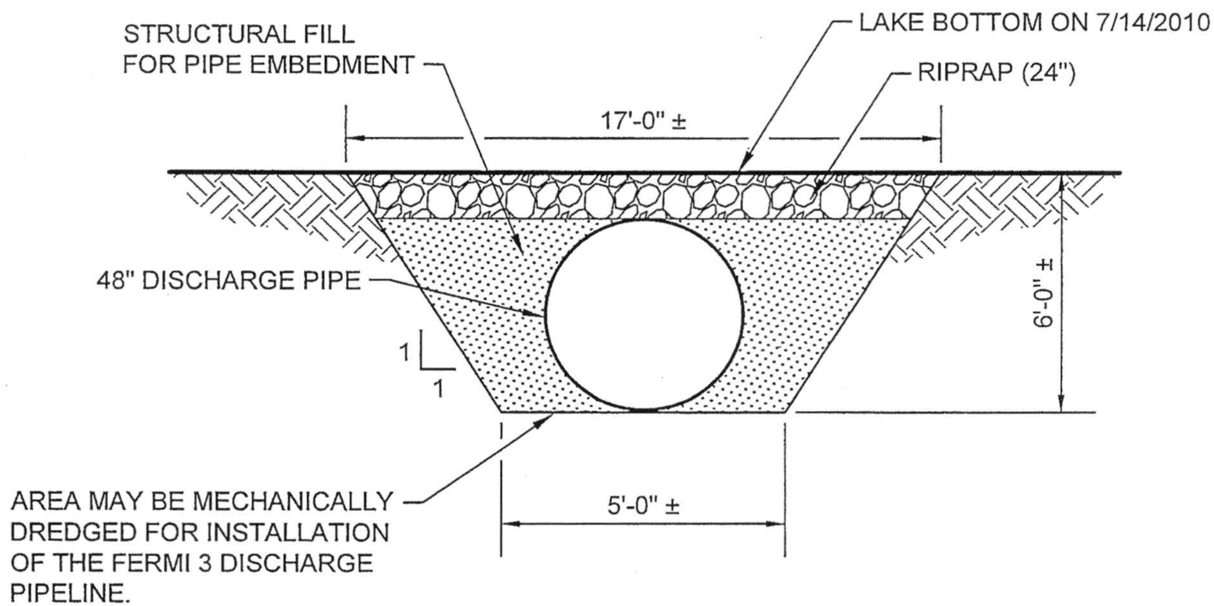
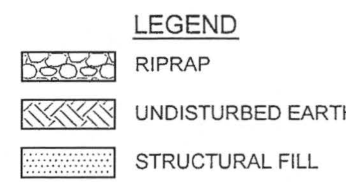


FIGURE 10-2A LAKE ERIE CONSTRUCTION AREA PLAN AND PROFILE OF PROPOSED DISCHARGE PIPE

LEGEND

- —·— USACE OHWM
- — — APPROX. MDEQ OHWM
- - - - PROPOSED BARGE SLIP LIMITS





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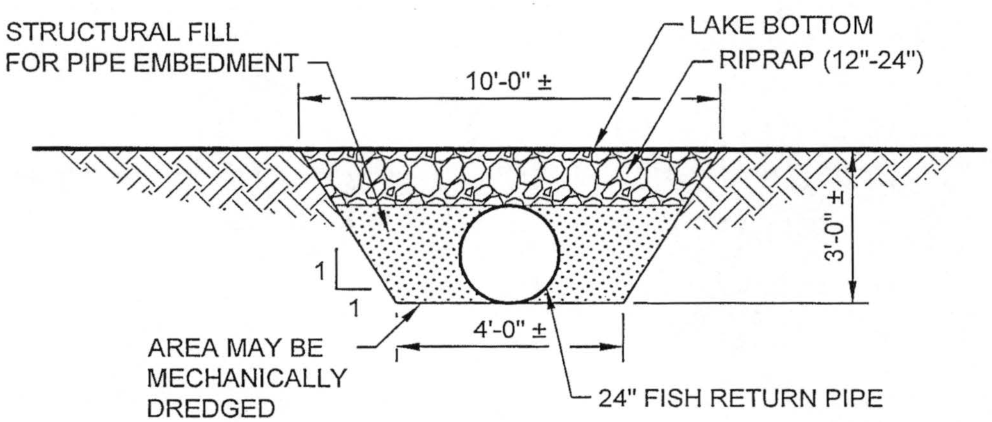
DREDGE VOLUME:	3,300 CY
SIDECAST VOLUME:	3,300 CY
STONE BACKFILL VOLUME:	970 CY
RIPRAP VOLUME:	1,690 CY
PIPE LENGTH:	1,340 LFT

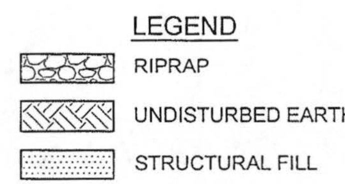
NOTE:
1. ONLY OUTSIDE MATERIALS WILL BE THE PIPE, RIPRAP AND STONE.
2. ALL WORK BELOW MDEQ AND USACE OHWM.

A DISCHARGE PIPE DREDGING CROSS SECTION

SCALE: NONE

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





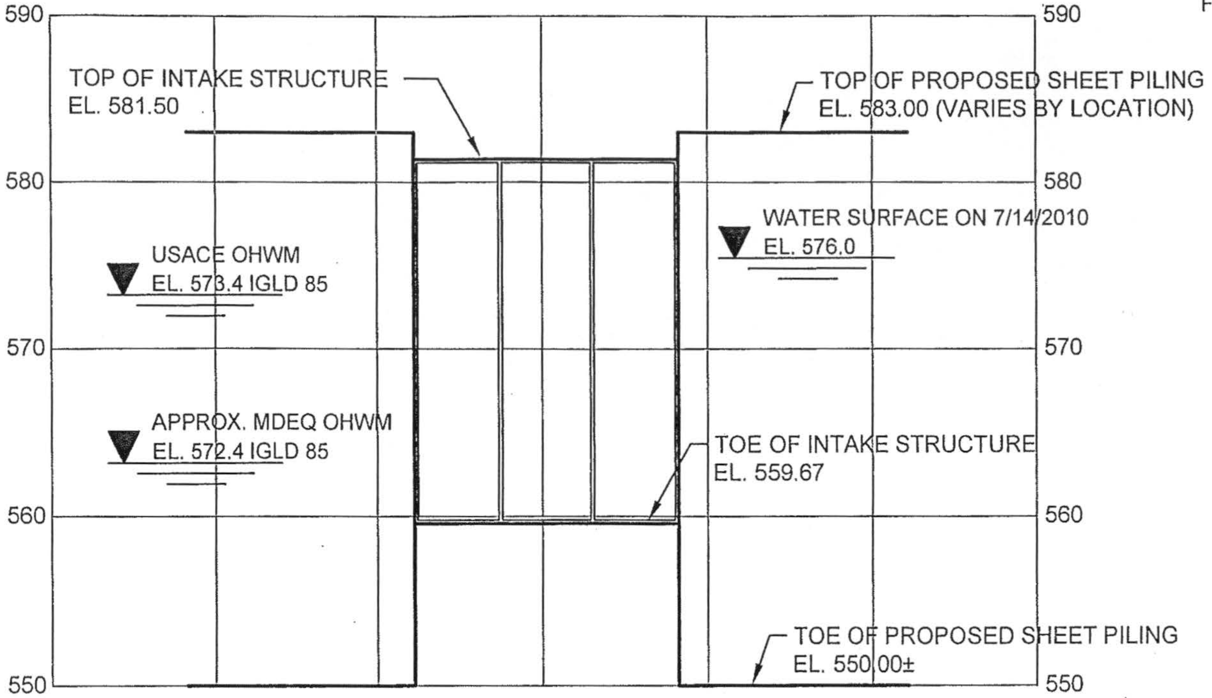
DREDGE VOLUME:	93 CY
SIDECAST VOLUME:	93 CY (39 CY TO BE USED TO BACKFILL TRENCH)
RIPRAP VOLUME:	40 CY
PIPE LENGTH:	120 LFT

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

B PIPE DREDGING CROSS SECTION (AT FISH RETURN LOCATION)

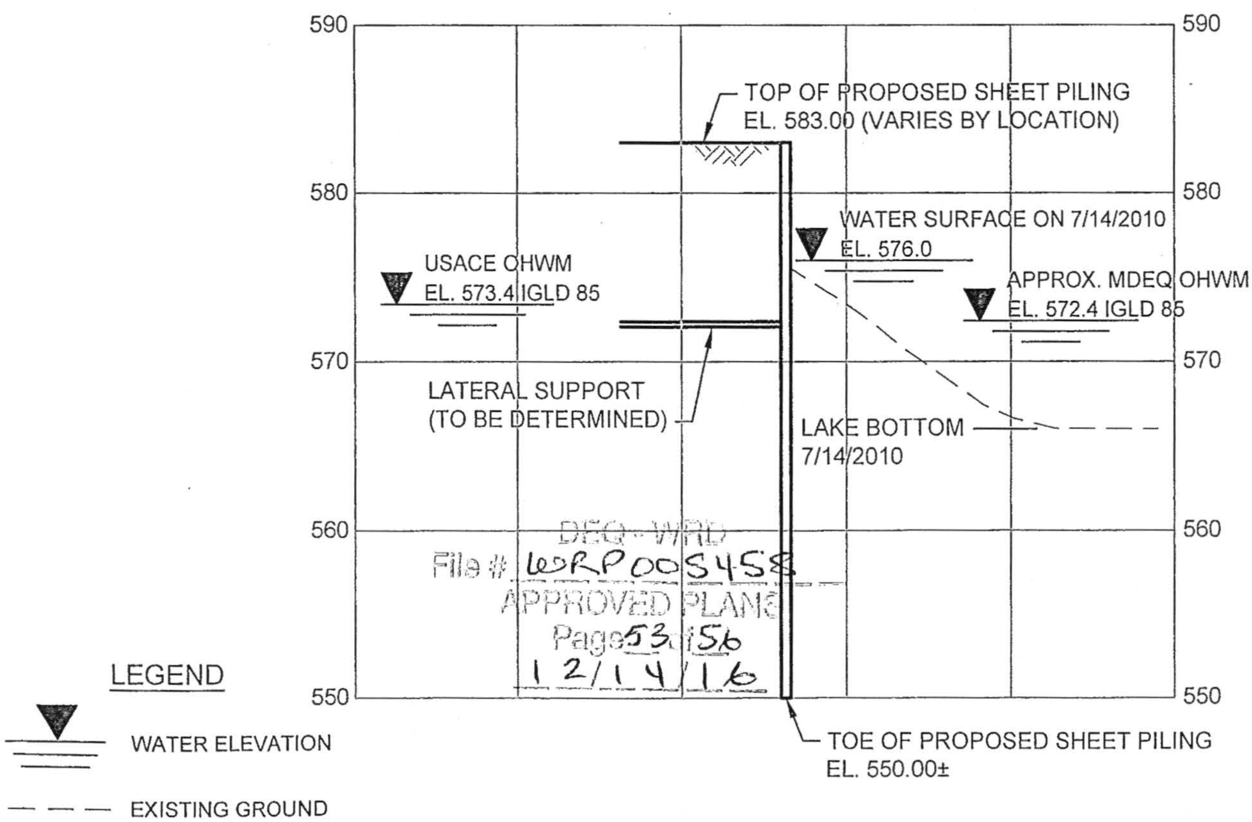
SCALE: NONE

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



INTAKE CROSS SECTION ALONG SHORELINE

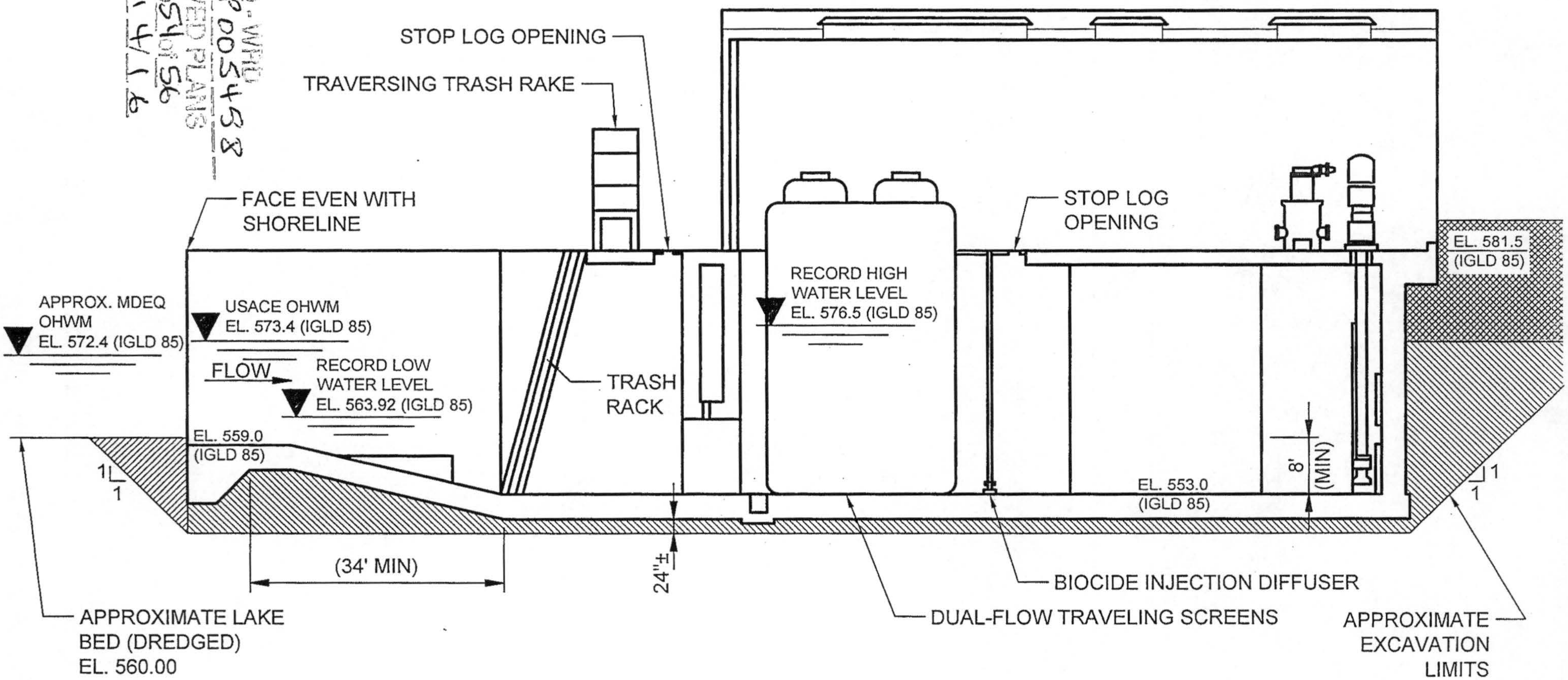
SCALE: 1"=60' HORZ.; 1"=10' VERT. (IGLD 85 DATUM)



C CROSS SECTION OF PROPOSED SHEET PILING

SCALE: 1"=10' VERT. (IGLD 85 DATUM)

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



LEGEND

- LAKE AREA DREDGE
- DREDGE
- UPLAND BACKFILL

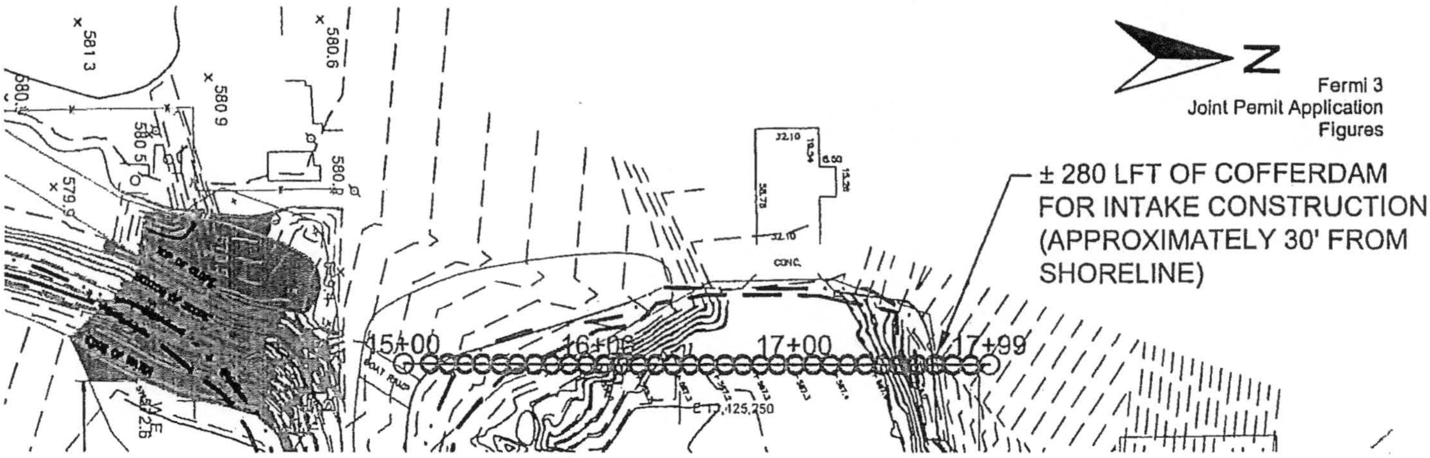
D PROPOSED INTAKE STRUCTURE (LOOKING SOUTH)

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

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

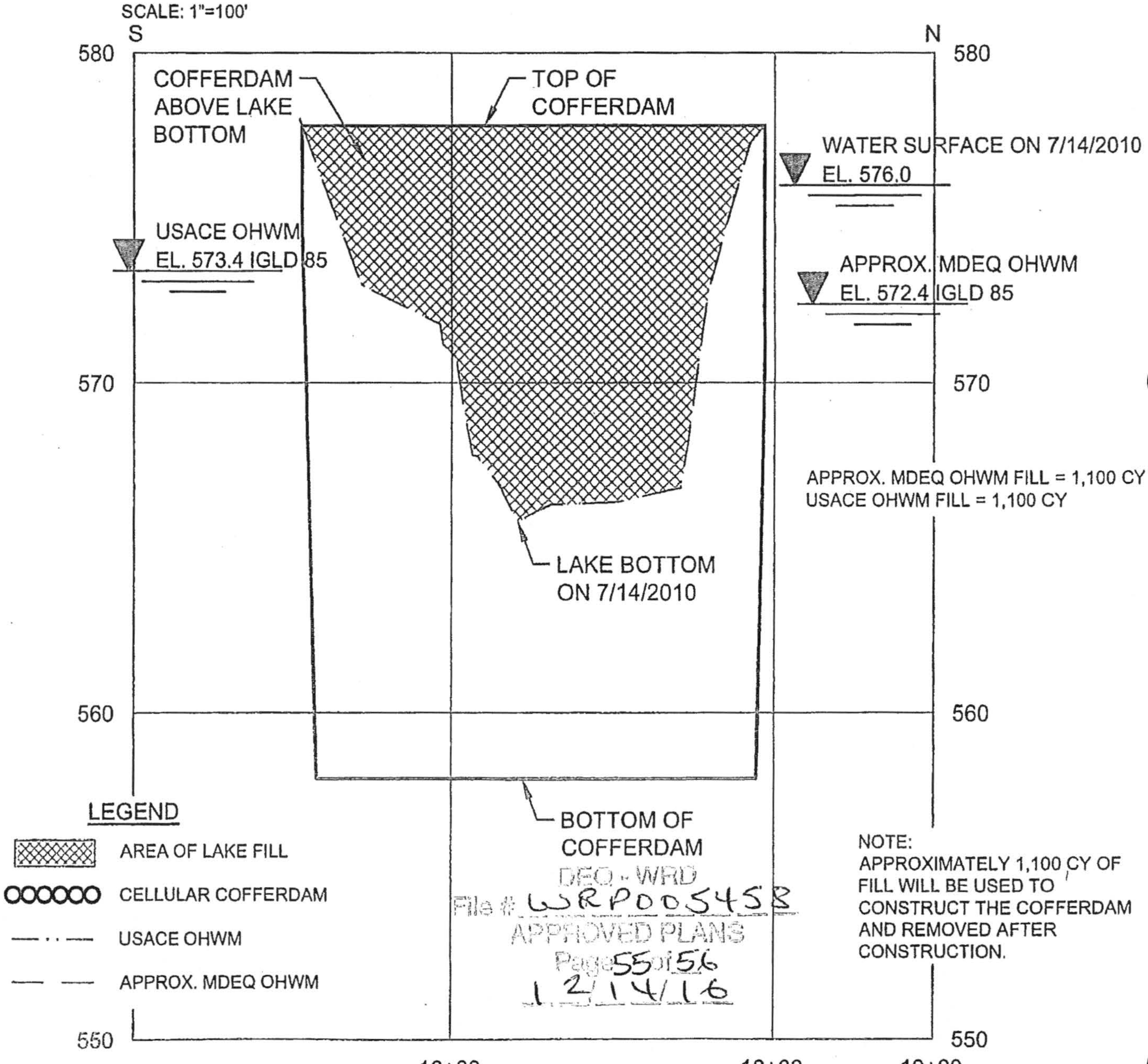
VOLUMES BELOW USACE OHWM	
DREDGE VOLUME:	16,600 CY
LAKE AREA DREDGE VOLUME:	300 CY
STRUCTURE VOLUME:	11,300 CY
BACKFILL VOLUME:	5,600 CY

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



PROPOSED TEMPORARY COFFERDAM AT INTAKE STRUCTURE

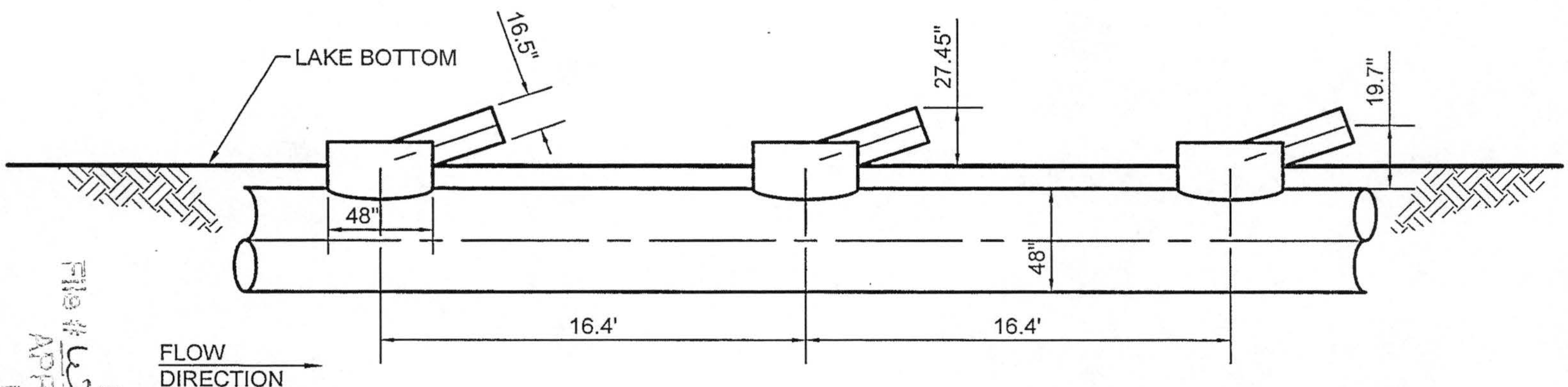
SCALE: 1"=100'



PROFILE OF TEMPORARY COFFERDAM

SCALE: 1"=100' HORZ.; 1"=5' VERT. (IGLD 85 DATUM)

FIGURE 10-2F LAKE ERIE CONSTRUCTION AREA PROPOSED COFFERDAM



NOTE:
TYPICAL RISER DETAIL ALONG DISCHARGE PIPE

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

SCALE: NONE

PERMIT APPLICATION CATEGORY AND PUBLIC NOTICE INFORMATION

Fermi 3 Adjacent Property Owner Labels

Fermi 3 Adjacent Landowners

Fermi 3 Adjacent Property Owner Labels

MICHIGAN NATURE ASSOCIATION
2310 SCIENCE PARKWAY, SUITE 100
OKEMOS, MI 48864

UNITED STATES FISH & WILDLIFE SERVICE
BISHOP HENRY WHIPPLE FEDERAL BLDG.
1 FEDERAL DRIVE
FORT SNELLING, MN 55111-4056

FIX FAMILY FARM LLC
MICHAEL S. FIX C/O
6394 LEROUX
NEWPORT, MI 48166

INTERNATIONAL TRANSMISSION CO,
ITC TRANSMISSION TAX DEPT.
27175 ENERGY WAY
NOVI, MI 48377

RANDY MASSERANT
6001 TOLL ROAD
NEWPORT, MI 48166

PARKER ORVAL
5121 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

MATTHEW VEY & ASHLYN FAYE PLUFF
5182 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

GORDON M. MCCARTY
5194 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

DARLIN EDWARD NOTHNAGEL
4704 ST CLAIR STREET
NEWPORT, MI 48166

MICHIGAN DEPT OF NATURAL RESOURCES
PO BOX 30722
LANSING, MI 48909

BETH E SQUIER ESTATE
C/O DONALD SQUIER
5820 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

DAVID L STERLING
5838 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

KAY MCDEVITT
2682 NADEAU RD.
MONROE, MI 48162

LAUREN & KELLY BOERNER
5884 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

MICHAEL JAMES RORKE JR.
5908 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

MARIA & SHIRLEY GONZALEZ
3276 CHIPPEWA
MONROE, MI 48162

JUSTIN C WRIGHT
5944 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

NABIH & JULIET QASSIS
37119 MUIRFIELD DRIVE
LIVONIA, MI 48152

TODD D & DIANA J FLIPPIN
9147 DOLD DRIVE
FINDLAY, OH 45840-1684

C/O LOWELL & SHELLY YOAS
6900 WILLIAMS
NEWPORT, MI 48166

MICHAEL & BRIDGET MCLAUGHLIN
6108 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

PATRICIA DRUMMONDS
6148 POINTE AUX PEAUX RD.
NEWPORT, MI 48166

JON W & KAREN E MADISH
6394 STERLING
NEWPORT, MI 48166

MICHAEL & LAURIE ELLISON
4702 LONG STREET
NEWPORT, MI 48166

MICHELLE ANN MAMAU
4720 LONG STREET
NEWPORT, MI 48166

C/O JOHN J QUALEY
4730 LONG STREET
NEWPORT, MI 48166

LONG EST. SUMMER RESORT ASSOCATION
4802 LONG STREET
NEWPORT, MI 48166

JOHN H & DEBORAH L DIEHL
4772 LONG STREET
NEWPORT, MI 48166

THOMAS & ANNA LIEDEL
4802 LONG STREET
NEWPORT, MI 48166

MICHAEL H LANE
PO BOX 173
WYANDOTTE, MI 48192

LONNY & LINDA SERES
4834 LONG STREET
NEWPORT, MI 48166

LONG EST. SUMMER RESORT ASSOCIATION
C/O TREASURER
4720 LONGSTREET
NEWPORT, MI 48166

FRENCHTOWN CHARTER TOWNSHIP
FIRE HALL 34
2744 VIVIAN
MONROE, MI 48162

FRENCHTOWN CHARTER TOWNSHIP
FIRE HALL #4
2744 VIVIAN
MONROE, MI 48162

CITY OF MONROE WATER WORKS
120 EAST FIRST STREET
MONROE, MI 48161

MONROE FRENCHTOWN
RAW WATER SUPPLY CO-PARTNERSHIP
120 E FIRST STREET
MONROE, MI 48161

JOHN & DEBORAH DIEHL
4772 LONG STREET
NEWPORT, MI 48166

THOMAS & ANNA LIEDEL
4802 LONGSTREET
NEWPORT, MI 48166

LONNY & LINDA SERES
4834 LONG STREET
NEWPORT, MI 48166

ROBERT D & LISA S MASSERANT
5645 TROMBLEY
NEWPORT, MI 48166

MICHIGAN LAND CONTRACT VENDOR
MARY LOU HUDICK
PO BOX 351
NEWPORT, MI 48166

LYON SAND & GRAVEL COMPANY
8800 DIX AVE.
DETROIT, MI 48209

JIMMY & REBECCA HOLMES
6200 LANGTON
NEWPORT, MI 48166

UNITED STATES OF AMERICA AND IT'S ASSIGNS, WASHINGTON DC
5600 AMERICAN BLVD. WEST, STE. 9900
BLOOMINGTON, MN 55437-1458

JAMIE DON BARCZEWSKI
5701 TOLL ROAD
NEWPORT, MI 48166

CHARLES & BARBARA CHILDRESS
6170 LEROUX ROAD
NEWPORT, MI 48166

DEWEY'S STONY POINT ASSOCIATION, INC.
PO BOX 66272
NEWPORT, MI 48166

CAPITAL ONE N A
7933 PRESTON ROAD
PLANO, TX 75024

ERIC & ROBIN BONDY
6211 HIGHLAND,
NEWPORT, MI 48166

ROBERT & VALERIE CARTWRIGHT
6098 POINTE AUX PEAUX ROAD
NEWPORT, MI 48166

ROXANNE D OLIVER
3938 LAKESHORE
NEWPORT, MI 48166

EDWARD J BODENMILLER
4771 POINTE AUX PEAUX ROAD
NEWPORT, MI 48166

APRELL BASIC
5928 POINTE AUX PEAUX ROAD
NEWPORT, MI 48166

Fermi 3 Adjacent Landowners

Link to the Monroe County, MI Property Tax Database

#	Parcel Number	First Name	Last Name	Street Address	City	State	Zip Code	Notes
1	07 020 502 00	ROBERT & LISA	MASSERANT	5645 TROMBLEY RD	NEWPORT	MI	48166	
2	07 020 504 10	RITA & RONALD	MARTIN	5152 POINTE AUX PEAUX	NEWPORT	MI	48166	
3	07 020 505 21	KELLY HUDICK ©	MICHIGAN LAND CONTRACT VENDEE	5168 POINTE AUX PEAUX	NEWPORT	MI	48166	
4	07 020 505 22	MATTHEW & ASHLYN	VEY	5182 POINTE AUX PEAUX	NEWPORT	MI	48166	
5	07 020 505 23	GORDON	MCCARTY	5194 POINTE AUX PEAUX	NEWPORT	MI	48166	
6	07 020 505 20	GORDON	MCCARTY	5194 POINTE AUX PEAUX	NEWPORT	MI	48166	
7	07 020 505 10	DARLIN EDWARD	NOTHNAGEL	4704 SAINT CLAIR ST	NEWPORT	MI	48166	
8	07 892 001 00	MICHIGAN DEPT OF NATURAL RESOURCES	MICHIGAN DEPT OF TREASURY	PO BOX 30722	LANSING	MI	48909	
9	07 528 014 00	LYON SAND & GRAVEL COMPANY		8800 DIX ST	DETROIT	MI	48209	
10	07 529 021 00	RANDY	MASSERANT	6001 TOLL RD	NEWPORT	MI	48166	
11	07 529 016 00	INTERNATIONAL TRANSMISSION CO		27175 ENERGY WAY	NOVI	MI	48377	
12	07 016 503 00	MICH LAND BANK FAST TRACK AUTHOR		PO BOX 30004	LANSING	MI	48909	
13	07 019 502 00	SUTTON NAKIA P, SUCCESSOR TRUSTEE		UNIT 6258	N/A	N/A	N/A	(see Tax Assessment Information below)

(1 of 2)

Tax Assessment Information

Parcel ID	07 019 502 00
Municipality	Frenchtown Township
Owner 1	SUTTON NAKIA P, SUCCESSOR TRUSTEE
Owner 2	VECTRUS OMDAC-SWACA
Property Address	POINTE AUX PEAUX
Property City	NEWPORT
Property State	MI
Property ZIP	48166
MBOR Assessment	45,500.00
Last Sale Date	
Last Sale Price	0.00
Land Value	91,000.00
Total Acres	10.00
Zoning	A-AGRICULTURAL
Neighborhood Code	1014
Property Class Code	102
Owner Address	UNIT 6258
Owner State	
Owner ZIP	XXXXX
Tax Description	F-517 SEC 19 T6S R10E 10 AMOL LD ON N END OF FRL 1/4 OF SE 1/4

#	Parcel Number	First Name	Last Name	Street Address	City	State	Zip Code	Notes
14	07 020 502 30	ORVAL	PARKER	5121 POINTE AUX PEAUX	NEWPORT	MI	48166	
15	07 529 015 30	ITC TRANSMISSION		27175 ENERGY WAY	NOVI	MI	48377	
16	07 529 015 40	FIX FAMILY FARM LLC		1502 PINETREE DR	TRENTON	MI	48183	
17	07 529 015 20	UNITED STATES OF AMERICA	AND IT'S ASSIGNS, WASHINGTON D C	5600 AMERICAN BLVD W STE 990	BLOOMINGTON	MN	55437	
18	07 529 018 00	UNITED STATES FISH & WILDLIFE SERV	BISHOP HENRY WHIPPLE FED BLDG	1 FEDERAL DR	FORT SNELLING	MN	55111	
19	07 529 018 10	MICHIGAN NATURE ASSOCIATION		2310 SCIENCE PKWY STE A	OKEMOS	MI	48864	
20	07 528 006 00	LANGTON VALARIAN TRUSTEE		6445 LEROUX RD	NEWPORT	MI	48166	
21	07 852 013 00	DONALD THOMAS &	MARY POLICHT	4834 LONG RD	NEWPORT	MI	48166	
22	07 852 019 00	LONG EST SUMMER RESORT ASSOC		4720 LONG RD	NEWPORT	MI	48166	
23	07 852 018 00	LONG EST SUMMER RESORT ASSOC		4720 LONG RD	NEWPORT	MI	48166	
24	07 852 011 00	CAROLYN GARDETTO &	JAMES ORWIN	145 BAPTISTE AVE	MONROE	MI	48162	
25	07 852 009 00	JAMES & RACHEAL	SHAW	4802 LONG RD	NEWPORT	MI	48166	
26	07 852 008 00	JOHN & DEBORAH	DIEHL	4772 LONG RD	NEWPORT	MI	48166	
27	07 852 002 00	QUALEY J & KENNEDY D / TRUSTEE &	MARILYN BAKER	4730 LONG RD	NEWPORT	MI	48166	
28	07 852 015 00	MONROE FRENCHTOWN RAW WATER	SUPPLY CO-PARTNERSHIP	120 E 1ST ST	MONROE	MI	48161	
29	07 028 509 00	CITY OF MONROE	WATER WORKS	120 E 1ST ST	MONROE	MI	48161	
30	07 028 508 10	FRENCHTOWN CHARTER TOWNSHIP	FIRE HALL #4	2744 VIVIAN RD	MONROE	MI	48162	
31	07 028 508 20	FRENCHTOWN CHARTER TOWNSHIP	WATER TOWER	2744 VIVIAN RD	MONROE	MI	48162	
32	07 852 113 00	DONALD THOMAS &	MARY POLICHT	4834 LONG RD	NEWPORT	MI	48166	
33	07 852 111 00	CAROLYN GARDETTO &	JAMES ORWIN	145 BAPTISTE AVE	MONROE	MI	48162	
34	07 852 109 00	JAMES & RACHEAL	SHAW	4802 LONG RD	NEWPORT	MI	48166	
35	07 852 108 00	JOHN & DEBORAH	DIEHL	4772 LONG RD	NEWPORT	MI	48166	
36	07 852 102 00	QUALEY J & KENNEDY D / TRUSTEE &	MARILYN BAKER	4730 LONG RD	NEWPORT	MI	48166	
37	07 852 101 00	MICHELLE	MUMAU	4720 LONG RD	NEWPORT	MI	48166	
38	07 827 012 00	PATRICIA	DRUMMONDS	6148 POINTE AUX PEAUX	NEWPORT	MI	48166	
39	07 887 002 00	MICHAEL & BRIDGET	MCLAUGHLIN	6108 POINTE AUX PEAUX	NEWPORT	MI	48166	
40	07 887 003 00	ROBERT & VALERIE	CARTWRIGHT	6098 POINTE AUX PEAUX	NEWPORT	MI	48166	
41	07 887 00[illegible]	ROBERT & VALERIE	CARTWRIGHT	6098 PO[illegible]AUX PEAUX	NEWPORT	MI	48166	
42	07 887 00[illegible] 00	KATRINA	RICHETTE	2820 L[illegible] LAKE DR	TITUSVILLE	FL	32780	

#	Parcel Number	First Name	Last Name	Street Address	City	State	Zip Code	Notes
43	07 887 009 00	JAMES III & RHONDA	SMITH	4690 N LAKE DR	NEWPORT	MI	48166	
44	07 887 010 00	JAMES III & RHONDA	SMITH	4690 N LAKE DR	NEWPORT	MI	48166	
45	07 887 257 00	POINTE AUX PEAUX FARMS INC		PO BOX 195	NEWPORT	MI	48166	
46	07 789 215 01	JULIET	QASSIS	37119 MUIRFIELD DR	LIVONIA	MI	48152	
47	07 789 176 00	JULIET	QASSIS	37119 MUIRFIELD DR	LIVONIA	MI	48152	
48	07 789 174 00	JULIET	QASSIS	37119 MUIRFIELD DR	LIVONIA	MI	48152	
49	07 789 129 00	JUSTIN	WRIGHT	5944 POINTE AUX PEAUX	NEWPORT	MI	48166	
50	07 789 127 00	SHAWLYNN MCBRIDE &	REECE WESLEY	5928 POINTE AUX PEAUX	NEWPORT	MI	48166	
51	07 789 126 00	MARIA & NEWSOME	GONZALEZ	3276 CHIPPEWA TRL	MONROE	MI	48162	
52	07 789 125 00	MARIA & SHIRLEY	GONZALEZ	3276 CHIPPEWA TRL	MONROE	MI	48162	
53	07 789 124 00	DENISE	DE BEAUSSET	5908 POINTE AUX PEAUX	NEWPORT	MI	48166	
54	07 789 070 00	LAUREN & KELLY	BOERNER	5884 POINTE AUX PEAUX	NEWPORT	MI	48166	DEWEY'S SUMMER HOMES SUBDIVISION LOTS
55	07 789 068 00	CHARLES & TERESA	SMITH	5866 POINTE AUX PEAUX	NEWPORT	MI	48166	
56	07 789 066 00	CHRISTOPHER TUFNELL &	MICHAELA KIELBASA	5854 POINTE AUX PEAUX	NEWPORT	MI	48166	
57	07 789 007 00	DAVID	STERLING	5838 POINTE AUX PEAUX	NEWPORT	MI	48166	
58	07 789 005 00	DAVID	STERLING	5838 POINTE AUX PEAUX	NEWPORT	MI	48166	
59	07 789 004 00	DAVID	STERLING	5838 POINTE AUX PEAUX	NEWPORT	MI	48166	
60	07 789 003 00	DAVID	STERLING	5838 POINTE AUX PEAUX	NEWPORT	MI	48166	
61	07 789 002 00	TONY	RUNYON	8401 TALON CT	NEWPORT	MI	48166	
62	07 789 001 00	DEWEY'S STONEY POINT ASSOC CORP		PO BOX 272	NEWPORT	MI	48166	

PROJECT DESCRIPTION

Attachment 2-1 Proposed Project and Associated Activities, and the Construction Sequence and Methods

Attachment 4-1 Proposed Project Purpose, Intended Use, and Alternative Considered

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 1

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 2 Hydrology Report

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 3 Wetland Delineation Report

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 4 Plans

Attachment 2-1 Proposed Project and Associated Activities, and the Construction Sequence and Methods

Attachment 2-1: Proposed Project and Associated Activities, and the Construction Sequence and Methods
(6 pages following cover page)

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

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 overall site plan is shown on **Figure 2-5**. The proposed Fermi 3 project will require the following regulated activities.

Construction Area 1:
Clear and grade 27 acres temporarily impacting 1.32 acres of emergent marsh wetlands and 1.37 acres of scrub-shrub wetlands to manage spoils generated during Fermi 3 construction.

Construction Area 2:
Clear and grade 18 acres for use as construction laydown and support structures and buildings temporarily impacting 1.14 acres of forested wetlands.

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

Construction Area 4:
Clear and grade 11.5 acres for use as construction laydown temporarily impacting 4.59 acres of emergent marsh wetlands.

Construction Area 5:
Clear and grade 31.1 acres adjacent to the proposed cooling tower permanently impacting 1.62 acres of forested wetlands. Construct two 24-foot by 6-foot arch concrete culverts running 880 linear feet to enclose a portion of the South Canal permanently impacting 1.17 acres of emergent marsh wetlands.

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

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

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

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

Lake Erie Construction Area:

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

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

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

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

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

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

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

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

2) 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 temporary placement of a cofferdam and mechanical or hydraulic dredging. Dredged material will be side cast and/or reused as fill after the pipe is installed. The discharge pipe trench will be fortified with riprap to prevent scouring.

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

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

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

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

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

Impact Type	Wetland ID	Proposed Impacts (acres)	Permanent (P) or Temporary (T)
Emergent marsh wetland			
Great Lakes marsh (rare and imperiled)	C	2.80	P
	C	6.93	T
	C[a]	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	1.96	P
	U	3.46	P
	Total	10.53	
Total emergent marsh		24.52	
Forested wetland			
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	
Scrub-shrub wetland			
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	
Total Wetland Impacts		**37.83**	
Total Wetland Impacts for mitigation[a]		**35.55**	

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

Impact Type	Wetland ID	Proposed Impacts (acres)	Permanent (P) or Temporary (T)
Open water[b]	Lake Erie	0.08	T

[a]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.

[b]Mitigation is not proposed for open water impacts.

Attachment 4-1 Proposed Project Purpose, Intended Use, and Alternative Considered

Attachment 4-1: Proposed Project Purpose, Intended Use, and Alternatives Considered
(14 pages following cover page)

- **Summary of the proposed project purpose, intended use and alternatives considered**
- **Table 4-1. Candidate Site Practicability Review**
- **Table 4-2. Comparison of Wetland/Water Impacts from Alternative Sites**
- **Table 4-3. Comparison of Impacts for Alternative Site Layouts**

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

1) Purpose/Intended Use:

The DTE Electric Company (DTE) 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 to provide new baseload electric generation capacity with a net electrical output of approximately 1,535±50 megawatts (MWe) for sale. This purpose is in-line with DTE's mission to provide reliable and affordable electrical power.

2) Alternatives Considered:

DTE 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. DTE's alternatives analysis included consideration of alternative locations for new nuclear electric production consistent with the purpose 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, DTE 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. DTE'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. DTE has also proposed mitigation for the unavoidable impacts to waters of the United States.

a) Alternative Sites

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

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

DTE evaluated the potential wetland and stream impacts associated with construction of the nuclear generating facility and any required infrastructure such as transmission corridors and make-up water supply or blowdown discharge pipelines to support the closed-cycle cooling system. The potential impacts associated with nuclear development at the Fermi and Greenwood sites are summarized in the **Table 4-2**. Based on the overall potential impacts to waters of the U.S., the Fermi site would be the LEDPA.

b) Site Layout Alternatives

DTE 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. DTE applied as much repositioning of project components as possible within project practicability limits to avoid and minimize impacts to wetlands and other natural resources at the Fermi site. Four project layout alternative scenarios were evaluated. These alternative layouts are identified as Revision 0, Revision 1, Revision 2, and the Preferred Alternative.

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

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

<u>Key Constraints</u>

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 DTE 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 DTE's knowledge of site environmental conditions evolved, revised versions of the site layout were created in keeping with Constraint 1. Each of the four versions of the site layout satisfied the key constraints based upon the state of knowledge at the time the site revision was developed.

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

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

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

Constraints 7 and 8 require arranging the Fermi 3 site to ensure that there will be adequate space near the primary construction area to allow a free flow of personnel, materials and equipment. Fermi 3 requires a large construction workforce with up to 2900 construction workers at peak and 900 onsite workers when operational. Adequate staging and laydown area (temporary storage of construction materials) is needed to support the modular construction of nuclear power plants. Reactors such as the ESBWR proposed for Fermi 3, use standardized modules and certified designs to expedite the construction schedule. Nuclear power plant construction management consultants have advised DTE 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. DTE evaluated each of the onsite alternative layouts based on the approximate acreage, type, and value of wetlands that would be impacted. Alternatives that would minimize impacts to wetlands were preferred over alternatives that would result in greater impacts.

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

Revision 0 Site Layout

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

Unchanged Site Layout Elements

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

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

The Fermi 3 blowdown water outfall to Lake Erie will be offshore via an underwater discharge line in conformance to Constraints 1, 2 and 10. The configuration and discharge location of this line did not change in subsequent revisions. Four discharge locations were considered including two shoreline discharges (concrete, partially submerged, discharge structure along the shoreline) and an inland location. The inland location into the south lagoon was eliminated due to environmental considerations according to Constraint 1. The warm blowdown water could potentially disturb the local aquatic ecosystem and wetlands in the south lagoon. The two shoreline discharge locations considered on the south side of the site, per Constraint 2, were also eliminated due to environmental considerations per Constraint 1 and potential Fermi 2 operational impacts per Constraint 2. One consideration with both shoreline locations was the possibility of variable, near-shore currents sending the warm blowdown water back into the Fermi 2 and Fermi 3 makeup water intakes, which could impact plant heat loads and water chemistry. The other consideration with both shoreline locations was that warm blowdown water discharged during a seiche event, with winds from the east, could flow back into the south lagoon, potentially disturbing the local aquatic ecosystem and wetlands. Shoreline discharge locations would pose greater impacts than the proposed offshore discharge, which is considered environmentally preferable.

Site Layout Elements that Changed in Subsequent Site Layout Revisions

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

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

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

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

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

The Fermi 3 temporary construction parking lot was proposed to be located on the north side of Fermi Drive, beneath the existing transmission corridors in accordance with the Fermi 2 and Fermi 3 separation requirements per Constraint 10. A large area is needed for construction parking to accommodate 2900 workers at the peak of construction. This area is also directly connected to the construction site and meets the requirements of Constraint 7. The utility of this area for other construction activities was limited due to the existing high-voltage overhead lines. The location of construction parking and the utilization of this field changed from Revision 1 to Revision 2.

<u>Revision 1 Site Layout</u>

Based on completion of the Ducks Unlimited wetland study in July 2008, DTE recognized that the cooling tower location and the location of the Fermi 2 facilities moved from the Fermi 3 construction site, had greater wetland impacts than originally assessed and that these placements would have to be modified. Therefore, at the U.S. Nuclear Regulatory Commission (NRC) environmental audit in February 2009, DTE informed the NRC, Michigan Department of

Environmental Quality (MDEQ), and the U.S. Army Corps of Engineers (USACE), that the Revision 0 site layout would be revised to further minimize wetland impacts.

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

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

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

The "pork chop" is an important feature of the Revision 1 site layout due to its proximity to the construction site; location adjacent to Fermi Drive and rail access; and, the absence of overhead transmission lines that can present a safety hazard and barrier to movement and assembly of equipment, materials and modules. Construction warehouses, staging, assembly areas, and maintenance shops were planned for this location. Utilization of this area greatly facilitates the free flow of personnel, equipment and materials, further relieving the pinch-point concern at the Fermi Drive and Quarry Lakes Road intersection. Traffic through this area includes workers and materials coming from Dixie Highway, laydown and staging areas, the rail spur, and the barge slip.

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

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

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

- The Fermi 2/Fermi 3 meteorological tower was relocated because the new Fermi 3 cooling tower location will interfere with the current meteorological tower location. The new meteorological tower is relocated in an area near the southeast corner of the site. This location was selected because there were no known wetland impacts in conformance with Constraint 1 and because it met NRC regulatory guidance for meteorological tower placement.

- Construction staging and laydown was added on the south site border in a low-wetland impact area, on the east side of Quarry Lakes Road and around Fox Road, in conformance with Constraints 8 and 10. Unavoidable, temporary impacts are incurred to several small, fragmented, low-value emergent and scrub shrub wetlands (Wetlands AA, JJ, II). Nuclear construction subject matter experts engaged by DTE indicated that more land was needed for construction activities (staging, laydown, temporary spoils storage, and component assembly) than was originally allocated in the Revision 0 site layout.
- The Fermi 3 switchyard was moved to the agricultural field at the far west side of the property, adjacent to the south side of Fermi Drive. In Revision 0, the Fermi 3 switchyard was adjacent to the Fermi 2 switchyard in the protected area. Further analysis of the Fermi 3 interconnection determined the available space adjacent to the Fermi 2 switchyard was not sufficient for the new Fermi 3 switchyard. In addition, in accordance with Constraint 2, the original location was an impediment to movement and a potential impact to Fermi 2 operations. The new location also places the switchyard outside the owner-controlled area to facilitate access by ITC*Transmission* (owner and operator of the switchyard).

<u>Revision 2 Site Layout</u>

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

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

The resulting changes are summarized as follows:

- The 345 kV transmission lines that serve Fermi 2 and the proposed Fermi 3 were rerouted to open up the field on the north side of Fermi Drive for all necessary construction activities to satisfy Constraints 7, 8 and 10. The transmission is rerouted due west through emergent Wetland C, then south along Toll Road, to the Fermi 3 switchyard, which was moved into the field at the corner of Toll Road and Fermi Drive. This change eliminates impacts to a large parcel of rare and imperiled wetland (the "pork chop") and incurs unavoidable impacts to approximately 2 acres of forested wetland (the impacts will change the edge of Wetland F below the transmission lines from a forested wetland to a emergent wetland) and small, unavoidable, permanent and temporary impacts to an emergent Wetland C.
- Land surrounding the Quarry Lakes, designated as laydown, was added for various construction activities in conformance with Constraints 7, 8 and 10, to replace loss of laydown and staging areas from the "pork chop" area and from moving construction parking into the farmer's field. Some temporary, unavoidable impacts are incurred to small, fragmented, low-value forested and emergent wetlands in these areas (Wetlands W and Y).
- The Fermi 3 switchyard was moved from the south side to the north side of Fermi Drive to facilitate the transmission corridor rerouting in conformance with Constraints 1, 7 and 8.

Construction parking, previously located in the field north of Fermi Drive, is moved into the farmer's field.

- The Fermi 2 access road was realigned to further minimize impacts to forested Wetland I in conformance with Constraint 1. The new alignment will follow Toll Road further north, just past Langton Road, prior to transferring onto the Fermi site access road.
- The meteorological tower was moved southeast of the Revision 1 location to eliminate any potential wetland impacts. When the Revision 1 location was identified, the understanding was that cutting trees in a wetland did not require a wetland permit. At the July 2010 meeting with the MDEQ and USACE, the staff clarified that cutting trees from forested wetland areas in association with the meteorological tower would require a permit for the conversion of wetland type. In conformance with Constraint 1, the Revision 2 site layout identified a location that was consistent with the recommendations of the meteorological tower siting study and did not require tree cutting in wetland areas.
- In Revision 2, construction boundaries were refined to eliminate unintended impacts in the Revision 1 site layout associated with construction along Quarry Lake Road and the Dredged Spoils Disposal Basin.
- Operations and maintenance dredging authorized under existing Fermi 2 permits was eliminated as an impact attributed to Fermi 3 construction (reduction of 7.32 acres of open water impacts). The incremental change in the extent of dredging within Lake Erie required to support Fermi 3 construction was included.

Preferred Site Layout

Refinements to the Revision 2 site layout were made during the development of the joint permit application. DTE 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, DTE believes equal or greater wetland impacts would have resulted from the previous access road alignment.

Summary of Project Alternatives and LEDPA Analysis

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

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

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

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

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

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

The design iterations reduced the potential wetland impacts from over 150 acres to approximately 40 acres. Overall impacts to wetlands were reduced in the Preferred Alternative. Open water impacts were also reduced in the Preferred Alternative. The Preferred Alternative also reduces the total impact to those Michigan Natural Communities that are considered rare and imperiled. These include Great Lakes marsh and southern swamp (southern hardwood swamp). All the permanent and temporary wetland impacts in the preferred 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.

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 1

Fermi 3 Aquatic Resource Mitigation Strategy and Final Design

MDEQ/USACE Joint Permit Application

PREPARED BY:

CONSERVATION CONNECTS

TETRA TECH

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Fermi 3 Aquatic Resource Mitigation Strategy and Final Design

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1.0 INTRODUCTION

DTE Electric Company has developed the following mitigation strategy to compensate for proposed impacts to aquatic resources associated with construction of Fermi 3 (Proposed Development) at the Enrico Fermi Atomic Power Plant (Fermi site). The Proposed Development site is located on the western shore of Lake Erie at Newport, Monroe County, Michigan on a 1,260-acre parcel owned and managed by DTE Electric Company (Figure 1).

A full description of the Proposed Development was presented in the associated Joint Permit Application [Michigan Department of Environmental Quality (MDEQ) File Number 10-58-0011-P, U.S. Army Corps of Engineers (USACE) File Number LRE-2008-00443-1-S11]. Proposed impacts include 35.55 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. Wetland types are classified broadly according to the U.S. Fish and Wildlife Service (USFWS) Cowardin classification and more specifically according to the Michigan Natural Community classification. Potential impacts include approximately 10.90 acres of palustrine emergent marsh (PEM; Great Lakes marsh), 3.15 acres of palustrine forested wetland (PFO; southern hardwood swamp), 3.91 acres of palustrine scrub shrub (PSS; southern shrub carr), 0.80 acres of PEM (coastal emergent wetland), 10.53 acres of PEM (other emergent wetland), 4.89 acres of PFO (other forested wetland) and 1.37 acres of PSS (other scrub shrub wetland).

To compensate for the wetland impacts, DTE Electric Company proposes to restore and enhance wetlands offsite in the coastal zone of Western Lake Erie. This mitigation strategy is based on data collected onsite, existing databases, the attributes of potentially impacted wetlands, watershed priorities, feedback from natural resource professionals and ongoing communication with the regulatory and conservation community.

2.0 MITIGATION GOALS AND OBJECTIVES

The principal goal of this mitigation strategy is to restore, enhance and protect wetland functions and services of equal or greater value than those impacted by construction of the Proposed Development (Figure 2). This goal will be achieved through offsite wetland mitigation activities within the coastal zone of Western Lake Erie. The specific objectives listed below were developed based on an in-depth evaluation of the natural resources at the impact site and the mitigation site, and the condition and conservation needs of the surrounding watershed (see Section 3.1). A watershed analysis allowed for integration of watershed attributes including history, current condition, land use trends, stressors, conservation priorities and other conservation efforts in the Ottawa-Stony watershed and the coastal zone of Western Lake Erie in Monroe County, Michigan (Section 3.1.9). Site level and landscape level perspectives were combined with feedback from regulatory and conservation agency staff to develop an integrated compensation strategy, consistent with guidance from the USACE contained in 33 CFR Part 332 – Compensatory Mitigation for Losses of Aquatic Resources, the Environmental Protection Agency guidance contained in 40 CFR Part 230 – Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, and the MDEQ Technical Guidance for Wetland Mitigation (Reference 1).

2.1 Mitigation Overview

Over 500 acres of wetlands are present at the Fermi site. Wetlands potentially impacted by the Proposed Development have been avoided and minimized to the maximum extent practicable. Aquatic resources on the Fermi Site were identified, evaluated and considered throughout the design process. The first consideration was to determine if wetland impacts could be avoided entirely. The second consideration was to minimize potential impacts in terms of both quantity and quality to the maximum extent possible. The third consideration was to develop a mitigation strategy that would compensate for all unavoidable impacts. Design iterations reduced potential wetland impacts from over 150 acres to approximately 35.55 acres of regulated wetlands requiring mitigation (21.4 acres of which will be restored post-construction). In addition to reducing total acreage of impacts, wetland location and quality were taken into consideration as discussed below and in Section 3.1.

To compensate for the loss of wetlands at the Proposed Development site, DTE Electric Company will restore and enhance wetlands of similar ecological type within the same coastal zone. For the purposes of this document, restoration implies returning an area to wetland that once was a functional wetland but currently is not because of past and ongoing modifications. Enhancement implies improving wetland functions in an existing, functional wetland. To achieve the mitigation goal stated above DTE Electric Company will restore and enhance wetlands offsite in the coastal zone of Western Lake Erie (Figure 3).

Restoration and enhancement activities emphasize heterogeneity in microtopography, vegetation and hydrology to maximize diversity and ecological resilience of wetland habitat. Wetland mitigation has also been designed to specifically replace the functions and values provided by wetlands with proposed impacts at the Fermi site. These functions and values include varying degrees of flood flow attenuation and storage, sediment, nutrient and toxicant retention, and fish and wildlife habitat. Section 3.1.8 details the wetland conditions, functions and values of impacted wetlands. The final mitigation design also targets functions and values of high priority to the surrounding watershed including food chain support, breeding and migration habitat for migratory birds, breeding and over-wintering habitat for amphibians, increased nutrient cycling, increased connectivity of habitat types, and water quality improvements for surface outflow to Lake Erie.

To quantify the expected functional replacement of wetlands, the Evaluation of Planned Wetlands (EPW) method (Reference 2) was used to describe and compare projected functions of the planned mitigation wetland to the functions of the impacted wetlands as assessed in the field at the Fermi site (Reference 37). The results of the function evaluation demonstrated that the planned mitigation wetland is designed to specifically replace lost functions of the impact wetlands. The EPW method utilized previous assessment data and resulted in functional capacity calculations and comparisons that provide a clear, numerical description of how the mitigation action compensates for unavoidable impacts to wetlands at the Fermi site. For each function evaluated (sediment stabilization, water quality, wildlife habitat, fish habitat, unique/heritage), the planned mitigation wetland matched or exceeded the functional capacity index of the impact wetlands. Weighted by area, the planned mitigation wetland is projected to significantly increase functional capacity over the impacted wetlands. The functional capacity of the planned mitigation wetland also exceeded the primary mitigation goal which was to replace lost wetland functions of impact wetlands at an average replacement ratio of 3:1.

This comprehensive mitigation strategy is unique in that it proposes mitigation that will ultimately restore and enhance significant coastal wetland resources with direct connection to lake hydrology along Lake Erie. DTE Electric Company proposes to implement these conservation measures to satisfy the site-specific compensation requirements for impacts to wetlands and address critical watershed needs and priorities as described below in Section 3.1.9. Mitigation activities will commence prior to or concurrent with wetland impacts at the Fermi site.

2.2 Mitigation Ratios

Ratio of wetland replacement is based on the community type and other attributes of a particular wetland and on guidance from regulatory agencies (References 3 through 6). A summary of wetland impacts and attributes is provided in Table 1. A more detailed description of the impacted wetlands is provided in Section 12 of the associated Joint Permit Application.

Wetland mitigation proposed here will replace wetland functions and values impacted on the Fermi site by restoring 111.17 acres of wetlands of similar type offsite in the same watershed (coastal zone) at an average spatial replacement ratio of approximately 3:1. Restoration will include approximately 75.19 acres of Great Lakes marsh (which includes 60.92 acres of emergent and 14.27 acres of open water), 25.62 acres of PFO (southern hardwood swamp), and 10.36 acres of PSS wetland. Table 2 provides the types and acreages of wetlands impacted, the required mitigation acreage and ratios, and the proposed acreage of mitigation. Figure 4 shows the derivation of the mitigation acreages. As described in Section 3.2.7, the majority of existing wetlands at the mitigation site are significantly impacted by ongoing agricultural activities including plowing and manipulation of site hydrology (draining). Existing wetlands W14 and W16 are severely degraded such that the public benefits provided by them are minimal to nonexistent. In accordance with the MDEQ Administrative Rules for Part 303, Mitigation, Rule 5 (5), the proposed reestablishment of wetland characteristics and functions in these areas is provided restoration credit and contributes toward the wetland compensation goals (Reference 6). In addition, the onsite restoration of 21.4 acres of the impacted wetlands post-construction and the enhancement of existing wetlands at the offsite mitigation area will provide added ecological value and benefits above the required compensatory mitigation.

In summary, DTE Electric Company recognizes the value of coastal wetland habitat along Lake Erie. Avoidance and minimization strategies were employed to minimize impacts to wetlands of high ecological value. Unavoidable impacts were restricted to low quality wetlands and wetland areas to the greatest extent possible. As described above, each acre of wetland impacted will be compensated for by the restoration of approximately 3 acres of high quality, intact wetland, enhancement of existing wetland habitat, and by post-construction restoration of approximately 60% of the impacted wetlands onsite. This mitigation strategy proposes compensation at the appropriate level to achieve replacement of lost functions and values, satisfy regulatory mitigation requirements and will also support DTE Electric Company's corporate environmental stewardship initiatives through continued collaboration and partnership with USFWS and other conservation entities.

3.0 BASELINE INFORMATION

3.1 Impact Area

3.1.1 Location and Ownership

The Proposed Development is at the Fermi site, Latitude: 41.961 and Longitude: -83.261 on the western shore of Lake Erie at Newport, Monroe County, Michigan on a 1,260-acre parcel owned and managed by DTE Electric Company (Figure 1). The impact site is within the coastal zone of Western Lake Erie and the northern portion of the Ottawa-Stony Watershed.

3.1.2 Land Use

Land use on the Fermi site is split mainly into developed areas and swamp or wetland areas. Most of the forested areas on the site are subject to flooding, and, therefore, are considered woody wetlands. The majority of the Fermi site that is not developed is included as part of the Detroit River International Wildlife Refuge (DRIWR), known as the Lagoona Beach Unit. The DRIWR encompasses a 656-acre portion of the Fermi site.

The 1260 acre Fermi site is composed of approximately 16.8% developed areas and 5.1% cropland. Terrestrial habitats account for 61% of the property. The remaining 17% are water bodies, e.g., Quarry Lakes and the main body of Lake Erie that lies east and north of the site. Figure 5 illustrates the extent and location of the habitats identified and the developed areas on the Fermi site. A summary of the acres of each habitat type on the site is provided below (Reference 7).

Habitat	Acres	Percent of Site
Coastal Emergent Wetland Open Water	35	2.8
Coastal Emergent Wetland Vegetated	238	18.9
Grassland: Right-of-Way	29	2.3
Grassland: Idle/Old Field/Planted	75	6.0
Grassland: Row Crop	64	5.1
Shrubland	113	9.0
Thicket	23	1.8
Forest: Coastal Shoreline	47	3.7
Forest: Lowland Hardwood	92	7.3
Forest: Woodlot	117	9.3
Developed Areas	212	16.8
Lakes, Ponds, Rivers	44	3.5
Lake Erie (main body)	171	13.6
Totals	1,260	100

3.1.3 Topography

Topography in the vicinity is fairly flat, with some lower elevation wetland areas along the Lake Erie shoreline, including the Fermi site (Figure 6). To prevent flooding of the developed areas, these areas were elevated during the construction of Fermi 2 using crushed limestone taken from the southwest portion of the Fermi site (Quarry Lakes). Site elevations range from the level of Lake Erie to approximately 25 feet above lake level on the western edge of the site (Reference 8). Topography on the Fermi site is relatively level in the undeveloped areas, with an elevation range of approximately 10 feet over the site according to U.S. Geological Service (USGS) topographic maps.

3.1.4 Soils

The overburden soils at the Fermi site consist of lacustrine deposits, glacial till, and rock fill (Figure 7). The rock fill is present only in the immediate area of the reactor; therefore, in the wetland areas, the overburden soils consist of lacustrine deposits and glacial till. The overburden is underlain by the Bass Islands Group dolomite bedrock. Groundwater is present in the overburden and the bedrock. The groundwater in the overburden is unconfined, while the Bass Islands Group aquifer is confined. The glacial till acts as an aquitard between the unconfined groundwater in the overburden and the confined groundwater in the Bass Islands Group aquifer.

The Monroe County Soil Survey (Reference 9) lists soil series Lenawee silty clay loam, ponded (Map Symbol 10) and Lenawee silty clay loam (21) as the primary mapped soil types on the Fermi site. Other soils found on the Fermi property include: urban land (63) on the eastern portion of the site where the existing Fermi 1 and Fermi 2 buildings and infrastructure are located; urban land-Lenawee complex (57) on the southern edge of the Fermi site; Aquents complex (31) and Blount loam (13A) on the northwestern side of the site; Pits-Aquents complex (33) in the southeast portion of the site; water (W) primarily in the southeast and northeast portions of the site; and beaches (27) along the eastern edge of the Fermi property adjacent to Lake Erie. Figure 7 depicts the soil series identified.

3.1.5 Vegetative Communities

Vegetative communities and wetland habitats were evaluated during detailed terrestrial surveys conducted from 2008 through 2010. In 2008 and 2009, spring, summer and fall pedestrian surveys of flora and fauna were conducted in all habitat types including wetlands on the Fermi site (Reference 10). In 2010 individual wetlands were revisited to determine Michigan Natural Community classification and wetland condition and quality. Several upland and wetland vegetative communities have been distinguished at the Fermi site as listed in Section 3.1.2 - Land Use. An in-depth discussion of vegetative communities for wetland covertypes is provided in Section 3.1.8 - Wetlands.

Requests for data concerning known or potential occurrences of endangered, threatened, candidate, or special concern plant species on the Fermi site were submitted to the USFWS and the Michigan Natural Features Inventory. In addition, a list of threatened, endangered, or candidate species for Monroe County, Michigan was obtained online from the Michigan Natural Features Inventory. The American lotus (*Nelumbo lutea*) is a state threatened plant species. However, large local populations of American lotus are scattered in areas of southern Michigan, reaching an apparent peak in Monroe County (Reference 11). In the south lagoon, and to a lesser extent in the north lagoon, are large stands of American lotus. American lotus is also abundant in the South Canal (Figure 8).

3.1.6 Wildlife

As discussed in Section 3.1.5 and Section 3.1.8, the Fermi site includes several ecological communities, some of which are considered rare and imperiled. The Fermi site was extensively surveyed for wildlife in 1973 and 1974 (Reference 12) with updates to species occurrences in 2000 and 2002 as part of a wildlife habitat planning effort. The most recent terrestrial and aquatic wildlife surveys were conducted during 2008 and 2009 (References 13 and 14) to confirm data from earlier surveys and to further characterize the wildlife species using the Fermi property. Secondarily, the surveys aided in determining if important species use the site and to guide decisions concerning avoiding, minimizing or compensating for impacts to these species from the proposed expansion. As such, wildlife surveys focused on portions of the Fermi site where construction and operation of Fermi 3 could potentially impact wildlife, whether from habitat destruction, conversion to other habitat types or through general habitat degradation.

The USFWS was consulted concerning the occurrence or potential occurrence of species on or in the vicinity of the Fermi property that are protected under the Endangered Species Act. The USFWS stated that the project occurs within the potential range of some federally listed species, but that the USFWS had no records of occurrence on the Fermi site or in the vicinity, nor was there any designated critical habitat in the area. The USFWS further stated that because of the types of habitat present at Fermi, no further action is required under Endangered Species Act. The USFWS did state that if more than 6 months pass before the project is initiated, then the USFWS should again be contacted to ensure there have been no regulatory changes. DTE Electric Company will continue consultations with the USFWS per their recommendations.

The MDNR and the Michigan Natural Features Inventory (Reference 15) was consulted regarding the presence of known or potential occurrences of state-listed threatened or endangered species on the Fermi site. The only species in the USACE/MDEQ-regulated project areas is the Eastern fox snake (*Pantherophis gloydi*).

Based upon the review of the data collected in the terrestrial and aquatic surveys there were no occurrences of federally and/or state listed threatened or endangered species. Based on avian surveys conducted during 2006-2008, the bald eagle (*Haliaeetus leucocephalus*) is the only migratory species of note that has been observed on the Fermi site. None of the previously observed bald eagle nests were observed on the Fermi site as of January 2011. During 2008, while wetland surveys were being conducted, two fox snakes were observed on two separate occasions. In addition, fifteen separate sightings were made by DTE Electric Company employees between 1990 and 2007 with 1-6 snakes identified on each occasion. In addition to minimizing wetland impacts, the fox snake's primary habitat, DTE Electric Company has developed a mitigation plan which will be implemented to minimize the project's impact to the species.

3.1.7 Site Hydrology

Currently the hydrology of the area is influenced by the physical processes of Lake Erie. Lake Erie has a perfect seiche fetch. With a predominant southwest wind, specific locations on Lake Erie are susceptible to great fluctuations in water levels due to sustained winds pushing the lake water to the east, and then, as the winds subside, the water levelizes across the lake. This creates large waterless expanses followed quickly by water inundating creek and river mouths, resulting in a bathtub like "sloshing" effect. This creates unique opportunities for both plants and wildlife. Other local hydrological conditions are dictated by the Swan Creek.

Water is seasonally to permanently present throughout the majority of the Fermi site. Average annual precipitation is approximately 35 inches and generally well distributed throughout the year. The site receives direct, surface runoff from a 2,440 acre drainage basin with cropland, wetland and forest as the primary cover types. Surface water is received from Lake Erie during periods of high water and storm events.

The hydrology of the Fermi palustrine emergent (PEM) wetland areas is controlled almost entirely by the elevation of surface water in Swan Creek and Lake Erie. The surface water in Swan Creek and Lake Erie is directly connected to the PEM areas on the Fermi site. Five sets of large-diameter culverts connect the majority of the inland PEM areas west of Doxy Road with the PEM areas that are directly connected with Swan Creek and Lake Erie. These culverts allow free flow of surface water throughout the interconnected PEM areas. Therefore, the surface water level in the majority of the PEM areas is directly controlled by the surface water elevation of Lake Erie and Swan Creek, rather than groundwater levels. Figure 9 shows the culvert locations and movement of surface water on the Fermi site.

Palustrine forested (PFO) and palustrine scrub-shrub (PSS) areas on the Fermi site are, for the most part, contiguous with the PEM areas. Therefore, these areas are hydraulically connected with the PEM wetlands, so the groundwater level in these areas is influenced by the surface water levels in Swan Creek and Lake Erie. With the exception of a few wetlands separated by berms or roads, the majority of wetland communities on the Fermi property are hydrologically connected and thus considered one wetland system.

3.1.8 Wetlands

DTE Electric Company conducted assessments of wetland resources on 1,106 acres of undeveloped lands at the Proposed Development site between 2008 (Reference 16) and 2011. The purpose of these assessments is to identify and integrate natural resource considerations throughout the design and implementation phases of the Proposed Development and to guide mitigation measures including avoidance, minimization and the development of a high quality mitigation strategy to compensate for unavoidable impacts. The assessments are based on existing data and onsite data collection. Existing data include topographic maps, federal and state wetland maps, soil maps, aerial photos, land use data, and ecological survey data from previous studies. Onsite assessment data were collected in each year to delineate wetland boundaries, evaluate wetland functions and services, determine natural community types and assess wetland condition and quality. A jurisdictional determination was completed and minor edits to wetland boundaries were made in 2011 (Figure 10). Watershed assessments of the northern section of the Ottawa-Stony Creek watershed and the coastal zone of Western Lake Erie in Monroe County were completed to further inform development strategies and conservation priorities at the Proposed Development site. This section provides an overview of wetlands with potential impacts associated with the Proposed Development. Section 3.1.9 provides a summary of the watershed assessments.

A functional assessment based on the USACE New England Highway Method (Reference 17) was originally conducted during the 2008 field delineation (Reference 16). In 2010, field observations of wetlands with proposed impacts included a refined assessment of vegetation communities and other wetland characteristics to further describe the condition, functions and services of impact areas. Data collection and analysis methods were based on the Michigan Rapid Assessment Method for Wetlands

(MiRAM, Reference 18) and the Delaware Rapid Assessment Procedure (Reference 19) and included metrics such as wetland size and connectivity, adjacent area use, hydrologic alterations and soil disturbance, habitat structure, and presence of invasive species. The results of the 2008/2009 terrestrial surveys, 2010 field visits described above, and feedback from regulatory staff were used to further evaluate individual wetlands potentially impacted by the Proposed Development and to define appropriate compensation ratios.

Over 500 acres of wetland were delineated at the Proposed Development site. The majority of wetlands at the Fermi site were ranked low to medium quality based on factors including hydrological disturbance, presence of invasive species, adjacent land use, fragmentation, human activity, deforestation, etc. There were several wetlands ranked high quality based on connectivity, presence of native, diverse vegetation communities, and wildlife habitat potential. Several other wetlands were given high ecological value based solely on their rare and imperiled status in Michigan even though condition ratings were low (MiRAM guidance, see below). Depending on condition, the principal functions and services provided by wetlands on the Fermi site include flood flow alteration, sediment/toxicant retention, nutrient removal, and fish and wildlife habitat.

Chapter 324, Section 303.01(t) of the Michigan Natural Resources and Environmental Protection Act identifies Michigan Natural Communities that are considered rare and imperiled. These include Great Lakes marsh and southern swamp (southern hardwood swamp). At the Fermi site, these communities are found relatively intact in Wetland C and the South Canal (Great Lakes marsh) and I and F (southern swamp, Figure 10). Impacts to these wetlands will require a 5:1 replacement ratio. Wetland E is a combination of emergent marsh/wet meadow and southern shrub carr with direct surface water connection to Lake Erie requiring a 2:1 replacement ratio (coastal wetland ratio). The other wetlands potentially impacted by Fermi 3 activities do not readily fall into a natural community category due to variables such as fragmentation and disturbance. MDEQ staff indicated that condition and quality are relevant factors in any mitigation proposed for areas that are fragmented with a high level of disturbance (not just invasive species), limited functions and that do not match a natural community description. These "other" wetland areas would not require a 5:1 mitigation ratio. 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 and a 2:1 mitigation ratio applies. The "other" wetlands, which include B, D, H, U, W, Y, AA, II, JJ, and KK, would require a 2:1 ratio if they are considered coastal and a 1.5:1 ratio if they are not.

Wetlands with proposed impacts and their associated covertypes are presented in Table 1. Mitigation is proposed for approximately 35.55 acres of potential impacts to regulated wetlands due to the Proposed Development. These potential impacts include approximately 10.90 acres of Great Lakes marsh, 3.15 acres of southern hardwood swamp, 3.91 acres of southern shrub carr, 0.80 acres of coastal emergent wetland, 10.53 acres of other emergent wetland, 4.89 acres of other forested wetland and 1.37 acres of other scrub shrub wetland.

3.1.9 Watershed Analysis

As part of the natural resource assessment effort, DTE Electric Company conducted a watershed analysis to provide a broader geographic context to guide land use decisions at the Fermi site. The purpose of the watershed assessment is to provide an analysis of land use features of the inland and coastal watersheds that encompass the Fermi site and evaluate the connection between natural resources on the Fermi site and site-specific and watershed conservation priorities. The watershed assessment also provides a landscape level perspective useful in consideration of any land use changes, proposed impacts and proposed compensation strategies.

The Fermi site is located in the northern portion of the Ottawa-Stony watershed (OSW, Figure 11), USGS Cataloging Unit and Hydrologic Unit Code (HUC): 04100001 and the coastal zone of Western Lake Erie in Monroe County (CZM, Figure 12). The OSW drains areas to the north and west of Lake Erie and flows directly into the lake. The northern portion of the OSW has a drainage basin of approximately 182,733 acres and is dominated by agriculture (55%). Approximately 25% of the OSW land area is in natural cover and approximately 20% is developed (Figure 11). The CZM encompasses approximately 18,697 acres with an almost even interspersion of natural lands (38%), developed lands (38%) and agriculture (24%) (Figure 12). Protected lands for conservation and recreation make up approximately 4% of the OSW and 36% of the CZM.

Wetlands comprise approximately 6% of the OSW and 43% of the CZM. The OSW is dominated by vegetated wetlands. Forested wetlands comprise the majority of vegetated wetlands (60%) with the remainder being emergent (24%) and shrub/scrub (15%). The CZM has equal proportions of vegetated and non-vegetated (open water) wetlands. Emergent wetlands are the dominant type comprising 71% of the vegetated wetlands with the remaining wetlands being forested (17%) and scrub shrub (11%).

An approximation of historic wetlands for the OSW and the CZM was developed based on soils classified as >80% hydric (soils >80% of a soil map unit classified as hydric by the Natural Resources Conservation Service) and current mapped wetlands. Former wetlands were defined as areas that are mapped hydric soils (>80% of map unit) but not mapped as wetlands based on the latest wetland maps. The topography and landscape position of the OSW and CZM are ideal for the development of wetlands because the land is very flat and in close proximity to the coast of Lake Erie. Prior to European colonization, approximately 45% of the land area of the OSW was wetland (Figure 13). Based on the most recent wetland maps 6% of the OSW area is currently wetland which constitutes an 86% loss in the OSW. Historically, 77% of the land area of the CZM was wetland (Figure 14). Based on the most recent wetland maps, 43% of the CZM is wetland which constitutes a 44% loss in the CZM.

Watershed Conservation Priorities

Based on natural resource assessments conducted at the Fermi site and within the OSW and CZM, the following wetland-based conservation priorities were identified for this project:

1. Protect and enhance existing high quality wetlands especially those that are directly connected to Lake Erie in the CZM and/or part of a larger wetland complex.
2. Improve a network of natural land use in the CZM and OSW by increasing the amount of large blocks (>50 acres) of natural lands and buffered streams to support ecosystem functions and services and establish corridors to connect large blocks.
3. Restore and enhance wetlands in the CZM to provide wildlife habitat and protect water quality in Lake Erie.
4. Restore wetlands and stream buffers in the OSW to re-establish large wetland complexes and riparian connections.

Because of the Fermi site's location in the lowest reaches of the OSW (in the CZM), any activity onsite will have the greatest local effects (either positive or negative) on coastal resources and Lake Erie itself. Based on the results of the watershed assessment, planned activities at Fermi have strategically avoided and minimized impacts to natural resources of high ecological value to the greatest extent possible. For unavoidable impacts, this mitigation strategy has been designed to address any loss of coastal habitat and the watershed conservation priorities listed above. Specifically, the proposed mitigation will restore more than 100 acres of coastal wetland including Great Lakes marsh and southern hardwood swamp and reconnect this large block of natural land directly to Lake Erie via a restored and buffered stream channel. In addition, existing wetlands will be enhanced and protected at the offsite mitigation area to decrease invasive species, increase vegetation diversity and provide enhanced habitat for wildlife. Approximately 21.4 acres of impacted wetlands will be restored post-construction on the Fermi site. On- and offsite mitigation actions are in close proximity to existing conservation efforts to help establish connectivity and habitat corridors.

3.2 Mitigation Area

The following description of the mitigation area is based on field data and review of existing, available data including aerial photography, soil survey maps, USGS topographic maps, state and federal wetland mapping, Monroe County Drain Commissioner records, and as-built drawings for I-75. Field surveys were conducted for topography, soils, hydrology, and wetland communities between 2010 and 2012. Drawing C101 (Appendix C) provides a plan view of existing conditions including site boundary, surveyed topography, existing easements, and MDEQ and USACE Ordinary High Water Marks (OHWM).

3.2.1 Location and Ownership

The proposed offsite mitigation area, referred to as the Monroe site, is approximately 210 acres in size and 7.25 miles from the Fermi site on DTE Electric Company's Monroe Plant, east of Interstate 75, north of La Plaisance Creek, immediately adjacent to Lake Erie (La Plaisance Bay), Town of Monroe, Monroe County, Michigan, in the Ottawa-Stony Watershed (HUC: 04100001, Figure 1). The mitigation site is owned and managed by DTE Electric Company.

3.2.2 Land Use

The proposed mitigation targets a 173-acre agricultural field at the Monroe site (Figures 15 and 16). This portion of the site is currently farmed and includes small areas of remnant wetlands and dikes which separate the site from Lake Erie. Excess water is pumped from the fields to accommodate farming. Adjacent areas include a 36-acre conservation area with a wetland restored approximately 10 years ago and associated grassland buffer. Adjacent land uses also include active agriculture, early successional old field and shrub habitat, agricultural ditches, small forest patches, existing wetland habitat, industrial, residential and other developed areas, access roads, highways and Lake Erie. Historical maps and aerial photos indicate the land has been in agricultural use with no structures present.

3.2.3 Topography

The topography of the site is very flat with an average elevation of approximately 572 ft. Drawing C101 (Appendix C) provides surveyed elevations including OHWMs as designated by both MDEQ and USACE. The lowest elevations in existing ditches and swales are below 570 feet with the highest elevation located on the top of a small rise in the northwestern corner of the site at approximately 589 feet. The elevation of the dike separating the site from Lake Erie has an average elevation of approximately 578 feet. Average lake levels of Lake Erie are 571.5 feet with seasonal fluctuations and periodic seiches causing significantly higher and lower elevations.

3.2.4 Soils

The Monroe County Soil Survey soil mapping for the site shows the presence of two soil types within the site boundaries (Figure 17). These soil types include Warners silt loam and Lenawee silty clay loam. The Warners series consists of very deep, very poorly drained soils on nearly level floodplains and seepage areas of hillsides. The Lenawee series consists of very deep, very poorly drained soils in lacustrine deposits. These soils are on lake plains and in depressional areas on moraines, outwash plains, and glacial drainageways. Both mapped soils are hydric and suitable for wetland restoration/creation.

3.2.5 Vegetative/Wildlife Communities

Vegetative communities were observed at the mitigation site primarily during wetland delineation field visits. The dominant covertype is active agriculture (Figures 15 and 16). Other covertypes include a mix of wetlands such as emergent marsh, floodplain forest, southern shrub-carr and wet meadow, and uplands such as old field, successional shrub and forest. The MDNR and the Michigan Natural Features Inventory (Reference 15) was consulted regarding the presence of known or potential occurrences of state-listed threatened or endangered species on the mitigation site. Based on review of known or potential occurrences and observations during field data collection, there are no occurrences of federally and/or state listed threatened or endangered species at the site. The shallow waters of La Plaisance Bay, immediately adjacent to the site, support a population of American Lotus. Restoration of the site will likely provide additional habitat for this state-threatened species.

3.2.6 Site Hydrology

The mitigation site receives runoff from the 588-acre Davis Drain watershed. The Davis Drain, under the jurisdiction of the Monroe County Drain Commissioner, is located along the southwest corner of the site. The drain carries stormwater runoff from Interstate 75 and upstream property. Water is seasonally to permanently present in ditches, swales and small remnant wetlands on the project site. Average annual precipitation is 31.5 inches and generally well distributed throughout the year. The site receives direct runoff from a 250-acre drainage basin with cropland, wetland and forest as the primary covertypes. The hydrology of the site is influenced by extensive tile and ditching for the purpose of draining surface water to facilitate farming. Figure 18 illustrates the location of ditches, culverts, and direction of flow for surface water drainage. Excess water is pumped from the fields at the northeast corner of the site into the adjacent ash basin. There is currently no direct hydrological connection between the mitigation site and Lake Erie. Depth to groundwater has not been determined however soil borings up to 20 inches revealed a compact clay lens and no groundwater penetration: the mitigation site is primarily surface-water driven.

A hydrological study was conducted for the mitigation site and the drainage basin (Appendix A). A water budget was developed to support mitigation design. Two models were developed to estimate the average annual volume of water that could enter the mitigation site from the drainage basin and from the planned mitigation wetland itself. Models include estimates of peak flows and average rainfall volume of the Davis Drain. Water budget calculations for the proposed wetland mitigation plan demonstrate the sustainability of the wetland design. See Appendix A for details.

3.2.7 Existing Wetlands

The mitigation site is adjacent to and includes existing wetlands, some of which are mapped on USFWS National Wetland Inventory (NWI) maps as PFO, PSS and PEM wetland types (Figure 19). Wetland boundaries within the mitigation site were delineated in 2011 (Appendix B). A total of 13 wetlands areas (Figure 20) were identified on the site totaling 74.52 acres. These wetlands are distributed throughout the site with the greatest concentration adjacent to site drainage ditches and the near shore areas adjacent to the dike separating the site from Lake Erie. The majority of wetlands identified at the site are significantly impacted by ongoing agricultural activities including plowing and manipulation of site hydrology (draining). Low diversity and the presence of invasive species such as reed canary grass (*Phalaris arundinacea*) and common reed (*Phragmites australis*) are typical of many of these existing wetlands. A functional assessment and conditions assessment were conducted during wetland delineations using the same methods that were used at the impact site and described in Section 3.1.8. Eleven of the 13 wetlands (Wetlands 1-5, 7, 11-14, 16) were ranked low to medium quality based on factors including hydrological disturbance, presence of invasive species, adjacent land use, fragmentation, human activity (farming), deforestation and degree of departure from their original functions and values. Two wetlands (Wetlands 8 and 10) were assigned high ecological value based solely on their rare and imperiled status in Michigan even though condition ratings were low (MiRAM guidance). A description of individual wetlands is provided in Appendix B.

4.0 MITIGATION SITE SELECTION FACTORS

An extensive exploration of potential mitigation projects spanning several years both on- and offsite within the Ottawa-Stony Watershed and coastal zone of Western Lake Erie has been conducted. The offsite mitigation project proposed here was determined to be the best based on site selection factors including:

- location, size and attributes of existing habitat;
- quality of mitigation options and likelihood of success based on both ecological and economic factors;
- land ownership and availability;
- adjacent land use;
- value and proximity to existing conservation plans, projects and watershed priorities;
- connectivity of habitat types;
- possible benefits to threatened and endangered species; and
- stewardship capabilities.

5.0 MITIGATION WORK PLAN

Implementation of the mitigation plan will commence prior to or concurrent with wetland impacts at the Fermi site and once all necessary permits are in place. A plan set has been developed detailing the final design for the mitigation site including an overall site plan, grading plan and details, planting plan, and erosion and sediment control plan (Appendix C). Qualified contractors will be secured to construct mitigation elements and to provide professional oversight and management of project implementation. Measures as detailed in the invasive species management plan in Section 9.1 will be utilized to prevent the establishment of invasive species within the mitigation sites. All equipment brought to the site will be thoroughly cleaned of all soil before entry into any of the mitigation zones. All soil materials and amendments brought to the mitigation site from offsite locations will require pre-approval by the site inspector to ensure that these materials are not sources of potential invasive species contamination.

Mitigation design emphasizes heterogeneity in vegetation and hydrology to maximize ecological diversity and functional resilience of the wetland. Wetland restoration and enhancement activities are designed to emphasize techniques that restore functions such as flood flow attenuation and storage, sediment/toxicant retention, nutrient removal, food chain support, breeding and migration habitat for migratory birds, breeding and over-wintering habitat for amphibians, increased nutrient cycling, increased connectivity of coastal habitat types, and water quality improvements for surface outflow. A natural buffer will be established or existing buffers maintained to protect mitigation wetlands. This final mitigation design is based on a full site evaluation and has been developed in cooperation with existing conservation focus areas (e.g., Detroit River International Wildlife Refuge), watershed plans and priorities, and input from local, state and federal conservation agencies and organizations.

Wetland restoration and enhancement efforts will replace and repair habitat modified by agricultural practices and hydrological disturbance within sensitive coastal areas. Mitigation actions will increase the abundance, integrity and quality of aquatic habitat types that are currently listed as rare and imperiled in the state of Michigan. The mitigation actions described below will restore wetlands in the 173-acre agricultural area as illustrated in Figure 3 and detailed in Appendix C. The mitigation actions will include forested, scrub shrub, and emergent wetland (including open water and wet meadow wetland types) with direct hydrological connection to Lake Erie. A specific objective of the offsite mitigation area is to reestablish a direct connection between the current agricultural area and Lake Erie and to redirect runoff from Interstate 75 into the restored wetland. These actions will reconnect a relatively large coastal floodplain area and will allow water to be filtered before it reaches Lake Erie.

5.1 Construction and Planned Hydrology

Construction activities in the agricultural area will include clearing, excavating and grading the proposed mitigation area to target elevations conducive for development of Great Lakes marsh including open water and wet meadow zonation, southern hardwood swamp, and southern shrub-carr wetlands. The construction sequence is described in Section 5.3. The mitigation area will be restored to two separate but hydrologically connected wetland units. The eastern unit will be directly connected to Lake Erie via a 60-foot cut in the existing dike to an elevation of 569 feet. Water levels in the eastern unit will fluctuate with Lake Erie water levels. A meandering waterway with a bottom channel width of 60 feet and 10:1 side slopes will be excavated to the west of the lake connection to allow for a permanent open water marsh zone in the emergent marsh area, providing habitat for aquatic species. Several pools extending to an elevation of 567.5 feet connected by a narrow channel of similar elevation will be created within the meandering waterway in the eastern unit. Two of these pools nearest Lake Erie will be dug to approximately 563.5 feet to accommodate fish species overwinter and during times of extended low water. Grading of soils adjacent to this waterway including the development of a rolling, pit and mound topography, will provide for a variety of water levels and habitat types within the eastern unit.

The western unit will be connected to Lake Erie where the open water channel of the eastern unit meets the spillway and the water control structure controlling the western unit. The western unit is designed to have a more stable hydroperiod than the eastern unit. To achieve the desired wetland communities in the western unit, a low berm will be constructed between the eastern and western restoration units. This berm will be constructed to a top elevation of 575 feet with a 12-foot top width and 4:1 side slopes with armored sides to protect against erosion and muskrat activity. A spillway and water control structure will be set to a full service elevation of 574 feet. The water control structure will provide water level management in increments of 6 inches from 574 feet to a complete drawdown. The berm, spillway and structure have been sized according to the drainage basin and hydrologic models to ensure adequate drainage capacity and successful restoration of proposed habitat types and acreages in the western unit. Additional hydrology will be introduced into the wetland by searching for and breaking drainage tile and plugging existing ditches. The western unit will be connected to the Davis Drain by allowing a small base flow to continue to Lake Erie and diverting a larger storm overflow to the wetland. DTE Electric Company consulted the Monroe County Drain Commissioner and obtained their approval for the proposed plans for the connection to the Davis Drain (Reference 38). This diversion will be accomplished by installing a 36-inch diameter culvert covered with soil in the Davis Drain. A cut in the Davis Drain bank upstream of this low flow culvert will be made to allow overflow to the wetland. The overflow weir will include three 12-inch culverts at the same invert elevation as the Davis Drain to divert base flow to the wetland. These culverts will include backflow valves and sluice gates to ensure the impounded wetland water will not reverse flow back into the drain (Drawing C504 in Appendix C). This overflow will increase water flow into the wetland, slow floodwater, reduce sediment loading and filter toxicants from runoff water before it reaches Lake Erie. A 3-sided culvert will allow the flow from the Davis Drain to pass under the gravel road separating the conservation area and the mitigation site (Drawing C503 in Appendix C).

Graded wetland basins (with the exception of open water channels) will integrate pit and mound topography and will be left rough to establish additional microtopography essential for creating niches for a variety of wetland plants. The edges of the excavated wetlands and transitions between wetland types will be irregular in shape with variable, shallow slopes.

5.2 Planned Vegetation and Habitat Features

5.2.1 Planned Vegetation

Recent surveys of the mitigation site have identified the presence of several invasive species, including common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), flowering rush (*Butomus umbellatus*), and Canada thistle (*Cirsium arvense*). Purple loosestrife (*Lythrum salicaria*) has not been observed but is likely to occur in southeast Michigan in the habitat types present on the Monroe site. These species can be problematic if they are allowed to become established within mitigation areas. To ensure proper development of target vegetative communities, mechanical and chemical treatment of existing invasive species at the mitigation area will be conducted at least once before construction activities commence. Additional applications will be conducted if necessary. Response from native vegetation will be facilitated by removing dead, chemically treated vegetation through mechanical removal after each treatment. Section 9.1 below provides a detailed description of the Invasive Species Management Plan for the mitigation site pre- and post-construction.

The mitigation area will be planted and seeded to establish native plant communities. Planting and seeding will also stabilize soil structure, provide biological diversity, restore ecosystem functionality, and protect against invasion by exotic and invasive herbaceous species. The constructed berm and all other upland construction areas will be seeded with a mix to prevent erosion, stabilize excavated areas and establish an herbaceous community typical of the region. Forested, shrub and emergent wetlands will be planted and seeded to closely resemble vegetation communities typical of southern hardwood swamps, southern shrub carr and Great Lakes marsh prior to invasion of common reed and other invasive and exotic species. These vegetation communities are described in Natural Communities of Michigan: Classification and Description (Reference 20).

A wetland seed bank is evident at the mitigation site and is expected to contribute to the development of target wetland communities. However, the primary method to establish target communities will be through direct seeding and planting. Seed and plant material will be from a recognized native seed and plant nursery and native to Michigan. A limited amount of hand collection of seed (up to 5% of seed requirement) may be conducted targeting key species from reference wetland locations or species that are not currently available from native nurseries. The genetic origin of all seed and plants will be from within 150 miles of the mitigation site to the maximum extent possible. A genetic origin within the eight-state Great Lakes region which includes Illinois, Indiana, Michigan, Ohio, Pennsylvania, Minnesota, New York and Wisconsin is also acceptable for species not commercially available with a genetic origin within a 150-mile radius. Wild-type nursery stock of an age and condition suitable for transplantation will be used. Seed will be applied in a manner and at a rate that will allow effective establishment of the wetland pool area and wetland margins. Seed distribution for adjacent wetland community types will be overlapped on slopes directly influenced by fluctuating lake levels to create a transitional zone that can respond to variable water regimes. These areas are typically dynamic in terms of plant and wildlife assemblages and exhibit high diversity. An overlapping seed distribution will support the development and responsiveness of these transition zones. Plant species are selected, and planting techniques will be applied, to emphasize both horizontal and vertical diversity of vegetation community structure. This aspect of the planting plan is supported by the grading plan that integrates microtopography including pits and mounds into all wetland community types.

Targeted species and associated details are provided by vegetation community type (Tables 3 through 7 and Drawing L101 in Appendix C). The Michigan Natural Features Inventory (Reference 20) for all target community types was used to create species lists. The Great Lakes marsh - emergent wetland was further refined to closely represent the common species found in this ecotype in Monroe County, MI (Reference 21). Plant species are chosen for their proven hardiness in the area, their ability to out-compete invasive plant species, wildlife value, availability, and their overall suitability to develop diverse, native communities. Individual plant species may be substituted with a native, ecologically similar species if the listed species are not available by the contracted seed/plant distributor at the time of implementation. Species in the planting plan tables are currently available from nurseries that are members of the Michigan Native Plant Producers Association (http://www.mnppa.org/members.html). Sources for plant materials include:

- The Native Plant Nursery LLC: http://www.nativeplant.com/
- Wildtype Plants- Mason, MI: http://www.wildtypeplants.com/
- Hidden Savanna Nursery : http://www.hiddensavanna.com
- Other MI native plant nurseries at: http://castle.eiu.edu/n_plants/michigan.htm

Seed will be purchased in quantities to support the overlapping seed distribution described above. Seed and plant quantities may be adjusted based on availability.

5.2.2 Habitat Structures

Habitat structures will be placed in all areas of the mitigation wetland with a grade of 570 feet or higher prior to seeding and planting. Habitat structures will be placed at a minimum of six per acre as required by MDEQ mitigation guidance (Reference 1). Habitat structures include whole trees, logs, snags, tree stumps and sand mounds and are described in greater detail in Section 7, Item 5. Additional habitat structures in the form of snake and turtle hibernacula, basking and nesting structures may also be placed in appropriate locations on the mitigation site as directed by herpetological experts working with DTE Electric Company on stewardship opportunities that will maximize the ecological value of the mitigation site beyond requirements for wetland compensation. These measures would augment the value of the proposed communities. They would not be in conflict with mitigation goals, objectives and performance standards.

5.3 Construction Sequence

The grading, planting, and introduction of hydrology at the offsite mitigation area will be constructed prior to or concurrent with initiating any Fermi 3 permitted activities. Construction is planned over a 4-year period to accommodate site preparation primarily in regards to eradicating existing invasive species and establishing planned hydrology. Invasive species control techniques will be applied in years 1 and 2 and each year thereafter, if necessary, as discussed in the Invasive Species Management Plan in Section 9.1. Farming is expected to continue until year 2 and assist in managing invasive plant species in the proposed mitigation area. The majority of the earthwork will be completed in year 2 along with seeding of all wetland community types and disturbed areas. Once seeded vegetation has been established in year 3, water levels on the west side of the wetland will be held to full service elevations and on the east side of the wetland the cut will be constructed to allow direct hydrological connection to Lake Erie. Water levels will be monitored throughout the rest of year 3 and into year 4. In year 4, plugs and container tree and shrub species will be installed. A summary of construction activities for each construction year and an approximate timeline is provided below.

- Year 1 - Initiate site preparation. Existing wetlands at the offsite mitigation area will be surveyed and treated with appropriate measures (manual removal and herbicide) to eradicate invasive plant species as described in the Invasive Species Management Plan in Section 9.1.

- Year 2 - Continue treatment of invasive plant species. Construction activities in the offsite mitigation area will include clearing, excavating and grading to elevations conducive for development of planned wetland communities. The berm separating the eastern and western units will be constructed and the water control structure and spillway will be installed along with the structure to allow flow from the Davis Drain onto the mitigation area. Habitat structures will be placed prior to seeding. Construction areas will be seeded with a mix to prevent erosion, stabilize excavated areas and establish an herbaceous community typical of the region.

Preconstruction meeting and site visit	June
Mobilization - install soil erosion control measures	June
Clearing and grubbing	June
Excavation and grading, construct berm, install water control structures	July - September
Install habitat structures	October
Final grading and seeding	October - November

- Year 3 – Manage western unit at full service water elevation. Excavate channel to connect the eastern unit of the mitigation site with Lake Erie.

Pre-Construction Meeting and Site Visit	June
Mobilization – install soil erosion control measures	June
Construct coffer dam	June
Excavate channel, install rip rap	July – August
Remove coffer dam	September
Remove spoils/Seed disturbed areas	October – November
Monitor water levels	November - May

- Year 4 – Complete final planting of plugs, tree/shrub potted materials after establishment of grade and hydrology. An assessment of water levels may require minor adjustments in grading to ensure proper hydroperiods are established for target wetland communities or minor adjustments in acreage goals for wetland community types.

Pre-construction meeting and site visit	June
Continue to monitor water levels	June - August
Adjust grade or hydrology, as required	August
Planting of potted nursery stock	October/May - June

6.0 PROTECTION

Ownership of on- and offsite mitigation areas will remain with DTE Electric Company. The restored and enhanced mitigation wetlands will be permanently protected as directed by regulatory requirements to preserve the wetland functions restored. DTE Electric Company will execute a conservation easement over the mitigation area in a form identical to the conservation easement model on the MDEQ website at www.michigan.gov/deqwetlands. The original executed conservation easement and associated exhibits will be sent to the MDEQ for review and recording within 6 months of the Decision to Construct Fermi 3 and prior to commencing any permitted work within regulated areas. The boundary of the conservation easement is shown on Figure 21. The conservation easement boundary will be demarcated by the placement of signs along the perimeter. The signs will be placed at an adequate frequency, visibility, and height for viewing, made of a suitable material to withstand climatic conditions, and will be replaced as needed. The signs will include the following language:

WETLAND CONSERVATION EASEMENT

NO CONSTRUCTION OR PLACEMENT OF STRUCTURES ALLOWED.

NO MOWING, CUTTING, FILLING, DREDGING OR APPLICATION OF CHEMICALS ALLOWED.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

7.0 PERFORMANCE STANDARDS

The following performance standards will be used to evaluate the mitigation wetland:

1. Construction has been completed in accordance with the MDEQ's approved plans and specifications included in the permit and mitigation plan.
2. The mitigation wetland is characterized by the presence of water at a frequency and duration sufficient to support a predominance of wetland vegetation and the wetland types specified at the end of the monitoring period.

3. A layer of high-quality topsoil, from the A horizon of an organic or loamy surface texture soil, is placed (or exists) over the entire wetland mitigation area at a minimum thickness of 6 inches.

4. The mitigation wetland shall be free of oil, grease, debris, and all other contaminants.

5. A minimum of six (6) habitat structures, consisting of at least three (3) types, have been placed per acre of mitigation wetland. At least 50 percent of each structure shall extend above the normal water level. This standard shall apply to all areas of the mitigation wetland with a grade of 570 feet or higher. The types of acceptable wildlife habitat structures are:

   a. Tree stumps laid horizontally within the wetland area. Acceptable stumps shall be a minimum of 6 feet long (log and root ball combined) and 12 inches in diameter.

   b. Logs laid horizontally within the wetland area. Acceptable logs shall be a minimum of 10 feet long and 6 inches in diameter.

   c. Whole trees laid horizontally within the wetland area. Acceptable whole trees shall have all of their fine structure left intact (i.e., not trimmed down to major branches for installation), be a minimum of 20 feet long (tree and root ball), and a minimum of 12 inches in diameter at breast height (DBH).

   d. Snags which include whole trees left standing that are dead or dying, or live trees that will be flooded and die, or whole trees installed upright into the wetland. A variety of tree species should be used for the creation of snag habitat. Acceptable snags shall be a minimum of 20 feet tall (above the ground surface) and a minimum of 12 inches DBH. Snags should be grouped together to provide mutual functional support as nesting, feeding, and perching sites.

   e. Sand mounds at least 18 inches in depth and placed so that they are surrounded by a minimum of 30 feet of water measuring at least 18 inches in depth. The sand mound shall have at least a 200 square foot area that is 18 inches above the projected high water level and oriented to receive maximum sunlight.

6. At the end of the monitoring period the mean percent cover of native wetland species west of the berm and of wetland species east of the berm in the herbaceous layer is not less than:

   a. 60 percent for emergent wetland.

   b. 80 percent for scrub-shrub wetland.

   c. 80 percent for wet meadow wetland.

   d. 80 percent for forested wetland.

   The total percent cover of wetland species in each plot shall be averaged for plots taken in the same wetland type to obtain a mean percent cover value for each wetland type. Plots within identified extensive open water and submergent areas, bare soil areas, and areas without a predominance of wetland vegetation shall not be included in this average. Wetland species refers to species listed as facultative and wetter (FAC, FAC+, FACW-, FACW, FACW+, OBL) on the USFWS "National List of Plant Species That Occur in Wetlands" for Region 3.

Extensive open water and submergent vegetation areas having no emergent and/or floating vegetation shall not exceed 20 percent of the mitigation wetland area west of the berm and 40 percent east of the berm.

Extensive areas of bare soil shall not exceed five percent of the mitigation wetland area. For the purposes of these performance standards, extensive refers to areas greater than 0.01 acre (436 square feet).

7. The mitigation wetland supports a predominance of wetland vegetation (as defined in the "MDEQ Wetland Identification Manual") in each vegetative layer, represented by a minimum number of native wetland species, at the end of the monitoring period. The minimum number of native wetland species per wetland type shall not be less than:

    a. 15 species within the emergent wetland.

    b. 15 species within the scrub-shrub wetland.

    c. 20 species within the wet meadow wetland.

    d. 15 species within the forested wetland.

    The total number of native wetland plant species shall be determined by a sum of all species identified in sample plots of the same wetland type.

8. At the end of the monitoring period, the mitigation wetland supports a minimum of:

    a. Three hundred (300) individual surviving, established, and free-to-grow trees per acre in the forested wetland that are classified as native wetland species and consisting of at least three different plant species.

    b. Three hundred (300) individual surviving, established, and free-to-grow shrubs per acre in the scrub-shrub wetland that are classified as native wetland species and consisting of at least four different plant species.

    c. Eight (8) native wetland species of grasses, sedges, or rushes in the wet meadow wetland.

9. The mean percent cover of invasive species including, but not limited to, *Phragmites australis* (Common Reed), *Lythrum salicaria* (Purple Loosestrife), and *Phalaris arundinacea* (Reed Canary Grass) shall in combination be limited to no more than ten (10) percent within each wetland type. Invasive species shall not dominate the vegetation in any extensive area of the mitigation wetland.

If the mean percent cover of invasive species is more than ten (10) percent within any wetland type or if there are extensive areas of the mitigation wetland in which an invasive species is one of the dominant plant species, the permittee shall submit an evaluation of the problem to the MDEQ.

If the permittee determines that it is infeasible to reduce the cover of invasive species to meet the above performance standard, the permittee must submit an assessment of the problem, a control plan, and the projected percent cover that can be achieved for review by the MDEQ. Based on this information, the MDEQ may approve an alternative invasive species standard. Any alternative invasive species standard must be approved in writing by the MDEQ.

If the mitigation wetland does not satisfactorily meet these standards by the end of the monitoring period, or is not satisfactorily progressing during the monitoring period, the permittee will be required to take corrective actions.

This mitigation project was designed to replace functions and values of Great Lakes marsh by development of plant communities and zones as described in the Michigan Natural Features Inventory Natural Communities of Michigan: Classification and Description (Reference 20). This document recognizes that Great Lakes marshes are characterized by dynamic water level cycles that can dramatically alter vegetation zones and their placement on the landscape. Monitoring reports shall indicate if performance standards are not satisfactorily met due to these natural, dynamic hydrologic conditions with a description of corrective actions or an explanation if corrective actions are not merited for review by the MDEQ.

8.0 MONITORING

Monitoring activities completed at the mitigation site will be conducted as described by MDEQ Technical Guidance for Wetland Mitigation represented below (Reference 1). This monitoring plan also satisfies USACE guidance contained in 33 CFR Part 332 – Compensatory Mitigation for Losses of Aquatic Resources. A monitoring plan is necessary to evaluate the mitigation wetland in regards to meeting the performance standards of the project. A biologist, experienced with wetland restoration and mitigation will coordinate and oversee monitoring activities. DTE Electric Company will submit a surveyed drawing showing the as-built conditions of the mitigation area to MDEQ and USACE within 60 days following completion of construction. Monitoring visits will be performed annually beginning with the first growing season after construction is completed. Emergent, shrub, and forested wetlands will be monitored for a minimum of 10 years or until performance standards are met. Monitoring includes:

1. During construction provide one-time photographic documentation of high quality soil placement across the site.
2. Measure inundation and saturation at all staff gauges, monitoring wells, and other stationary points shown in the mitigation plan (Figure 22) monthly during the growing season. Hydrology

data shall be measured and provided at sufficient sample points to accurately depict the water regime of each wetland type.

3. Sample vegetation in plots located along transects shown in the mitigation plan once between July 15 and August 31 or other timeline required to adequately sample target vegetation communities. The number of sample plots necessary within each wetland type shall be determined by use of a species-area curve or another approach approved by the MDEQ and USACE. The minimum number of sample plots for each wetland type shall be no fewer than five (5). Sample plots shall be located on the sample transect at evenly spaced intervals. If additional or alternative sample transects are needed to sufficiently evaluate each wetland type, they must be approved in advance in writing by the MDEQ and USACE. The herbaceous layer (all non-woody plants and woody plants less than 3.2 feet in height) shall be sampled using a 3.28 foot by 3.28 foot (1 square meter) sample plot. The shrub and tree layer shall be sampled using a 30-foot radius sample plot. The data recorded for each herbaceous layer sample plot shall include a list of all living plant species, and an estimate of percent cover in 5 percent intervals for each species recorded, bare soil areas and open water relative to the total area of the plot. The number and species of surviving, established and free-to-grow trees and surviving, established, and free-to-grow shrubs shall be recorded for each 30-foot radius plot. Plot data and a list of all the plant species identified in the plots and otherwise observed during monitoring will be provided. Data for each plant species will include common name in English, scientific name, wetland indicator category from the USFWS's National List of Plant Species That Occur in Wetlands for Region 3 (Reference 22), and whether the species is considered native according to the Michigan Floristic Quality Assessment (Reference 23). Nomenclature shall follow Reference 24 through Reference 26. Surface water depth measurements will be taken at the center of each sampling plot. The location of sample transects and plots will be identified in the monitoring report on a plan view showing the location of wetland types. Sample transects shall be permanently staked at a frequency sufficient to relocate the transect in the field.

4. Delineate any extensive (greater than 0.01 acre in size) open water areas, bare soil areas, areas dominated by invasive species, and areas without a predominance of wetland vegetation, and provide their location on a plan view.

5. Document any sightings or evidence of wading birds, songbirds, waterfowl, amphibians, reptiles, and other animal use (lodges, nests, tracks, scat, etc.) noted within the wetland during monitoring. Note the number, type, date, and hour of the sightings and evidence.

6. Inspect the site during all monitoring visits and inspections for oil, grease, man-made debris, and all other contaminants and report findings. Rate (e.g., poor, fair, good, excellent) and describe the water clarity in the mitigation wetland and determine source(s) of turbidity.

7. Provide annual photographic documentation of mitigation wetland development during vegetation sampling from permanent photo stations located within the mitigation site. At a minimum, photo stations shall be located at both ends of each transect. Photos will be labeled with the location, date, and direction.
8. Provide the number, type and location of habitat structures placed and representative photographs of each structure type.
9. Conduct a wetland delineation to determine the area meeting all three wetland criteria (dominance by hydrophytic vegetation, wetland hydrology and hydric soils) at the completion of the monitoring period. Include the wetland delineation in the final monitoring report as a supplement and include the estimated wetland acreage in the report.
10. Provide a written summary of data from previous monitoring periods and a discussion of changes or trends based on all monitoring results.
11. Provide a written summary of all the problem areas that have been identified and potential corrective measures to address them.

Monitoring reports shall cover the period of January 1 through December 31 of each year following planting. Reports will be submitted to DTE Electric Company before January 31 of the following year. DTE Electric Company will forward the annual reports to the appropriate regulatory agencies. Additional monitoring beyond the 10-year standard monitoring period may be required if all performance standards are not met to the satisfaction of MDEQ and USACE.

9.0 MAINTENANCE, ADAPTIVE MANAGEMENT AND INVASIVE SPECIES MANAGMENT

Necessary steps will be taken to ensure the proper establishment and maintenance of the mitigation wetland. The mitigation site will be visited one to two times each year by qualified contractors during the monitoring period to satisfy standard maintenance requirements and to identify any conditions that threaten the proper protection, function and development of the wetlands, streams and associated buffers. Any deficiencies in vegetative community development including plant survival will be noted and appropriate corrective measures will be implemented.

If monitoring indicates that a performance standard is not being met, that standard will be evaluated to determine if simply more time is needed or if a remedial action may be required. Remedial measures may include seeding or planting, non-native plant control, and erosion control measures. In less common circumstances contingency may be required regarding the wetland basin, removal or addition of dikes, spillways, or other water control structures, and access control. Should adaptive management be required, DTE Electric Company will develop an adaptive management plan and implementation timetable and submit it to the MDEQ and USACE for review and approval. Upon approval, DTE Electric Company will proceed with implementation of adaptive management activities.

9.1 Invasive Species Management Plan

Recent surveys of the mitigation site have identified the presence of several invasive species, including common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), flowering rush (*Butomus umbellatus*), and Canada thistle (*Cirsium arvense*). Purple loosestrife (*Lythrum salicaria*) has not been observed but is likely to occur in southeast Michigan in the habitat types present on the Monroe site. These species can be problematic if they are allowed to become established within mitigation areas. Most of these species prefer wetland sites, but upland areas can be just as susceptible to colonization by some of these and other invasive species. These and most other invasive species produce many seeds, grow quickly, have few natural predators in the area, and can quickly produce monocultures within mitigation areas to the significant detriment of more desirable native species. The invasive species management program for the Monroe site includes measures to identify and address the presence of invasive species within the site boundary and adjacent areas owned by DTE Electric Company.

Mechanical and chemical treatment of existing invasive species will be conducted at least once before construction activities commence. Additional applications will be conducted if necessary. One treatment should sufficiently control the existing invasive species to a point where they can effectively be monitored and treated during and after construction as necessary to minimize existing coverage of all onsite invasive species. Several existing wetlands and upland areas at the mitigation site will be treated with herbicide to kill invasive plant species including common reed, reed canary grass and Canada thistle prior to construction of the mitigation wetland. Response from native vegetation will be facilitated by removing dead, chemically treated vegetation through burning or mowing after each treatment. Seeding and planting within the mitigation area will be conducted as soon as conditions allow following earthwork, limiting the potential for new infestations. After construction, the mitigation area will be monitored to allow for early detection of, and rapid response to, the future establishment of any invasive species.

9.1.1 Monitoring

Monitoring of the mitigation area has already begun with the preconstruction vegetation surveys and wetland delineation. Species present have been recorded and invasive species have been noted. Additional surveys will be conducted prior to construction activities to map the specific location of invasive species patches in preparation for control activities. Monitoring will be conducted using both visual ocular and transect surveys once after preconstruction treatment but before construction, monthly during construction, and semi-annually after construction activities have ceased, to identify any regrowth of original invasive patches as well as any colonization of new areas by invasive species. Post construction monitoring will continue annually through the life of the monitoring period. This monitoring will be conducted by DTE Electric Company staff or a qualified contractor. Anyone involved with identification of invasive species will be given instruction in identification of all invasive species likely to occur in southeast Michigan in the habitat types present on the Monroe site. Emphasis will be given to those species present prior to construction. Estimates of the percent cover of invasive species will be based on qualitative ocular estimates and reported to MDEQ and USACE as part of the regularly scheduled monitoring reports. If invasive species are observed, they will be addressed in accordance with the following management procedures.

9.1.2 Invasive Plant Species Management

Invasive plant species most likely to be a problem in the restored wetland areas include common reed, purple loosestrife, reed canary grass and flowering rush. Additionally, upland areas within the site are likely to be degraded by the presence of Canada thistle. Each species is addressed below including a discussion of its ecology and control measures.

Common Reed (*Phragmites australis*)

Common reed is an aggressive grass with an extensive rhizome root system (http://plants.usda.gov/factsheet/pdf/fs_phau7.pdf). Once established, common reed can be extremely difficult to eliminate. While many control measures have been tried in the past, including mowing, flooding, burning, and covering with black plastic, the most effective control method has been herbicide application. Glyphosate has been shown to be an effective control measure but may take two or three seasons of applications to eliminate dense stands. Other herbicides, such as Imazapyr, have recently shown promise in controlling common reed and may be an effective alternative to Glyphosate. MDEQ and Michigan Department of Natural Resources (MDNR), Ducks Unlimited, USFWS, and other participating land managers are currently experimenting with various techniques for controlling common reed in coastal wetlands along Lake Erie and Saginaw Bay. The techniques being tested include glyphosate, imazapyr, and a glyphosate/imazapyr mixture along with mechanical management actions. The treatment plan for existing and any future growth of common reed at the Monroe site is based on the MDEQ Guide to the Control and Management of Invasive Phragmites (Reference 27), any new, widely accepted, information resulting from Phragmites control studies, and on consultation with regulatory and conservation agency staff who have extensive knowledge of chemical control of invasive species in the coastal zone of Western Lake Erie.

Common reed is shade intolerant and once the planted shrub and forested species provide a canopy that shades the restoration areas, common reed should not be a concern. If common reed becomes established in the emergent marsh areas, it will remain indefinitely since no shading will be likely. Regardless of its location, common reed will be aggressively controlled on the entire mitigation site during the monitoring period. Hand pulling or digging may be effective on small or very young plants. This technique is very labor intensive particularly if the plant becomes well established. However, once a stand becomes established, the extensive root system will make hand pulling or digging very difficult and essentially ineffective. At this point the most effective means of control of common reed will be application of herbicides, usually glyphosate as discussed above.

Herbicide can be sprayed or applied by wick application. Glyphosate is a nonspecific herbicide and the foliage of any plant sprayed will be killed. Therefore, spraying will be conducted in a manner in which overspray of non-target species is minimized. Control of dense stands of common reed may require multiple applications over several years. Application of herbicide will be conducted using a concentration and during a time period that has been shown to be effective in southeastern Michigan (e.g., 6 pints/acre of Glyphosate sprayed in early September). Any herbicide application within the mitigation site will be conducted by a Michigan licensed herbicide applicator. Additionally, any herbicide sprayed within the wetland areas of the site will be approved for such applications.

Currently, several dense stands of common reed exist on the mitigation site. These stands total approximately 15 acres. These stands will be treated with ground application equipment at least once before construction activities commence. Additional applications will be conducted if necessary. One application should sufficiently control the existing common reed stands to a point where they can effectively be monitored and treated while construction activities are underway.

Purple Loosestrife (*Lythrum salicaria*)

Purple loosestrife is a wetland indicator species and often found in natural and man-made wetlands (http://plants.usda.gov/plantguide/pdf/pg_lysa2.pdf). This species can be effectively controlled by several methods. Typical control measures include hand pulling, herbicide treatment or biological control (*Galerucella* spp. beetles). Similar to common reed, purple loosestrife is shade intolerant and once the planted shrub and forested species provide a canopy that shades the restoration areas, purple loosestrife should not be a concern. If purple loosestrife becomes established in the emergent marsh areas, it will remain indefinitely without treatment since no shading will be likely.

Regardless of its location, purple loosestrife will be aggressively controlled on the entire mitigation site during the monitoring period. Young plants can be pulled up by hand or dug up if the plant is not too big and the infestation is not too widespread. This technique is very labor intensive particularly if the plant becomes well established. However, once a stand becomes established, the extensive root system will make hand pulling or digging very difficult and essentially ineffective. Once the plants get larger than 18 inches in height, or the density of plants is excessive, herbicide treatment with Glyphosate or another suitable herbicide, as described for common reed above, will be more effective to control purple loosestrife. Control of dense stands of purple loosestrife may require multiple applications over several years.

Biological control may provide the best opportunity for long term treatment of an extensive infestation of purple loosestrife. Control would be achieved by the release of two leaf-feeding species of *Galerucella* spp. beetles (*G. pusilla* and *G. calmariensis*). Adults and larvae of these species prefer purple loosestrife as a food source feeding on the leaves, significantly weakening the plants and can cause a reduction in purple loosestrife density of up to 90 percent. Biological control is not expected to completely eradicate purple loosestrife and utilizing this approach will require review of performance standards. Use of these beetles has been shown to be effective in controlling purple loosestrife in other locations in Michigan including the Fermi site. Michigan Sea Grant, a cooperative program of the University of Michigan and Michigan State University, and administered through the National Oceanic and Atmospheric Administration (NOAA), provides information on the efficacy and use of biological control for purple loosestrife in Michigan (http://www.miseagrant.umich.edu/ais/pp/index.html). Biological control will be applied as needed and coordinated with Michigan Sea Grant and appropriate regulatory staff.

To date, purple loosestrife has not been detected at the Monroe site.

Reed Canary Grass (*Phalaris arundinacea*)

Reed canary grass is an aggressive wetland species that forms dense monotypic stands to the exclusion of other wetland species (http://plants.usda.gov/factsheet/pdf/fs_phar3.pdf). It spreads by rhizomous growth and seeds. Once established it can be difficult to adequately control due to resprouting from the soil seed bank. Similar to the previously highlighted species reed canary grass is shade intolerant and once the planted shrub and forested species provide a canopy that shades the restoration areas, reed canary grass should not be a concern. If reed canary grass becomes established in the emergent marsh areas, it will remain indefinitely without treatment since no shading will be likely. Some control may be realized by increasing water levels, but this could negatively affect desirable species as well. Regardless of its location, reed canary grass will be aggressively managed prior to construction and controlled on the entire mitigation site and adjacent areas owned by DTE Electric Company where appropriate during the monitoring period.

Several methods of control are available each with moderate effectiveness. No one methodology will be fully effective if the reed canary grass is well established. Control methods include, herbicides, burning, mowing or mechanical removal. Use of Glyphosate has shown to have some success, being effective for up to two years. After two years, regrowth from the seed bank may reestablish the stand. Spraying large stands and or wicking small stands or individual plants will provide the best options. Repeated application will likely be needed. Burning and twice yearly mowing have also shown some success, but again resprouting from the seed bank will require management over multiple years. Removal using heavy construction equipment has not shown to be effective due to rapid regrowth from rhizomes and seeds left in the soil.

Currently, stands of reed canary grass are present in existing wetlands at the mitigation site.

Flowering Rush (Butomus umbellatus)

Flowering rush is a perennial aquatic herb that spreads via rhizomes (http://www.in.gov/dnr/files/FLOWERING_RUSH.pdf). It can grow as both an emergent along shorelines and as a submersed plant in rivers and lakes. Once established, it can form dense stands which crowd out native plants. It is difficult to identify, especially when not flowered, as it resembles many native emergent plants, including common bulrush.

Control methods include, cutting and hand digging of the plant. It is very difficult to eradicate with the use of herbicides, herbicides easily wash off the narrow leaves of the plant. Cutting the plant below the surface of the water is an effective method of control. Cutting will not kill the plant, however it will decrease the abundance. Several cuttings within the same growing season will be required. It is very important that all cuttings of the plant be removed, any cuttings left can re-sprout and cause further spread. Hand digging is also an option for isolated plants or small stands. Care must be taken to remove all root fragments. As with the cuttings, any disturbed root fragment left can re-sprout and lead to the spread of the plant. Raking and pulling of the plants are not recommended as methods for this reason. Once the plant is removed from the water it can still grow and spread, mainly through sending out new shoots from the root stalk. All plants and pieces removed should be thoroughly dried. Drying should not occur near a wetland or any body of water, large piles should be turned frequently to ensure adequate drying. Control methods will have to be continued as long as the plant is present on the site. There is a small stand of flowering rush in a wetland adjacent to the mitigation site that will be treated prior to construction and monitored thereafter.

Canada Thistle (*Cirsium arvense*)

Canada thistle is an aggressive, creeping perennial weed that reproduces from vegetative buds in its root system and from seed (http://plants.usda.gov/java/profile?symbol=ciar4). Infestation generally occurs on disturbed soils. It is difficult to control due to its extensive root structure, which allows it to recover after control attempts.

The key to controlling Canada thistle is to stress the plant and force it to use stored root nutrients. It is able to recover from almost any control method due to these root nutrient stores. Successful control and eradication requires several years of action. There are several viable options for control, and the best management includes combining multiple methods. Grasses and alfalfa can effectively compete with Canada thistle. If desired, planting these species in areas with Canada thistle will aid in control. Herbicide control is also an effective method; however, it will need to occur for several years as described for common reed above. Mowing is another option for control, in conjunction with herbicide treatments. Mowing should occur on a monthly basis, over several growing seasons. This repeated mowing regime depletes nutrients stored in the roots of the plant. Control methods should continue as long the plant is a problem on the site.

Farmed wetlands and upland areas at the mitigation site are colonized by Canada thistle and will be treated before, during and after construction utilizing a combination of the methods described above.

Control of Other Invasive Species

It is possible that other invasive species, not discussed in this document may become established in the mitigation area. Monitoring activities will be conducted with identification of any new species infestations as a priority. If any new invasive species are observed during monitoring or other site activities, those species will be identified, the size of the infestation determined and the best control methods researched and implemented.

9.1.3 Summary of Invasive Species Control

This plan provides a number of potential management techniques for the most likely invasive species that will be encountered in this project. No single management technique may be adequate to address all invasive species problems. Monitoring will be conducted on the entire mitigation site, including all habitat types. Once established, invasive species can be very difficult to control and even harder to eliminate. Therefore, the most important component of this invasive species control program is early detection and rapid response to new invasive species infestations. If the presence of invasive species is noted, a response plan will quickly be prepared to address the problem and determine the most effective and efficient control program. Action will be taken as soon as conditions (e.g., weather, time of year, plant life stage, etc.) allow. If a new infestation moves beyond a few plants and into a large area of coverage, it is likely that control will have to incorporate one or more techniques over multiple seasons. However, even under this circumstance, the most effective and efficient control techniques will be used in an effort to eliminate the problem as soon as possible. When determining the proper technique to use to control invasive species, many variables will be reviewed. Control techniques will be reviewed based on factors such as historical and recent research, range wide efficacy, local efficacy, ecological impact of the control technique, and onsite experience with the control technique.

Monitoring for invasive species will be conducted throughout the construction period as part of the regular construction environmental monitoring and will continue after completion of construction as part of the wetland mitigation monitoring. Results of invasive species monitoring and control measures will be reported in annual monitoring reports. The Long Term Management Plan will also incorporate periodic monitoring and management measures for invasive species as appropriate.

10.0 LONG TERM MANAGEMENT PLAN

As discussed in Section 6, ownership of the mitigation site will remain with DTE Electric Company. The site will be permanently protected via a conservation easement. In addition, DTE Electric Company will implement the following actions to ensure long term management for the mitigation site. The long term management actions will commence with the acceptance of the final mitigation monitoring report and regulatory approval that the mitigation site has met all necessary performance standards. DTE Electric Company will commence long term management by developing all necessary stewardship agreements and endowments. Copies of agreements and documentation of endowment funds to support annual site visits and any necessary long term management actions will be provided to regulatory agencies for the permit file.

This long term management plan provides an overview of how the wetland mitigation site will be monitored and maintained after mitigation construction has been completed and final performance standards have been met. DTE Electric Company will enter into a long term agreement with a suitable third party steward and establish an endowment to support third party review of site conditions and long term management activities. The responsibility of DTE Electric Company and the third party steward is to implement the activities described here and to prescribe, execute and evaluate any necessary management actions.

The third party steward will be provided with a copy of the Final Aquatic Resource Mitigation Strategy and Final Design, which includes this long term management plan. Section 3.2 of the mitigation strategy provides detailed background on the mitigation site including location, site history, existing conditions and adjacent land use. Section 5 provides a detailed description of mitigation actions and community types targeted for development of the site. A copy of as-built conditions and detailed monitoring reports will also be provided to the third party steward to support and guide stewardship review and activities. Monitoring reports will include as-built conditions, a final wetland delineation identifying wetland community boundaries, documentation of any rare and imperiled vegetation communities and animal species, photo documentation, existing and potential threats and potential problem areas. The third party steward will review all available information and conduct an initial site visit. DTE Electric Company will establish permanent photo stations and water level monitoring stations designated for the long term management phase. DTE Electric Company will conduct annual site visits to the mitigation site. During annual site visits qualified staff will:

- Traverse the perimeter of the mitigation site
- Traverse wetland areas including a representative sample of each wetland community type
- Take photos from permanent photos stations
- Collect water level data from permanent water level gauges
- Record anecdotal observation of plant and animal species
- Record observations of public use activities
- Record, photograph and map potential threats (invasive species, erosion, signs of incompatible public use, etc.)
- Record, photograph and map rare and imperiled communities/species
- Visit areas where threats were previously recorded and evaluate efficacy of previous management actions.
- Check perimeter signs demarcating the conservation easement boundary to ensure signs are in place and readable.

In addition to the items listed above, annual site visits will document adherence to the conservation easement ensuring there has been no alteration of topography, creation of unplanned paths, trails, or roads; placement of fill, dredging, or excavation; drainage of surface or groundwater; construction or placement of any structure; plowing, tilling, or cultivating the soils or vegetation; cutting, removal, or alteration of vegetation; including the planting of non-native plant species; construction of unauthorized utility or petroleum lines; storage or disposal of garbage, trash, debris, abandoned equipment;

accumulation of machinery or other waste materials; use or storage of off-road vehicles; placement of billboards or signs; or the use of the wetland for the dumping of storm water.

An annual stewardship report will be submitted to the third party steward for review. This report will include recommendations for any required management actions and a suggested implementation schedule and cost estimate. Management actions will be implemented at the appropriate time and for the appropriate duration. Management actions will be prescribed only in the case of a documented threat. Threats may include erosion, presence of invasive species, nuisance wildlife, changes to adjacent land use, incompatible use of wetland areas, missing or unreadable boundary signs. Recommended management actions may include:

- Water level manipulation
- Manual or chemical removal of undesirable plant species as described in the invasive species management plan in Section 9.1
- Control of nuisance wildlife
- Repairs to berm, spillway or water control structures as needed
- Water level management as needed to maintain healthy interspersion of water and emergent vegetation on the west side of the mitigation site.
- Monitoring and management of public use to ensure compatible activities.
- Water quality monitoring to protect from undesirable impacts from land use changes in adjacent areas.
- Clean up of trash and debris
- Repair and maintenance of conservation easement signs and designated public use trails and signage.

The annual stewardship report will also be used to inform and update the long term management plan to continue utilizing an adaptive management strategy for development and maintenance of the wetland communities at the mitigation site.

11.0 FINANCIAL ASSURANCES

DTE Electric Company will provide financial assurances in the amount of $12,000,000 in the form of a letter of credit or bond to ensure that the replacement wetland is constructed, the conservation easement is recorded, monitoring is completed, and corrective actions are performed as required to comply with the mitigation requirements and conditions of MDEQ permit 10-58-0011-P. The financial assurance document shall be provided to and accepted by the MDEQ within 6 months after the Decision to Construct Fermi 3.

12.0 REFERENCES

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TABLES AND FIGURES

Table 1. Wetland Impacts and Attributes Summary Table (Sheet 1 of 2)

ID	Type/General Description	Total Size (acres)	Impact (acres)	Jurisdiction	Condition/ Primary Function	Guidance Mitigation Ratio
B	Linear PFO	0.76	0.76	MDEQ/USACE	Low/ Floodflow alteration, sediment, toxicant retention, nutrient removal and wildlife habitat	2:1
C	Great Lakes marsh, fragmented from Lake Erie by access roads, but connected hydrologically through culverts	48.18	9.73	MDEQ/USACE	Medium (high ecological value)/ Floodflow alteration, sediment, toxicant retention, nutrient removal and wildlife habitat	5:1
D	Palustrine forested wetland with partially open canopy	1.37	1.37	MDEQ/USACE	Medium/ Floodflow alteration, sediment, toxicant retention, nutrient removal and wildlife habitat	2:1
E-North	North: Palustrine mix of scrub-shrub, emergent marsh/wet meadow, in two sections split by Wetland D,	2.67	1.87	MDEQ/USACE	Medium/Floodflow alteration, sediment, toxicant retention, nutrient removal and wildlife habitat for both portions of E	2:1
E-South	South: Southern shrub carr or other coastal wetland type	2.04	2.04			
F	PFO southern hardwood swamp, relatively intact,	31.07	2.71	MDEQ/USACE	Medium (high ecological value)/Floodflow alteration, sediment, toxicant retention, nutrient removal and wildlife habitat	5:1
H	PEM edge around a created open water pit	1.96	1.96	MDEQ	Low/Minimal floodflow alteration, sediment/toxicant retention and nutrient removal	1.5:1
I	PFO southern hardwood swamp, relatively intact, indirectly connected to Lake Erie, provides a buffer for the interior and less disturbed wetland	39.74	0.44	MDEQ/USACE	Medium (high ecological value)/Floodflow alteration, sediment, toxicant retention, nutrient removal and wildlife habitat	5:1
U	PEM edge around a created open water canal	3.46	3.46	MDEQ/USACE	Low/Minimal floodflow alteration, sediment/toxicant retention and nutrient removal.	1.5:1
W	PEM wet meadow wetland	4.59	4.59	MDEQ	Low/ Floodflow alteration, sediment, toxicant retention, nutrient removal and marginal wildlife habitat	1.5:1

Table 1. Wetland Impacts and Attributes Summary Table (Sheet 2 of 2)

ID	Type/General Description	Total Size (acres)	Impact (acres)	Jurisdiction	Condition/ Primary Function	Guidance Mitigation Ratio
Y	PFO fragmented early successional with mixed vegetation and a partially open canopy	1.14	1.14	MDEQ	Low/Marginal wildlife habitat for edge species and limited water storage.	2:1
AA	PEM established spoil area	0.80	0.80	MDEQ/USACE	Low/Minimal floodflow alteration, sediment/toxicant retention and nutrient removal	2:1
II	PEM ditch, contains vegetation communities with high structural diversity and low species diversity with well-established invasive species populations	0.52	0.52	MDEQ	Low/ minimal floodflow alteration, sediment/toxicant retention and nutrient removal	1.5:1
JJ	PSS established spoil area	1.37	1.37	MDEQ	Low/ minimal floodflow alteration, sediment/toxicant retention and nutrient removal	1.5:1
KK	PFO linear wetland, connected to the South Canal	1.62	1.62	MDEQ/USACE	Low/ floodflow alteration, sediment/toxicant retention, nutrient removal, marginal wildlife habitat for edge species	2:1
South Canal	PEM Great Lakes marsh hydrologically connected to Lake Erie	1.97	1.17	MDEQ/USACE	Medium/ fish and wildlife habitat, floodflow alteration, sediment, toxicant retention and nutrient removal	5:1

Table 2. Wetland Impacts, Ratios, and Proposed Mitigation

Wetland Type	Fermi 3 Impacted Areas (Acres)[a]	Mitigation Ratio for Wetland Type	Required Mitigation (Acres)	Proposed Mitigation/Restoration (Acres)[b]
Emergent Marsh				
Great Lakes marsh (rare/imperiled)	9.73	5:1	48.65	
Palustrine emergent (coastal)	0.80	2:1	1.60	
Palustrine emergent (other)	5.11	1.5:1	7.67	
Emergent Marsh Totals	**15.64**		**57.92**	**60.92**
Open water - Great Lakes marsh (rare/imperiled)	1.17	5:1	5.85	
Open water - emergent (other)	5.42	1.5:1	8.13	
Open Water Totals	**6.59**		**13.98**	**14.27**
Forested Wetland				
Southern hardwood swamp (rare/imperiled)	3.15	5:1	15.75	
Palustrine forested (coastal and other)	4.89	2:1	9.78	
Forested Wetland Totals	**8.04**		**25.53**	**25.62**
Scrub Shrub Wetland				
Southern shrub carr (coastal)	3.91	2:1	**7.82**	
Palustrine scrub shrub (other)	1.37	1.5:1	**2.06**	
Shrub/Scrub Wetland Totals	**5.28**		**9.88**	**10.36**
Wetland Totals	**35.55**		**107.30**	**111.17**

a. 2.29 acres of temporary impact associated with transmission line construction will be restored immediately after construction and does not require additional mitigation as per regulatory guidance.

b. Proposed acreage includes existing wetlands W14 and W16. In accordance with the MDEQ Administrative Rules for Part 303, Mitigation, Rule 5 (5), the proposed reestablishment of wetland characteristics and functions in these areas is provided restoration credit and contributes toward the wetland compensation goals.

Table 3. Great Lakes Marsh – Emergent Planting Plan

Great Lakes Marsh	67.69 acres		
Seed Mix Species List	**Seeding Rate: 6 lbs/acre**		
Common Name	**Scientific Name**	**Form[a]**	**% by Seeds**
Sweet flag	*Acorus calamus*	Seed/Plug	0.31
Common water plantain	*Alisma subcordatum*	Seed/Plug	2.81
Swamp milkweed	*Asclepias incarnata*	Seed/Plug	0.23
Swamp aster	*Aster puniceus*	Seed/Plug	0.38
Nodding bur marigold	*Bidens cernua*	Seed	2.95
Bristly sedge	*Carex comosa*	Seed/Plug	1.41
Bottlebrush sedge	*Carex hystericina*	Seed/Plug	1.13
Awlfruit sedge	*Carex stipata*	Seed/Plug	1.59
Fox sedge	*Carex vulpinoidea*	Seed/Plug	1.88
Joe pye weed	*Eupatorium maculatum*	Seed/Plug	0.45
Common boneset	*Eupatorium perfoliatum*	Seed/Plug	0.75
Canada manna grass	*Glyceria canadensis*	Seed	5.10
Reed manna grass	*Glyceria grandis*	Seed	5.39
Southern blue flag	*Iris virginica*	Seed/Plug	0.09
Soft rush	*Juncus effusus*	Seed/Plug	4.69
Cardinal flower	*Lobelia cardinalis*	Seed/Plug	1.88
Great blue lobelia	*Lobelia siphilitica*	Seed/Plug	2.34
Monkey flower	*Mimulus ringens*	Seed/Plug	21.57
Pennsylvania smartweed	*Polygonum pennsylvanicum*	Seed	1.22
Pickerel weed	*Pontederia cordata*	Seed/Plug	0.03
Common arrowhead	*Sagittaria latifolia*	Seed/Plug	0.29
Dark green bulrush	*Scirpus atrovirens*	Seed	21.57
Soft-stem bulrush	*Scirpus validus*	Seed	4.36
Common bur reed	*Sparganium eurycarpum*	Seed/Plug	0.14
Blue vervain	*Verbena hastata*	Seed/Plug	17.44

a. Plugs will be planted at a density of 500 plugs/acre along open water emergent marsh transition zones comprised of a mix of the listed species where Seed/Plug is indicated in the Form column.

Table 4. Southern Wet Meadow – Emergent Planting Plan (Sheet 1 of 2)

Southern Wet Meadow	13.84 acres		
Seed Mix Species List	**Seeding Rate: 6 lbs/acre**		
Common Name	**Scientific Name**	**Form**	**% by Seeds**
Swamp milkweed	*Asclepias incarnata*	Seed	0.12
Eastern lined aster	*Aster lanceolatus*	Seed	7.58
Side flowering aster	*Aster lateriflorus*	Seed	0.6
Swamp aster	*Aster puniceus*	Seed	7.73
Blue joint grass	*Calamagrostis canadensis*	Seed	13.53
Marsh bellflower	*Campanula americana*	Seed	0.82
Fringed sedge	*Carex crinita*	Seed	0.56
Bottlebrush sedge	*Carex hystericina*	Seed	1.09
Hairy sedge	*Carex lacustris*	Seed	0.06
Wollyfruit sedge	*Carex lasiocarpa*	Seed	0.03
Shallow sedge	*Carex lurida*	Seed	0.29
Fen panicled sedge	*Carex prairea*	Seed	2.03
Sartwell's sedge	*Carex sartwellii*	Seed	0.16
Awlfruit sedge	*Carex stipata*	Seed	0.82
Upright sedge	*Carex stricta*	Seed	0.13
Water hemlock	*Cicuta maculata*	Seed	0.29
Swamp thistle	*Cirsium muticum*	Seed	0.02
Spike rush	*Eleocharis calva*	Seed	8.7
Joe pye weed	*Eupatorium maculatum*	Seed	2.3
Common boneset	*Eupatorium perfoliatum*	Seed	15.46
Northern bedstraw	*Galium boreale*	Seed	0.17
Fowl manna grass	*Glyceria striata*	Seed	15.46
Marsh St.John's wort	*Hypericum virginicum*	Seed	0.56
Jewelweed	*Impatiens capensis*	Seed	0.01
Southern blue flag	*Iris virginica*	Seed	0.02
Marsh pea	*Lathyrus venosus*	Seed	0.01
Water horehound	*Lycopus americanus*	Seed	12.56
Prairie loosestrife	*Lysimachia quadriflora*	Seed	0.22
Wild mint	*Mentha arvensis*	Seed	1.45
Marsh wild timothy	*Muhlenbergia glomerata*	Seed	0.54
Water smartweed	*Polygonum amphibium*	Seed	0.01

Table 4. Southern Wet Meadow – Emergent Planting Plan (Sheet 2 of 2)

Southern Wet Meadow	**13.84 acres**		
Seed Mix Species List	**Seeding Rate: 6 lbs/acre**		
Common Name	**Scientific Name**	**Form**	**% by Seeds**
Mountain mint	*Pycnanthemum virginianum*	Seed	1.06
Great water dock	*Rumex orbiculatus*	Seed	0.02
Common arrowhead	*Sagittaria latifolia*	Seed	1.47
Mad dog skullcap	*Scutellaria lateriflora*	Seed	0.16
Late goldenrod	*Solidago gigantea*	Seed	0.6
Swamp goldenrod	*Solidago patula*	Seed	0.87
Rough goldenrod	*Solidago rugosa*	Seed	2.23
Purple meadow rue	*Thalictrum dasycarpum*	Seed	0.27

Table 5. Southern Shrub-Carr – Shrub Wetland Planting Plan (Sheet 1 of 2)

Southern Shrub-Carr	**10.84 acres**				
Container Species					
Common Name	**Scientific Name**	**Form**	**Size**	**Spacing**	**%**
Black chokeberry	*Aronia prunifolia*	Flat/Cont	1 gal	10'x10'	5
Bog birch	*Betula pumila*	Flat/Cont	1 gal	10'x10'	15
Silky dogwood	*Cornus amomum*	Flat/Cont	1 gal	10'x10'	15
Red osier dogwood	*Cornus sericea*	Flat/Cont	1 gal	10'x10'	10
American hazelnut	*Corylus americana*	Cont	1 gal	10'x10'	5
Winterberry	*Ilex verticillata*	Cont	1 gal	10'x10'	10
Swamp rose	*Rosa palustris*	Flat/Cont	1 gal	10'x10'	5
Pussy willow	*Salix discolor*	Flat/Cont	1 gal	10'x10'	10
Elderberry	*Sambuscus canadensis*	Flat/Cont	1 gal	10'x10'	10
Meadowsweet	*Spiraea alba*	Flat/Cont	1 gal	10'x10'	5
Nannyberry	*Viburnum lentago*	Cont	1 gal	10'x10'	5
Shrubby cinquefoil	*Potentilla fruticosa*	Flat	1 gal	10'x10'	5
		TOTAL PLANTS		**4,726**	**100**

Table 5. Southern Shrub-Carr – Shrub Wetland Planting Plan (Sheet 2 of 2)

Southern Shrub-Carr	**10.84 acres**		
Seed Mix Species List	**Seeding Rate: 6 lbs/acre**		
Common Name	**Scientific Name**	**Form**	**% by Seeds**
Water plantain	*Alisma subcordatum*	Seed	4.17
Swamp milkweed	*Asclepias incarnata*	Seed	0.67
Blue joint grass	*Calamagrostis canadensis*	Seed	19.46
Tall bellflower	*Campanula americana*	Seed	2.95
Longhair sedge	*Carex comosa*	Seed	2.09
Bottlebrush sedge	*Carex hystericina*	Seed	2.09
Hairy sedge	*Carex lacustris*	Seed	0.09
Upright sedge	*Carex stricta*	Seed	0.18
Fox sedge	*Carex vulpinoidea*	Seed	8.69
Water hemlock	*Cicuta maculata*	Seed	0.42
Common boneset	*Eupatorium perfoliatum*	Seed	11.12
Northern bedstraw	*Gallium boreale*	Seed	0.24
Rattlesnake grass	*Glyceria canadensis*	Seed	10.29
Soft rush	*Juncus effusus*	Seed	6.95
Water horehound	*Lycopus americanus*	Seed	6.78
Dark green bulrush	*Scirpus atrovirens*	Seed	6.39
Wool grass	*Scirpus cyperinus*	Seed	11.82
Rufous bulrush	*Scirpus pendulus*	Seed	1.31
Softstem bulrush	*Scirpus validus*	Seed	1.08
Rough goldenrod	*Solidago rugosa*	Seed	3.21

Table 6. Southern Hardwood Swamp – Forested Wetland Planting Plan (Sheet 1 of 2)

Southern Hardwood Swamp	25.69 acres				
Container Species					
Common Name	**Scientific Name**	**Form**	**Size**	**Spacing**	**%**
Red maple	*Acer rubrum*	Cont	1 gal	10'x10'	5
Silver maple	*Acer saccharinum*	Flat/Cont	1 gal	10'x10'	20
Yellow birch	*Betula alleghaniensis*	Flat/Cont	1 gal	10'x10'	10
Eastern cottonwood	*Populus deltoides*	Cont	1 gal	10'x10'	5
Swamp white oak	*Quercus bicolor*	Cont	1 gal	10'x10'	10
Pin Oak	*Quercus palustris*	Cont	1 gal	10'x10'	5
Musclewood	*Carpinus caroliniana*	Cont	1 gal	10'x10'	5
Shagbark hickory	*Carya ovata*	Cont	1 gal	10'x10'	10
Hackberry	*Celtis occidentalis*	Cont	1 gal	10'x10'	2
Buttonbush	*Cephalanthus occidentalis*	Flat/Cont	1 gal	10'x10'	2
Gray dogwood	*Cornus racemosa*	Cont	1 gal	10'x10'	5
Running strawberry bush	*Euonymus obovatus*	Cont	1 gal	10'x10'	2
Michigan holly	*Ilex verticillata*	Cont	1 gal	10'x10'	5
Spicebush	*Lindera benzoin*	Cont	1 gal	10'x10'	5
Chokecherry	*Prunus virginiana*	Cont	1 gal	10'x10'	2
Wild black currant	*Ribes americanum*	Cont	1 gal	10'x10'	1
Swamp rose	*Rosa palustris*	Flat/Cont	1 gal	10'x10'	2
Elderberry	*Sambuscus canadensis*	Flat/Cont	1 gal	10'x10'	2
Nannyberry	*Viburnum lentago*	Cont	1 gal	10'x10'	2
		TOTAL PLANTS		**11,200**	**100**

Table 6. Southern Hardwood Swamp – Forested Wetland Planting Plan (Sheet 2 of 2)

Southern Hardwood Swamp	25.69 acres		
Seed Mix Species List	**Seeding Rate: 6 lbs/acre**		
Common Name	**Scientific Name**	**Form**	**% by Seeds**
Water plantain	*Alisma subcordatum*	Seed	4.17
Swamp milkweed	*Asclepias incarnata*	Seed	0.67
Blue joint grass	*Calamagrostis canadensis*	Seed	19.46
Tall bellflower	*Campanula americana*	Seed	2.95
Longhair sedge	*Carex comosa*	Seed	2.09
Bottlebrush sedge	*Carex hystericina*	Seed	2.09
Hairy sedge	*Carex lacustris*	Seed	0.09
Upright sedge	*Carex stricta*	Seed	0.18
Fox sedge	*Carex vulpinoidea*	Seed	8.69
Water hemlock	*Cicuta maculata*	Seed	0.42
Common boneset	*Eupatorium perfoliatum*	Seed	11.12
Northern bedstraw	*Galium boreale*	Seed	0.24
Rattlesnake grass	*Glyceria canadensis*	Seed	10.29
Soft rush	*Juncus effusus*	Seed	6.95
Water horehound	*Lycopus americanus*	Seed	6.78
Dark green bulrush	*Scirpus atrovirens*	Seed	6.39
Wool grass	*Scirpus cyperinus*	Seed	11.82
Rufous bulrush	*Scirpus pendulus*	Seed	1.31
Softstem bulrush	*Scirpus validus*	Seed	1.08
Rough goldenrod	*Solidago rugosa*	Seed	3.21

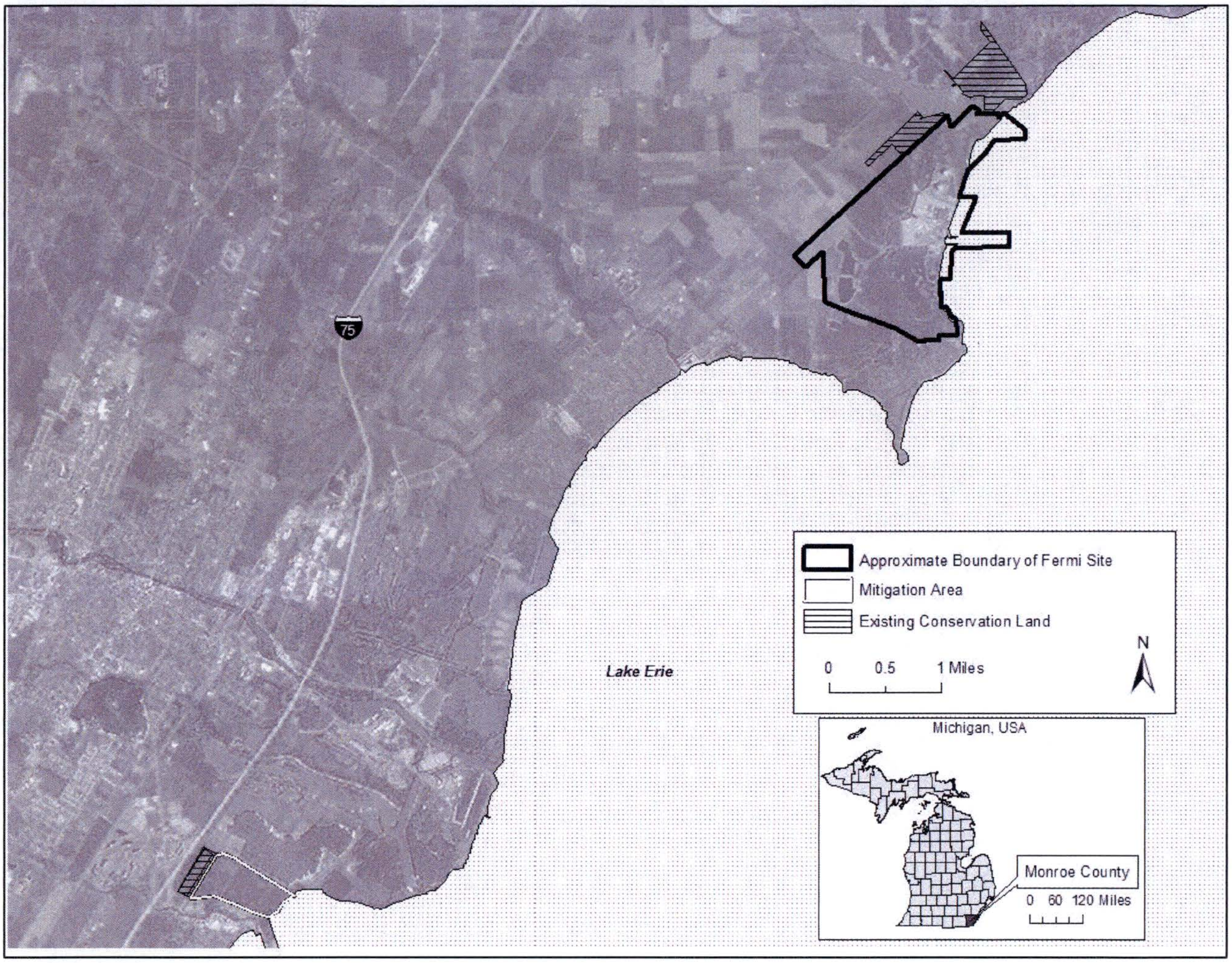
Table 7. Mesic Southern Forest – Upland Planting Plan (Sheet 1 of 2)

Mesic Southern Forest	**13.31 acres**				
Container Species					
Common Name	**Scientific Name**	**Form**	**Size**	**Spacing**	**%**
Red maple	*Acer rubrum*	Cont	1 gal	30'x30'	10.0
Sugar maple	*Acer saccharum*	Flat/Cont	1 gal	30'x30'	20.0
Bitternut hickory	*Carya cordiformis*	Flat/Cont	1 gal	30'x30'	12.5
American beech	*Fagus grandifolia*	Cont	1 gal	30'x30'	12.5
Tulip tree	*Liriodendron tulipifera*	Cont	1 gal	30'x30'	7.5
Black cherry	*Prunus serotina*	Cont	1 gal	30'x30'	7.5
White oak	*Quercus alba*	Cont	1 gal	30'x30'	5.0
Northern red oak	*Quercus rubra*	Cont	1 gal	30'x30'	5.0
American basswood	*Tilia americana*	Cont	1 gal	30'x30'	5.0
Pawpaw	*Asimina triloba*	Cont	1 gal	30'x30'	2.0
Musclewood	*Carpinus caroliniana*	Flat/Cont	1 gal	30'x30'	2.0
Alternate-leaved dogwood	*Cornus alternifolia*	Cont	1 gal	30'x30'	2.0
Witch hazel	*Hamamelis virginiana*	Cont	1 gal	30'x30'	2.0
Spicebush	*Lindera benzoin*	Cont	1 gal	30'x30'	3.0
Virginia creeper	*Parthenocissus quinquefolia*	Cont	1 gal	30'x30'	2.0
Maple-leaf viburnum	*Viburnum acerifolium*	Cont	1 gal	30'x30'	2.0
		TOTAL PLANTS		**644**	**100.0**

Table 7. Mesic Southern Forest – Upland Planting Plan (Sheet 2 of 2)

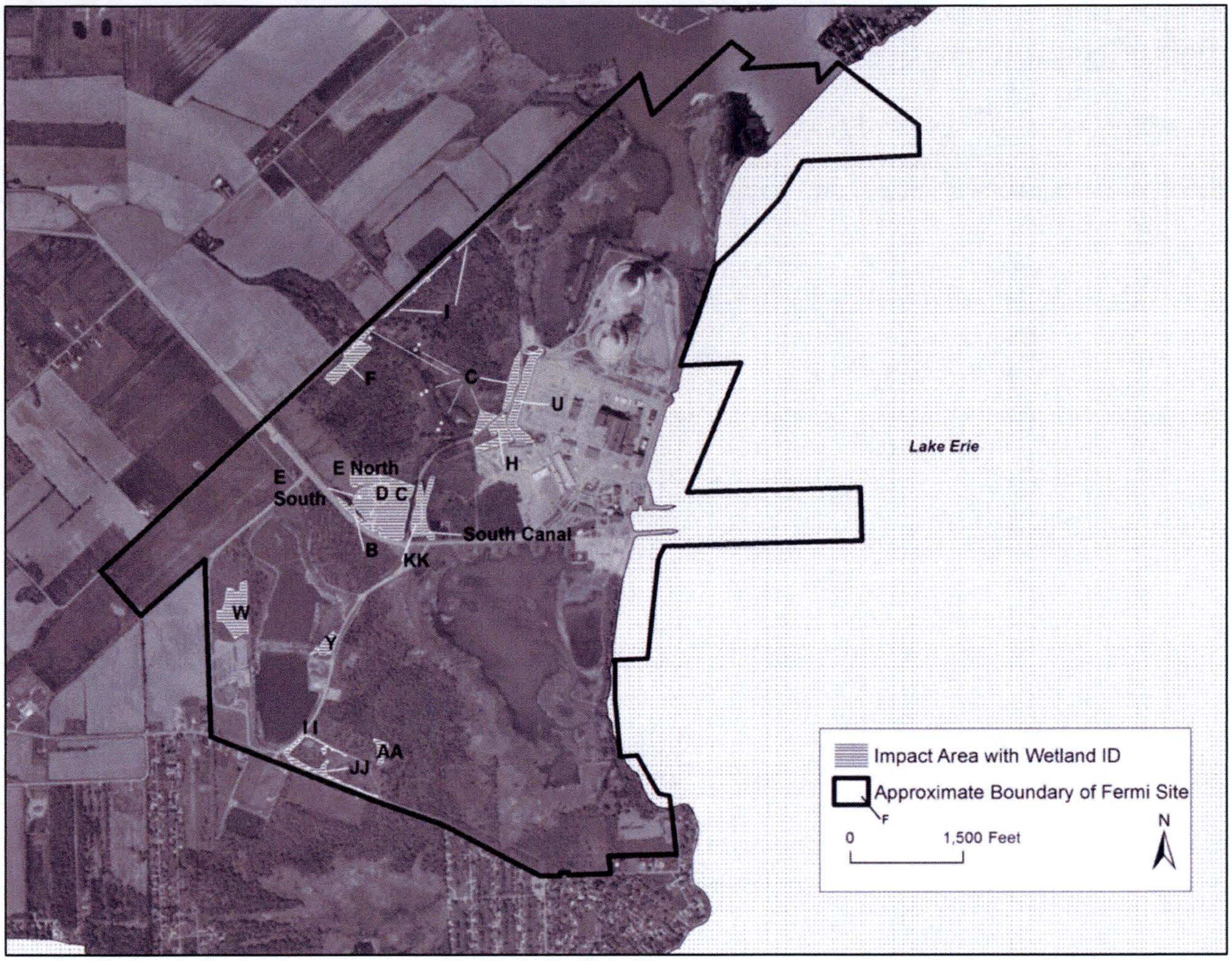
Mesic Southern Forest	**13.31 acres**		
Seed Mix Species List	**Seeding Rate: 7 lbs/acre**		
Common Name	**Scientific Name**	**Form**	**% by Weight**
Big bluestem	*Andropogon gerardii*	Seed	8.93
Common milkweed	*Asclepias syriaca*	Seed	2.39
Butterfly milkweed	*Asclepias tuberosa*	Seed	1.94
Arrow-leaved aster	*Aster sagittifolius*	Seed	2.24
Partridge pea	*Cassia fasciculata*	Seed	3.93
Lance-leaf coreopsis	*Coreopsis lanceolata*	Seed	1.8
Canada wild rye	*Elymus canadensis*	See	28.57
False sunflower	*Heliopsis helianthoides*	Seed	5.06
Wild bergamot	*Monarda fistulosa*	Seed	0.27
Switchgrass	*Panicum virgatum*	Seed	7.14
Foxglove beardtongue	*Penstemon digitalis*	Seed	1.8
Yellow coneflower	*Ratibida pinnata*	Seed	2.68
Black-eyed susan	*Rudbeckia hirta*	Seed	4.46
Brown-eyed susan	*Rudbeckia triloba*	Seed	0.27
Little bluestem	*Schizachyrium scoparium*	Seed	8.93
Indian grass	*Sorghastrum nutans*	Seed	17.86
Hoary vervain	*Verbena stricta*	Seed	1.8

Figure 1. Site Location Map



Source: Reference 28

Figure 2. Wetland Impact Area Map



Source: Reference 28

Figure 3. Mitigation Site Plan

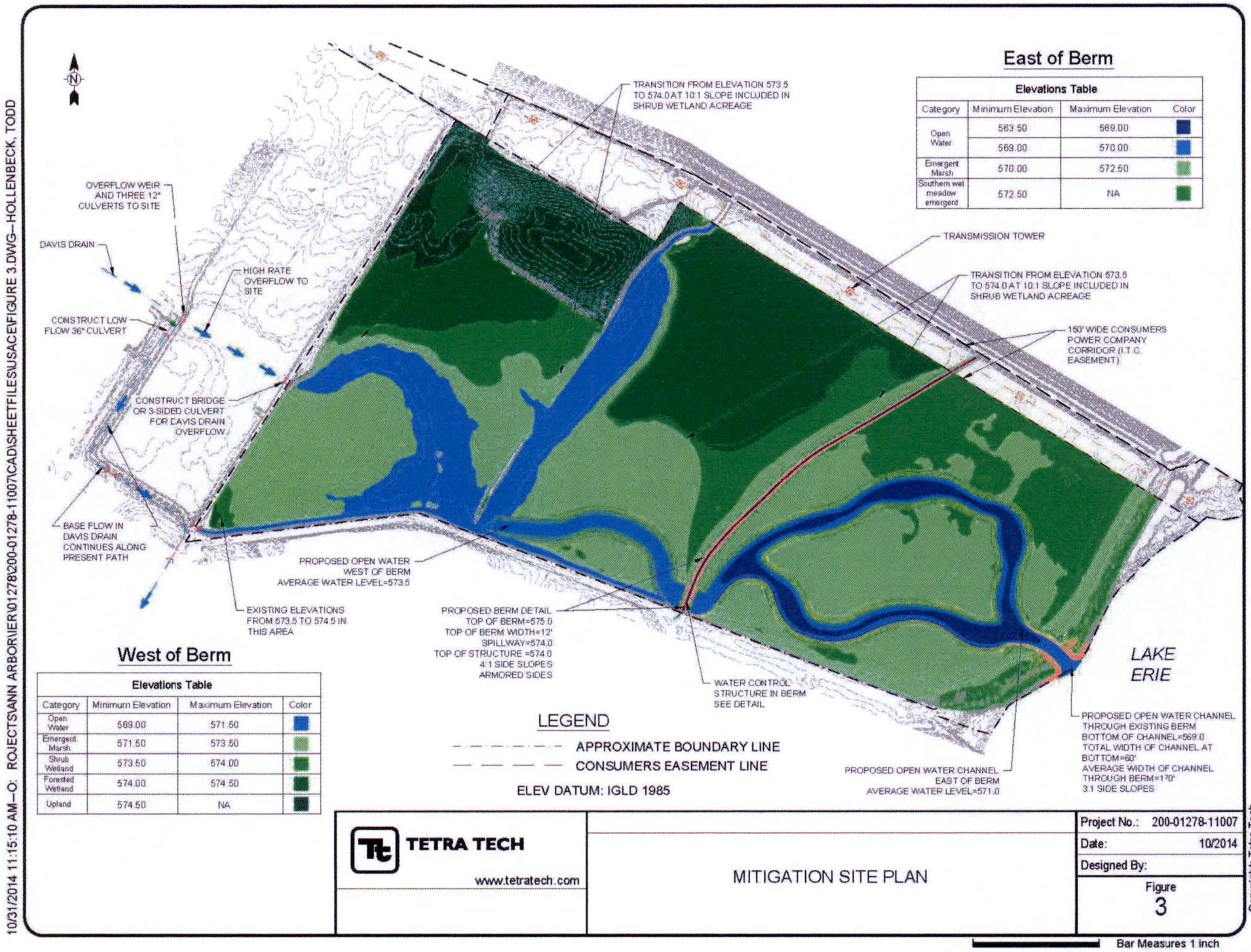


Figure 4. Mitigation Acreages

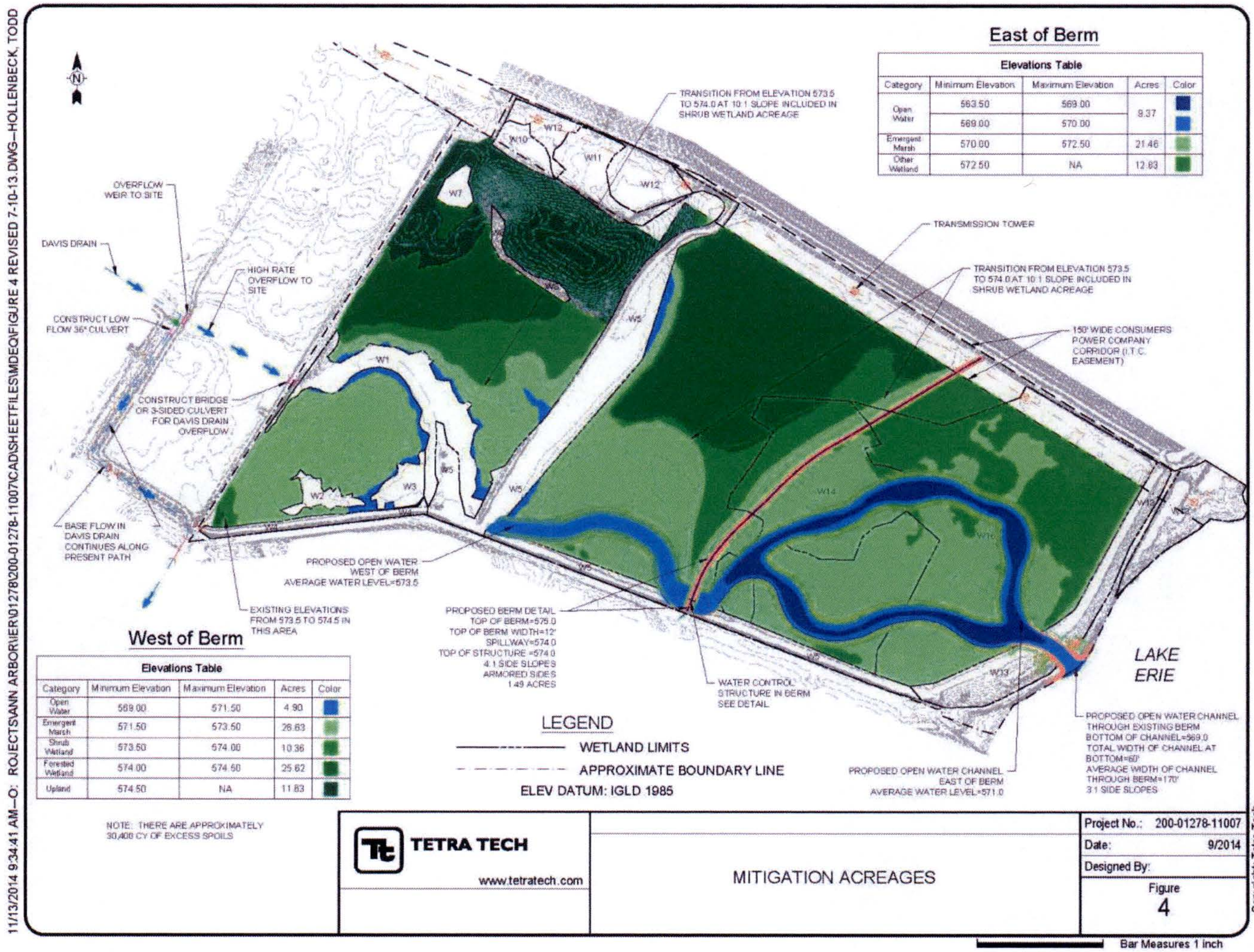
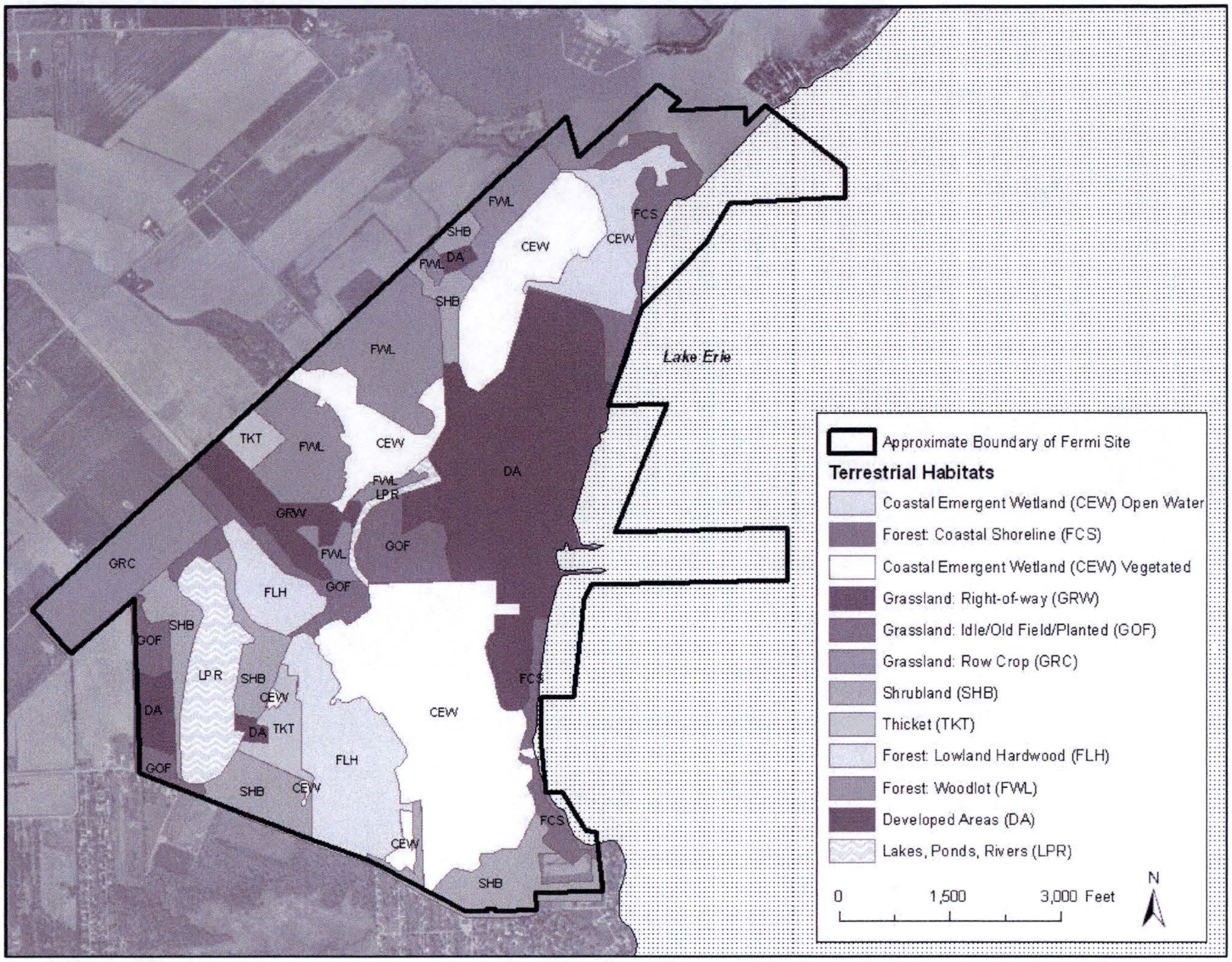
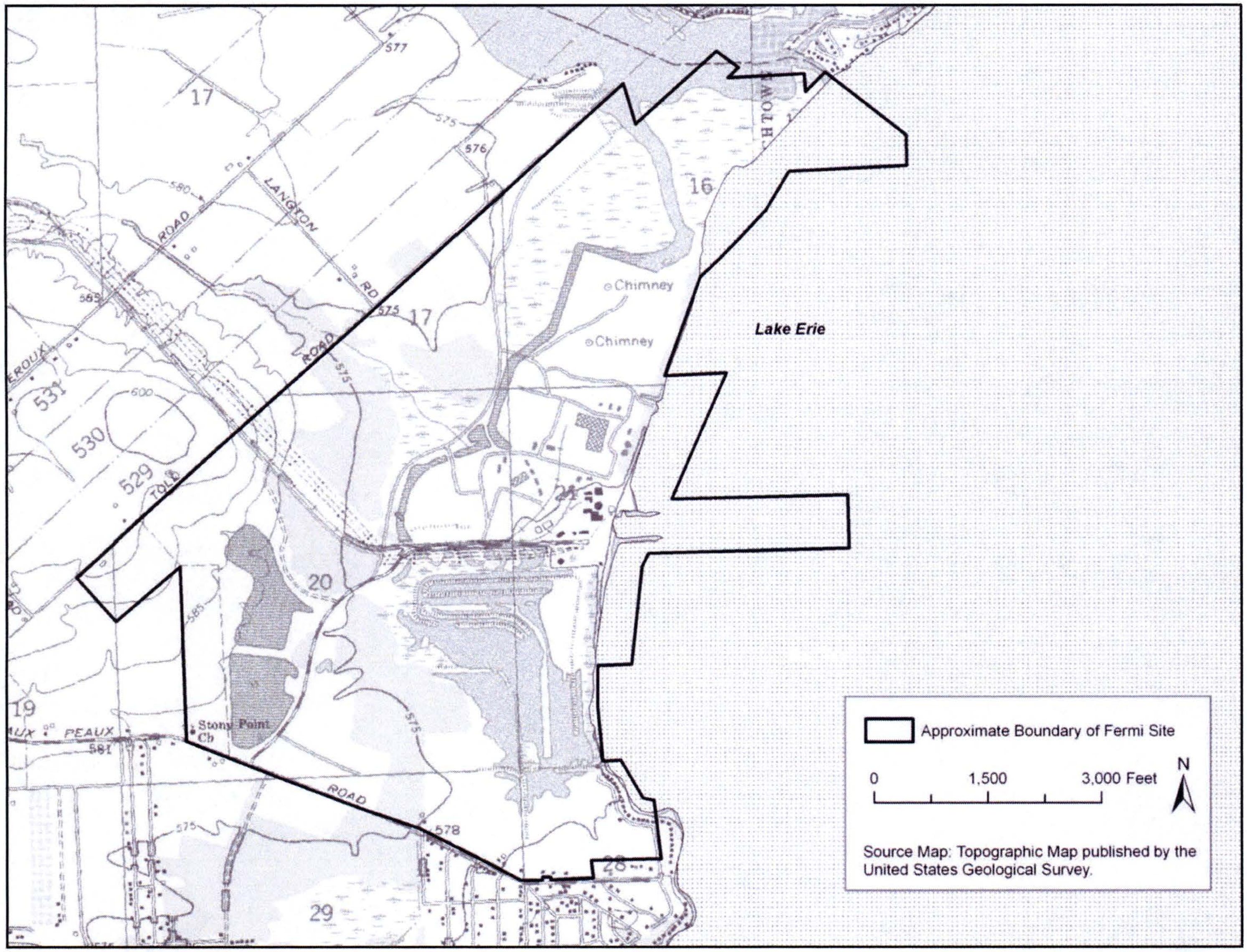


Figure 5. Land Uses on the Fermi Site



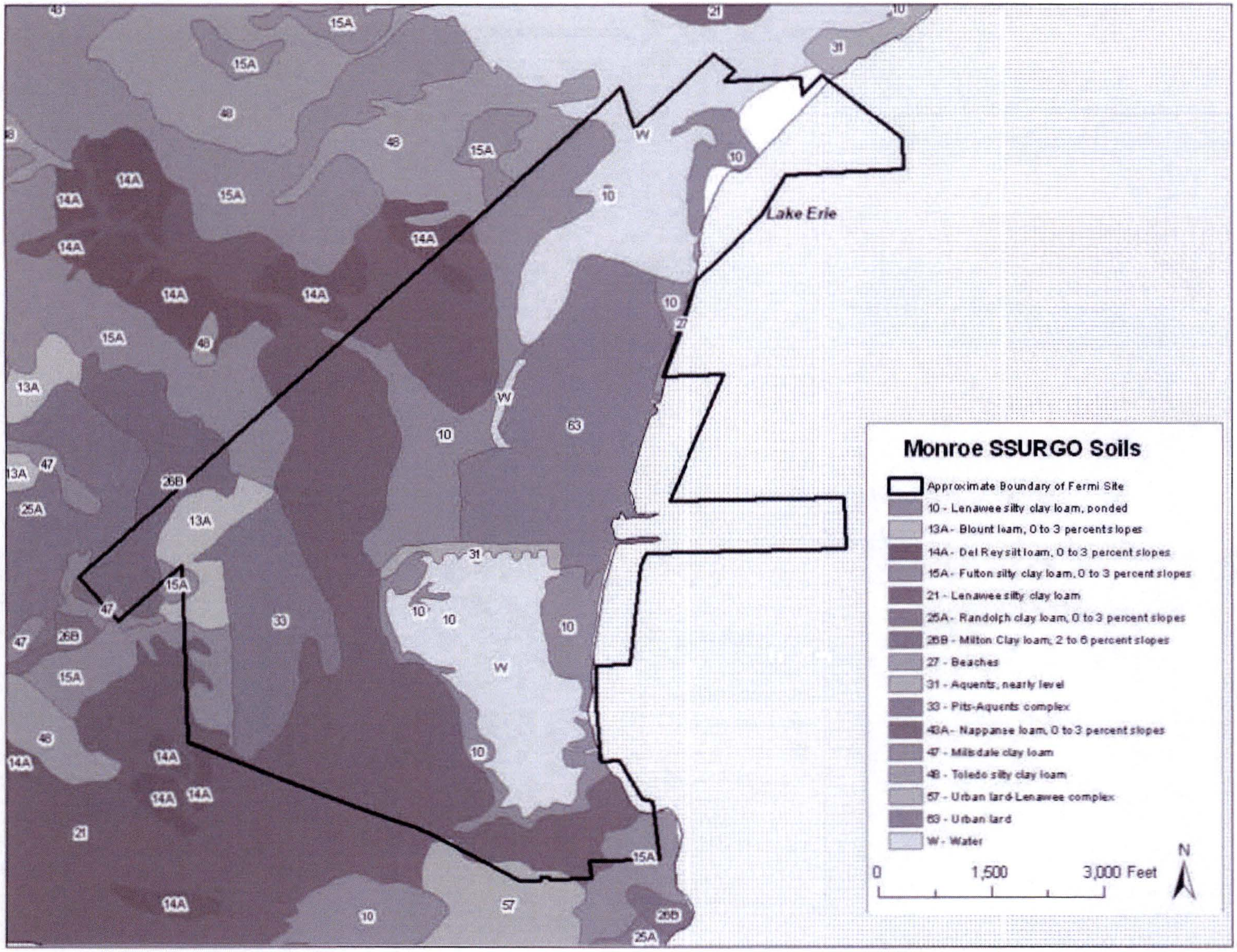
Source: Reference 7

Figure 6. Topography of the Fermi Site



Source: Reference 29

Figure 7. Soil Types on the Fermi Site



Source: Reference 30

Figure 8. Observed Locations of American Lotus on the Fermi Site

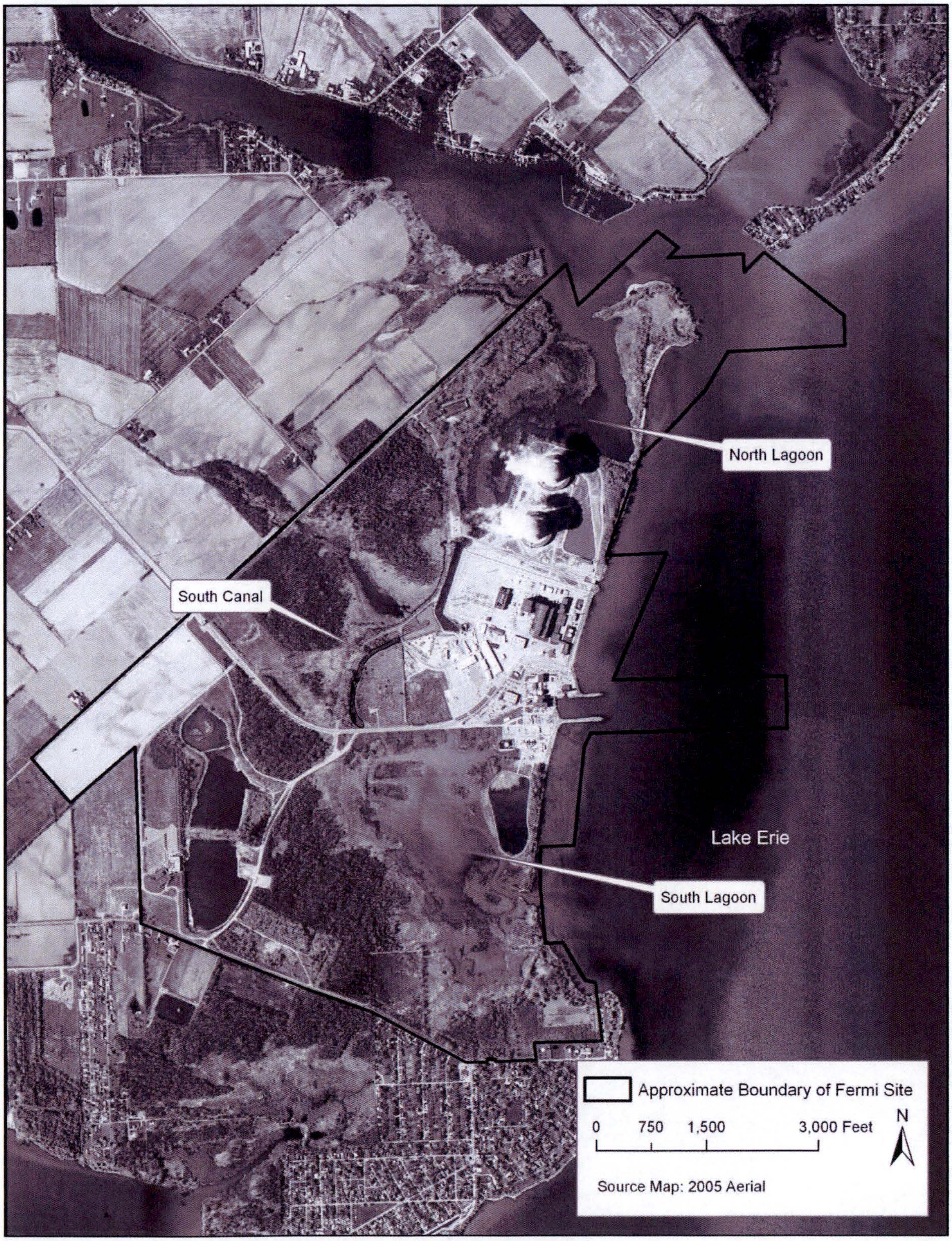


Figure 9. Culvert Locations on the Fermi Site

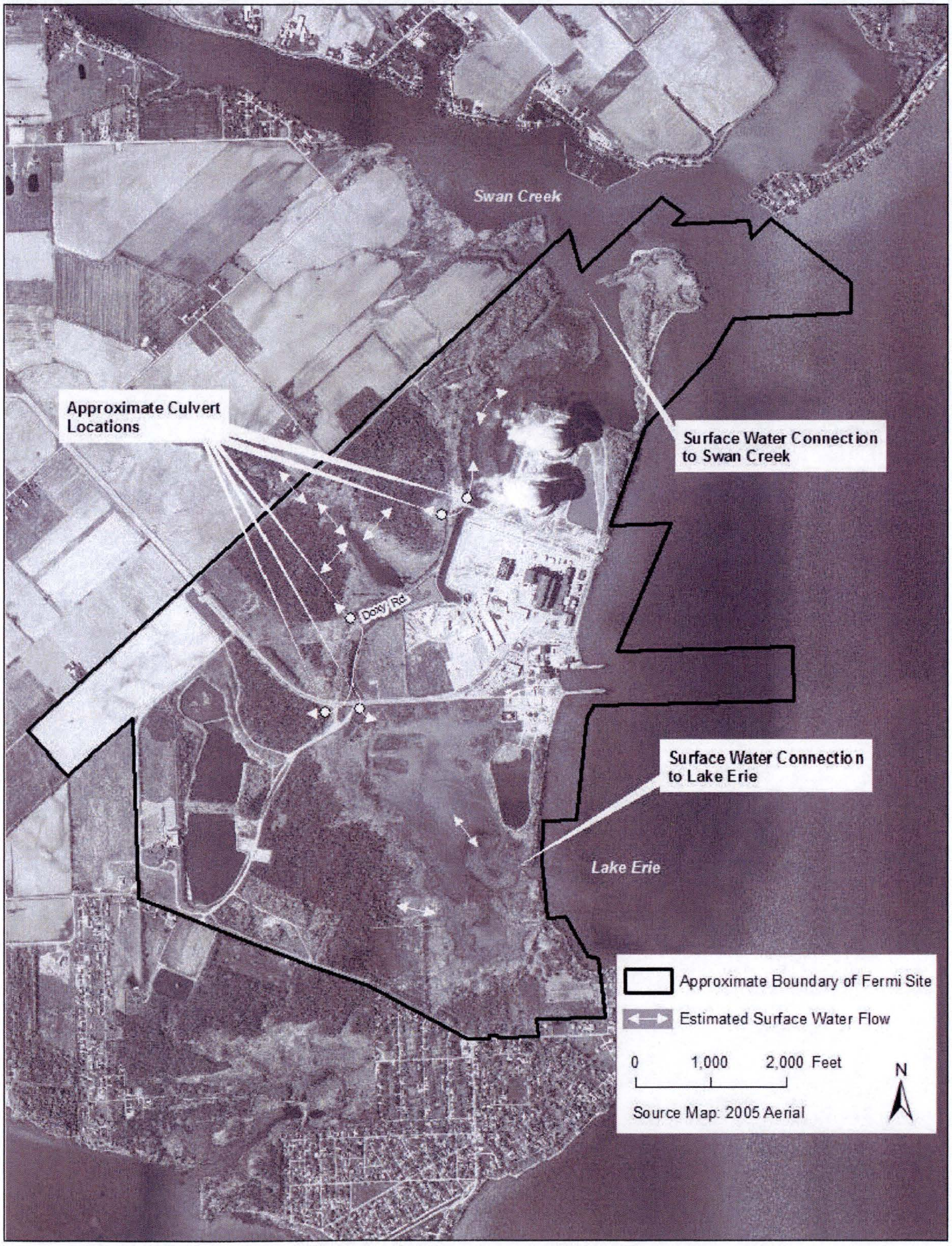


Figure 10. Fermi Site Delineated Wetlands

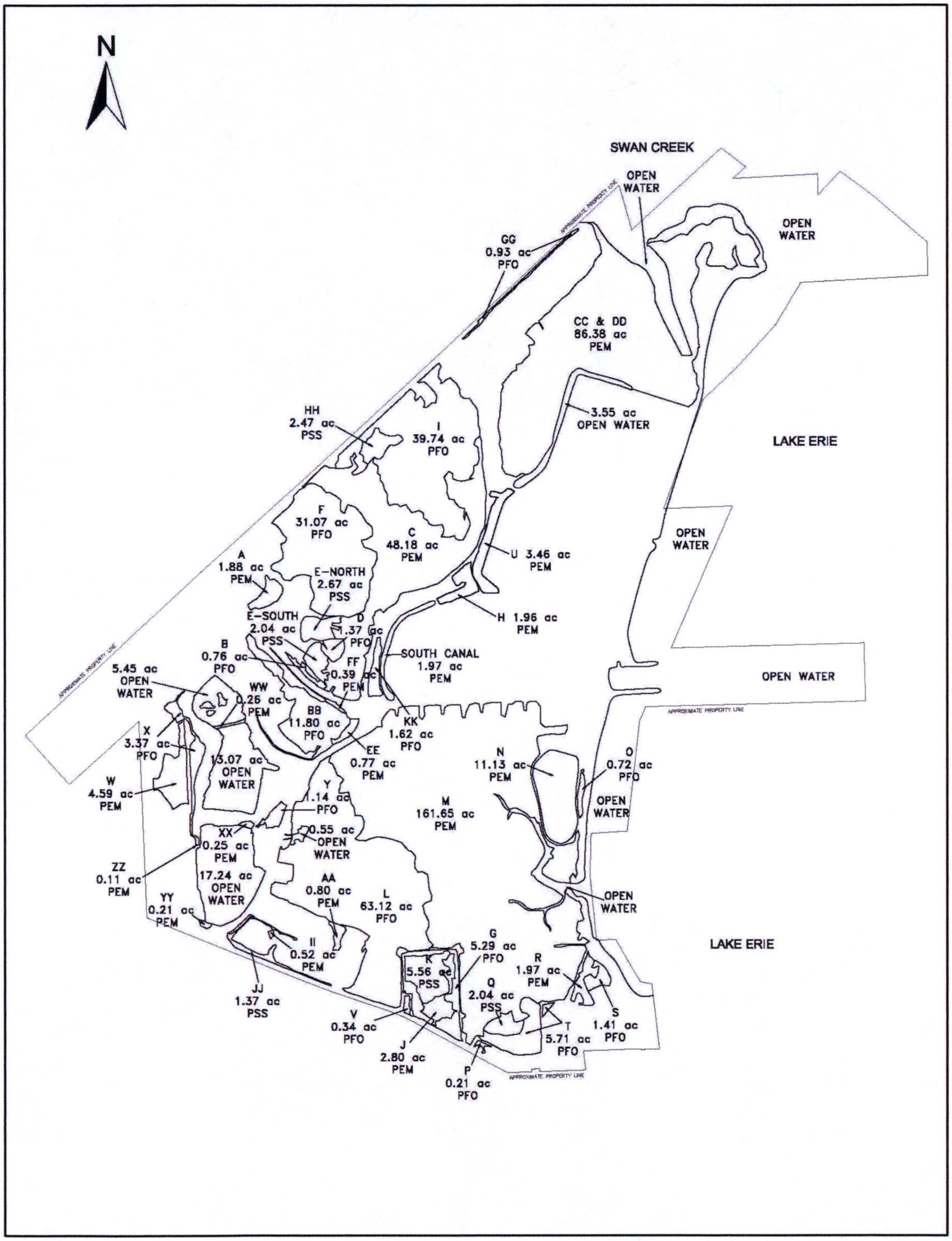
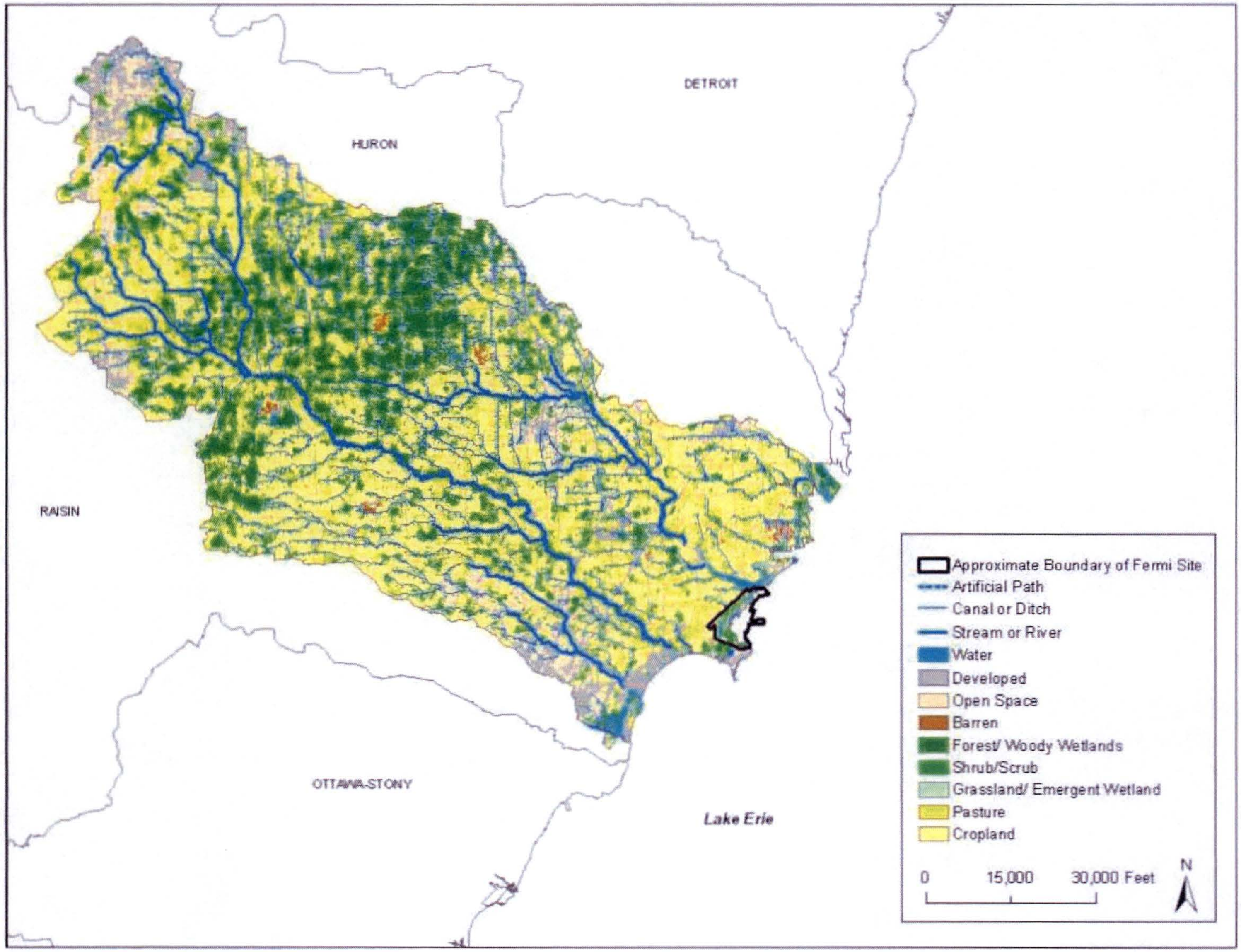
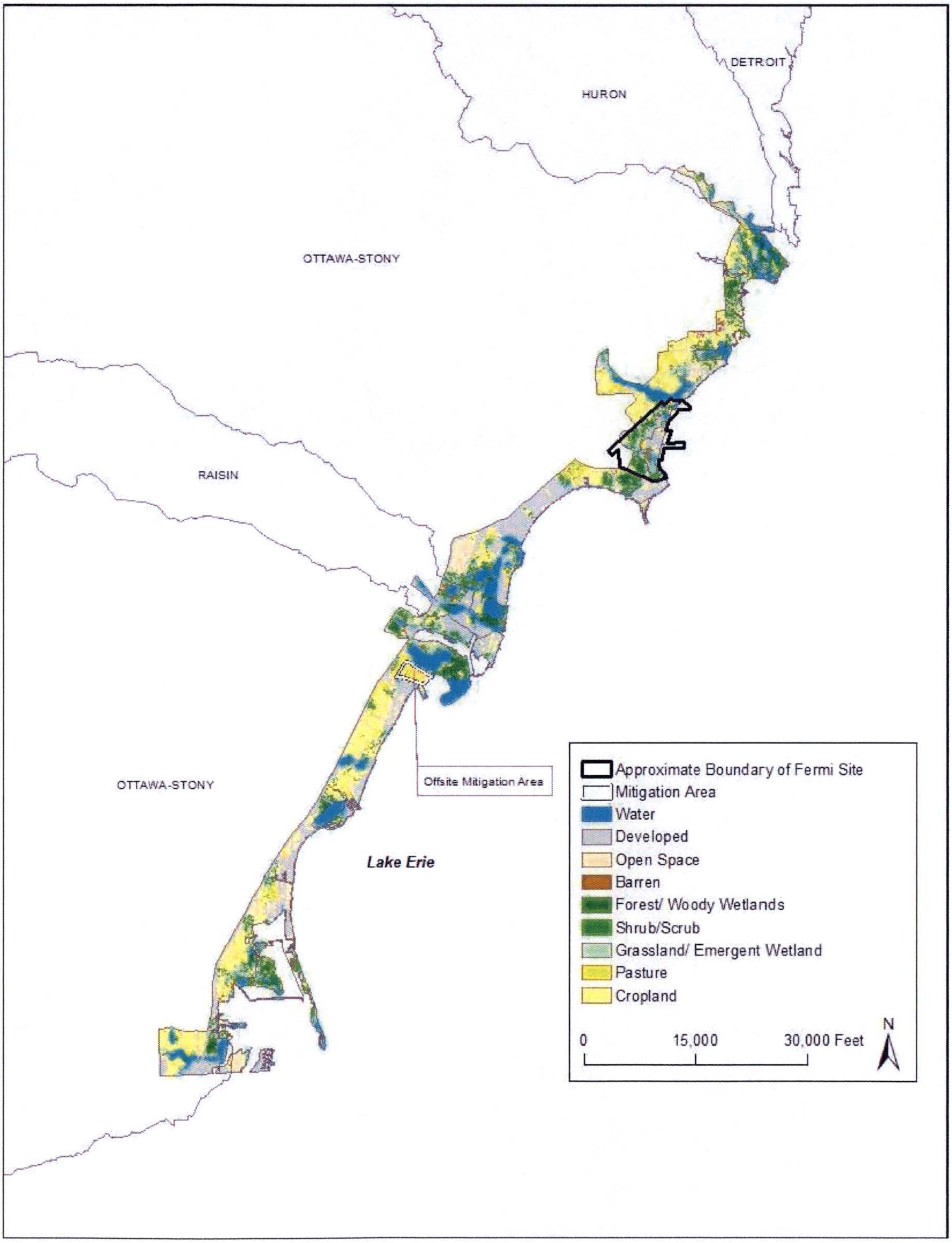


Figure 11. Land Use Land Cover (2001) in the Ottawa-Stony Watershed



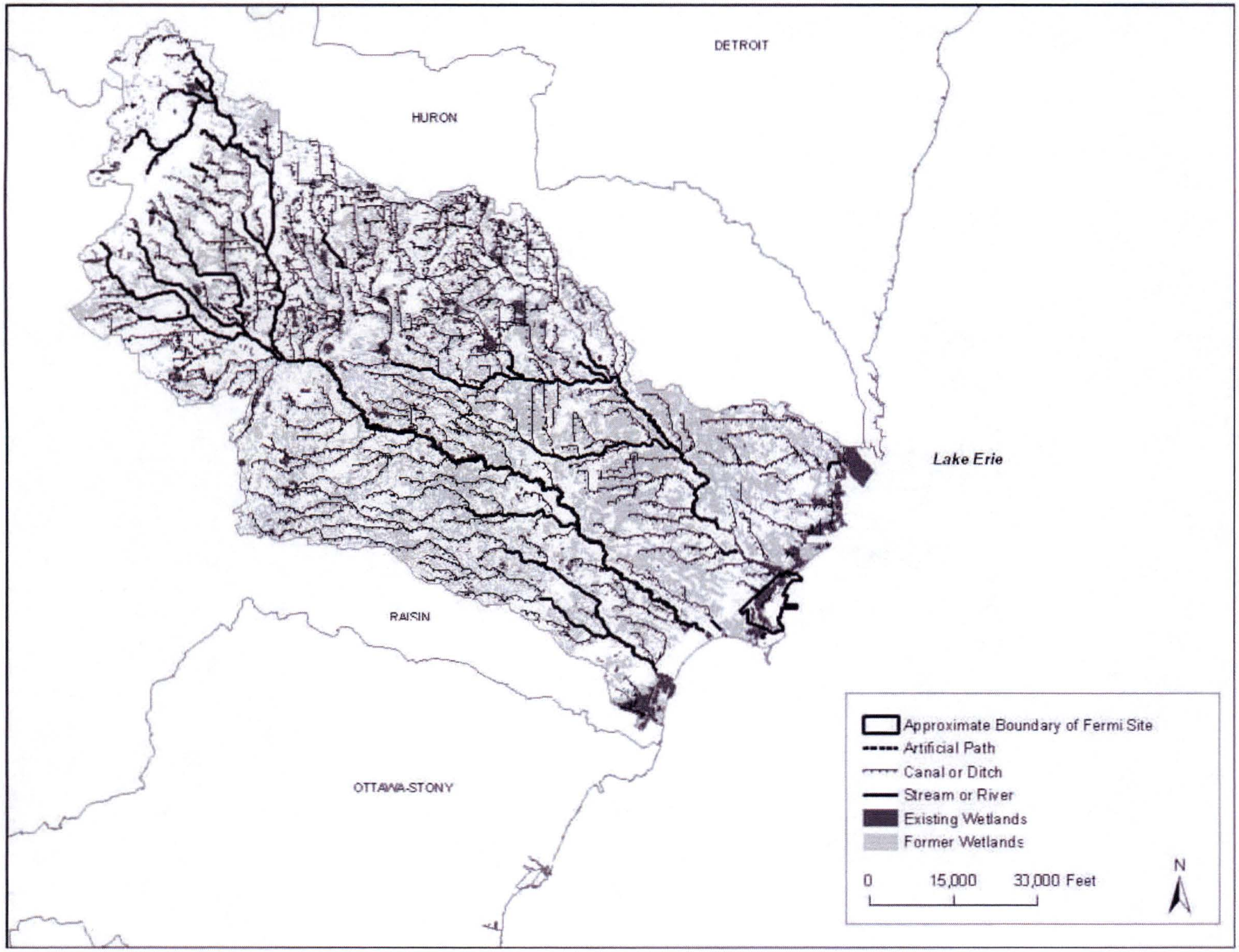
Source: Reference 31 and Reference 32

Figure 12. Land Use Land Cover (2001) in the Coastal Zone of Lake Erie



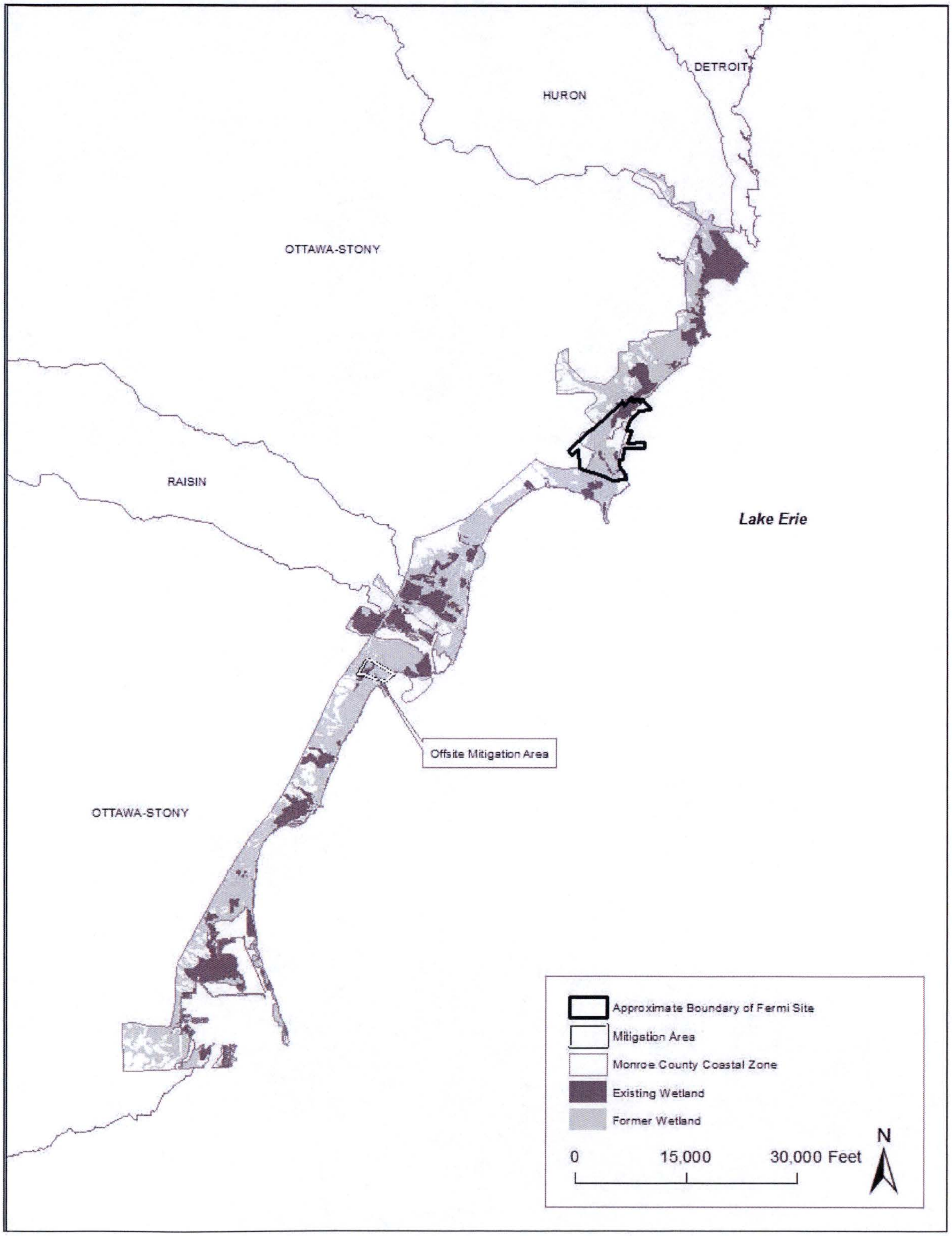
Source: Reference 32 and Reference 33

Figure 13. Existing and Former Wetlands in the Ottawa-Stony Watershed



Source: Reference 31 and Reference 34 through Reference 36

Figure 14. Existing and Former Wetlands in the Coastal Zone of Lake Erie

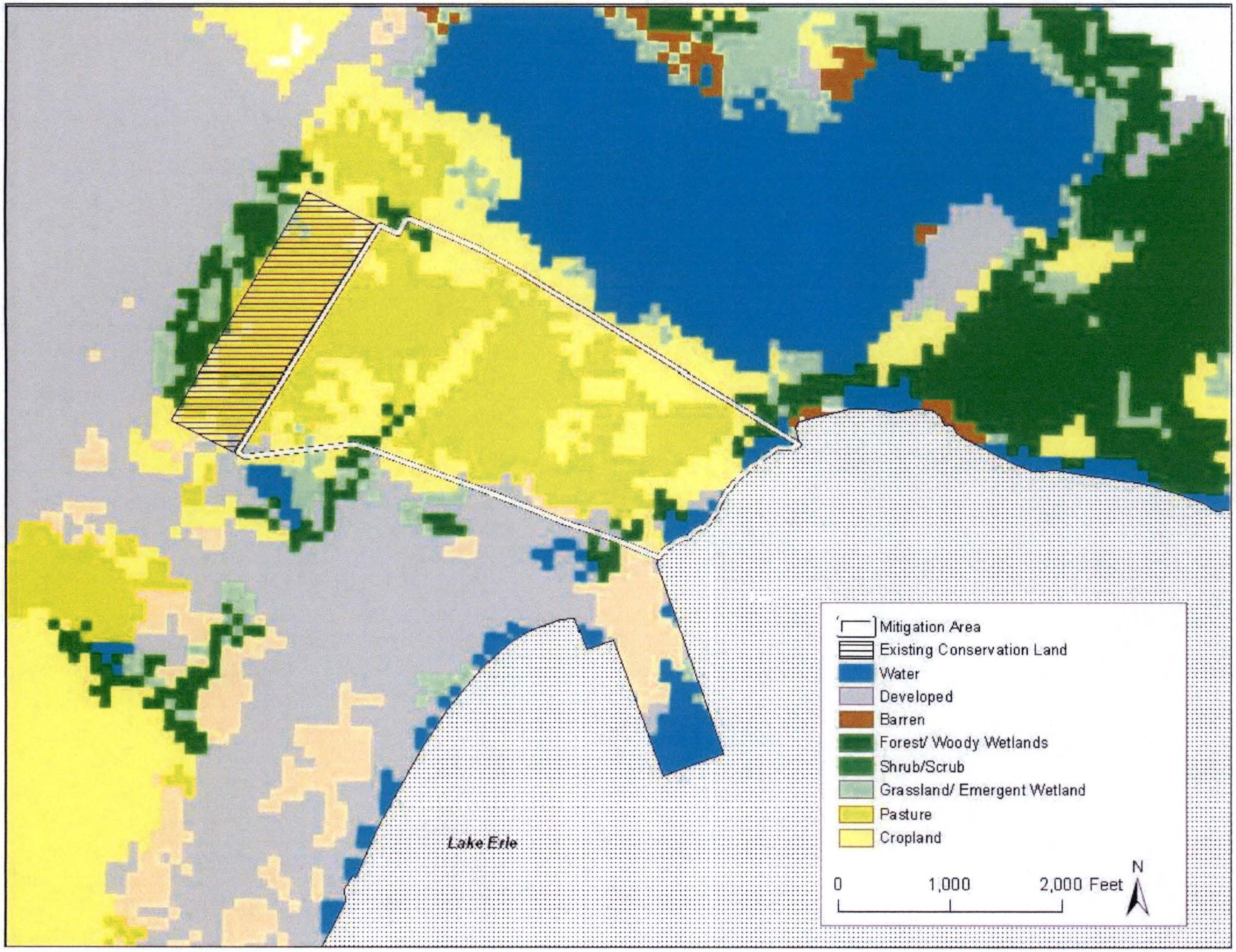


Source: Reference 33 and Reference 36

Figure 15. Mitigation Area Aerial Photo

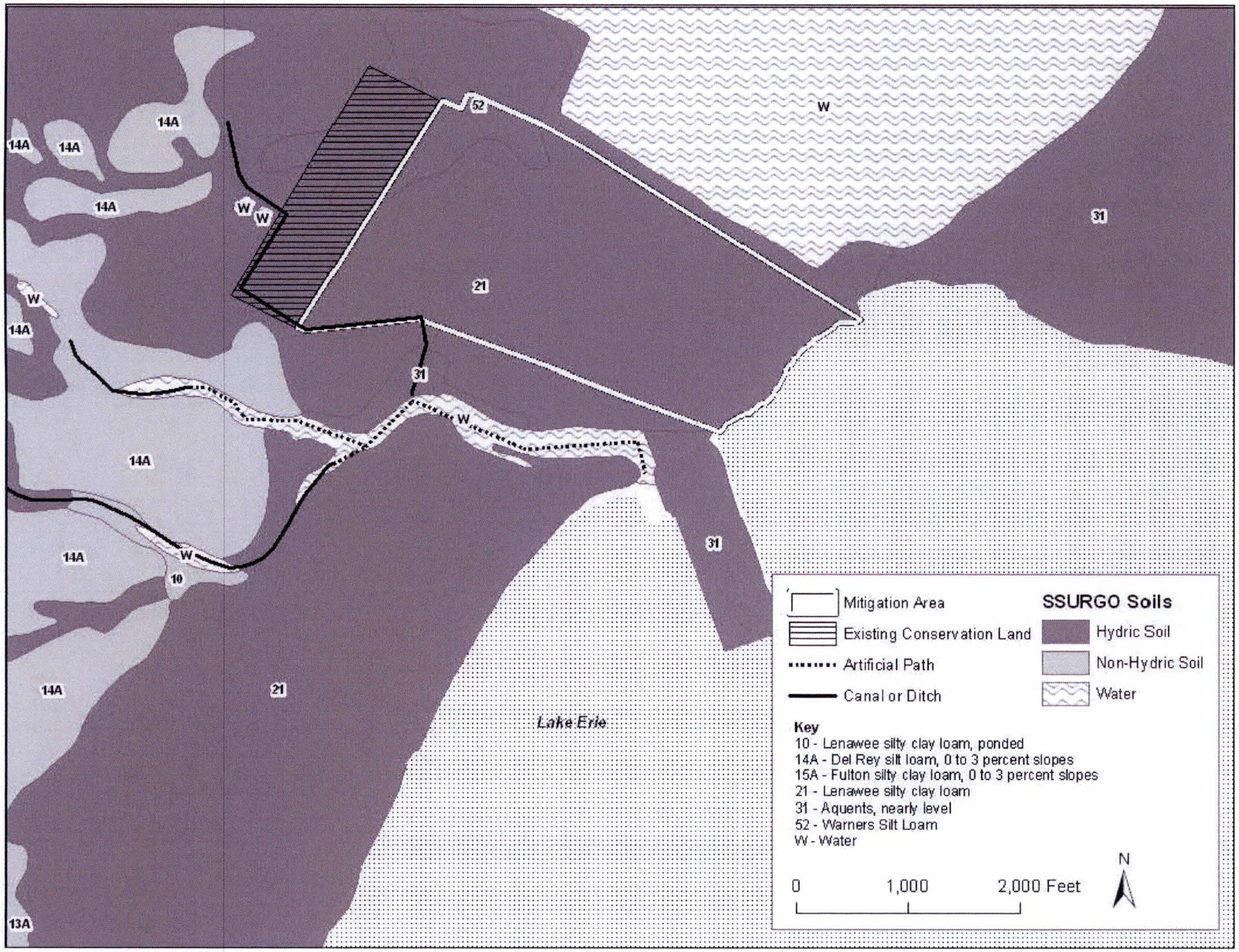
Source: Reference 28

Figure 16. Mitigation Area Covertype Map



Source: Reference 32

Figure 17. Mitigation Area Soils Map



Source: Reference 30 and Reference 31

Figure 18. Mitigation Area Current Hydrologic Conditions

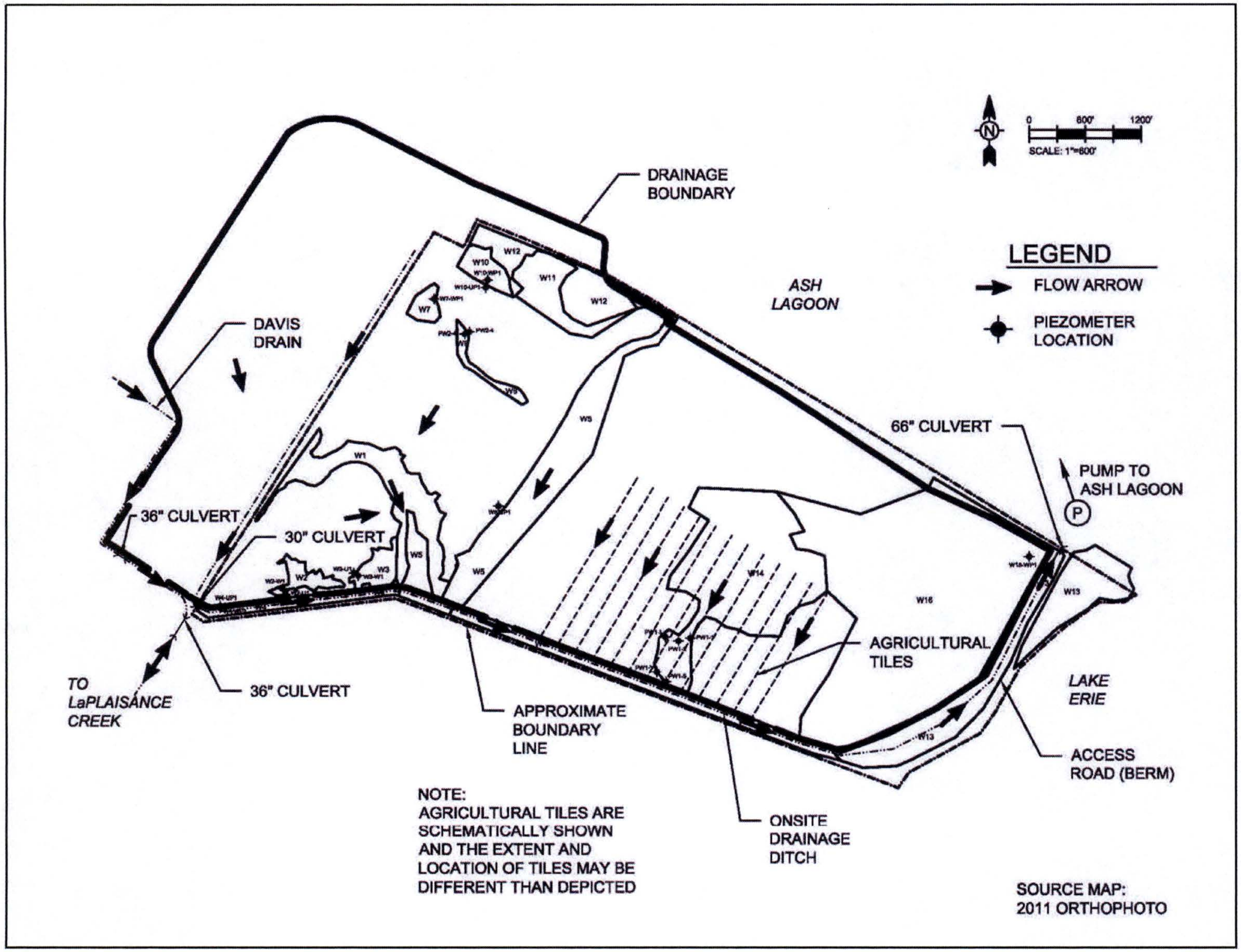
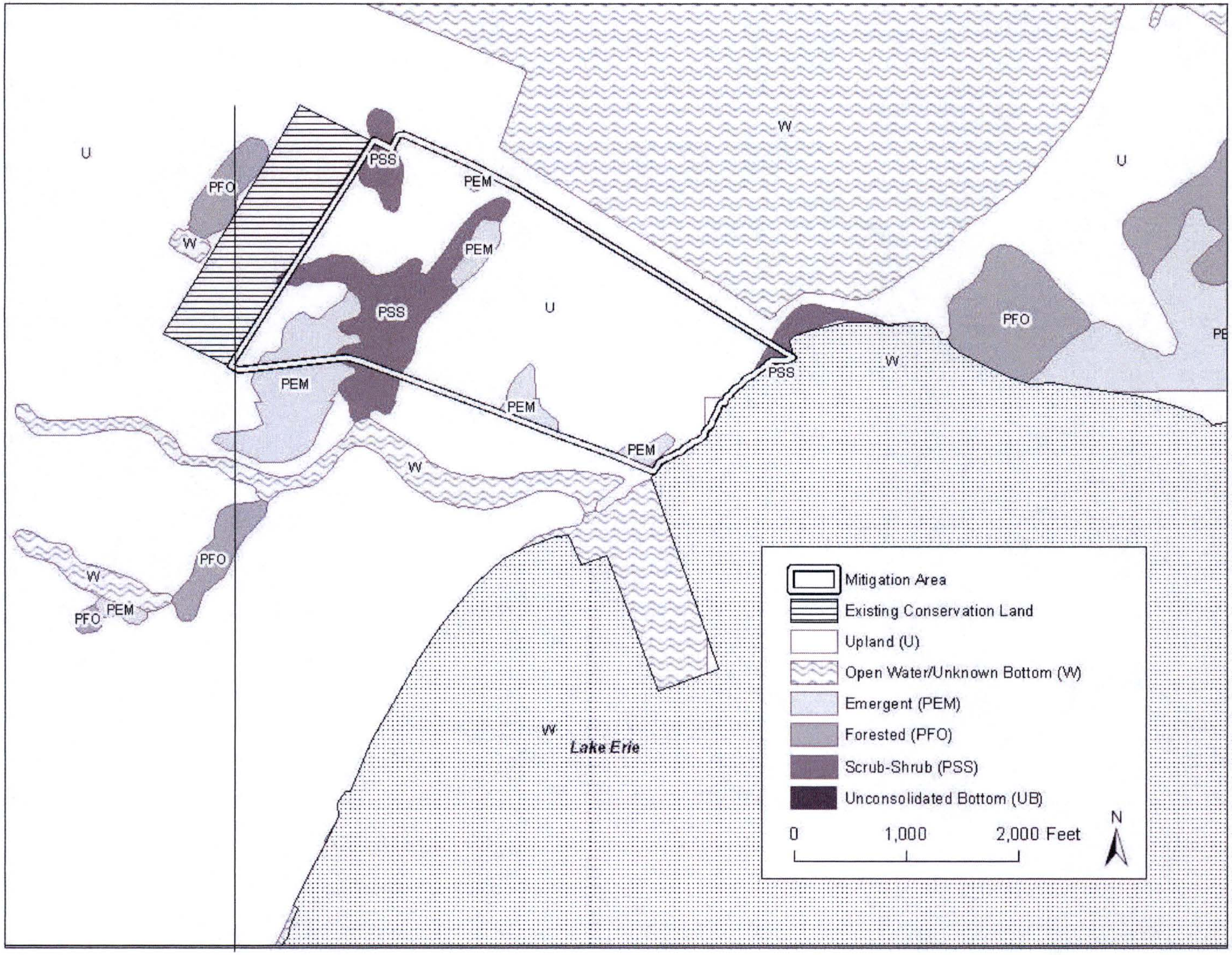


Figure 19. Mitigation Area Federal Mapped Wetlands



Source: Reference 36

Figure 20. Mitigation Area Delineated Wetlands

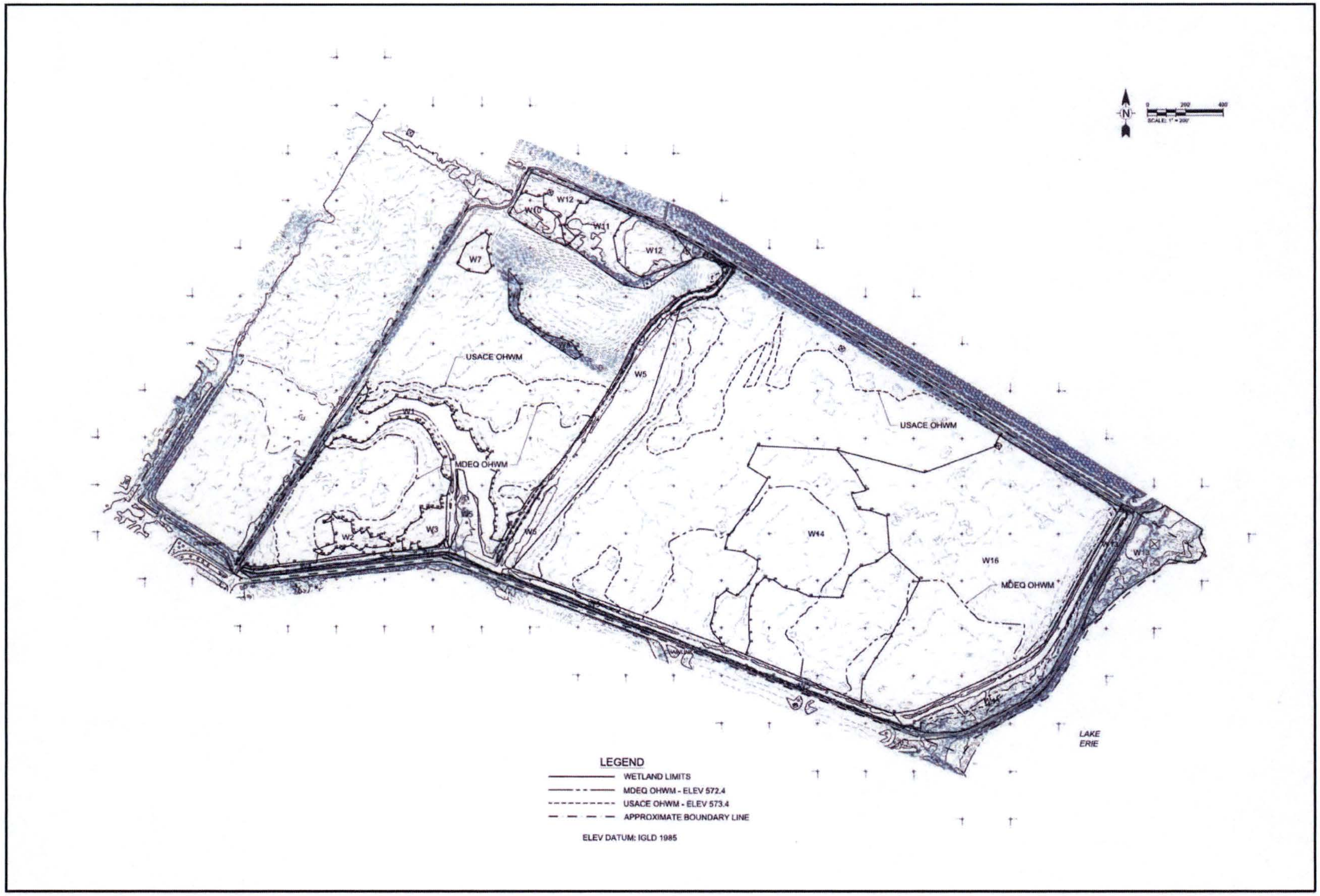


Figure 21. Conservation Easement

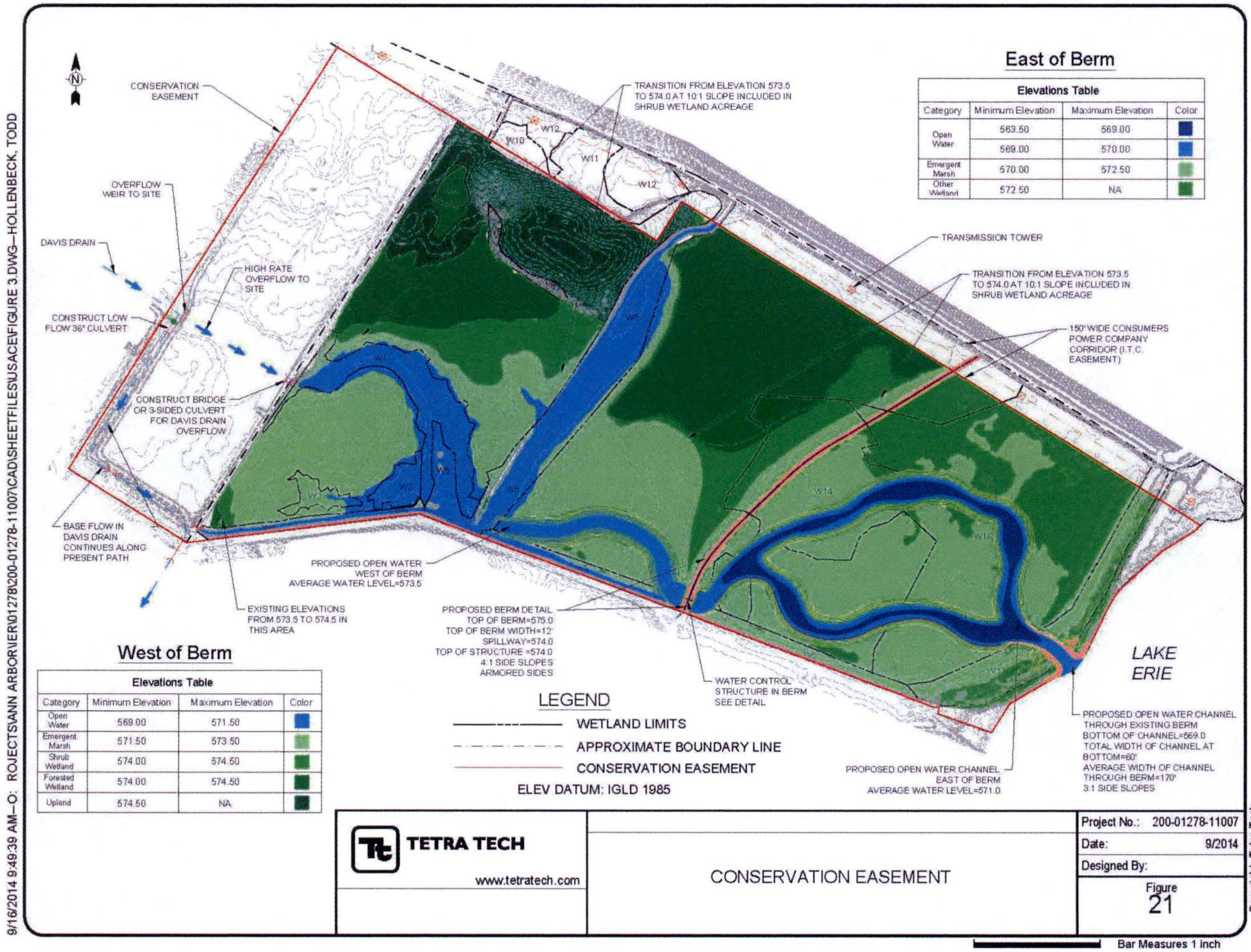


Figure 22. Monitoring Locations

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 2 Hydrology Report

DTE Energy

Detroit Edison

DETROIT EDISON OFFSITE MITIGATION AREA

HYDROLOGY REPORT

December 2012

TETRA TECH

200-01278-11007

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APPENDICES

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SECTION 1
INTRODUCTION

Detroit Edison has proposed a mitigation strategy to compensate for proposed impacts to aquatic resources associated with construction of Fermi 3 at the Enrico Fermi Atomic Power Plant. The proposed offsite mitigation area, referred to as the Monroe site, is east of Interstate 75, north of La Plaisance Creek, and immediately adjacent to Lake Erie. The Monroe site is owned and managed by Detroit Edison as part of the Monroe Power Plant. The proposed mitigation wetland would be constructed using an approximately 173-acre agricultural field. This area will be restored to two separate but hydrologically connected wetland units as shown on **Figure 1**. The eastern unit will be directly connected to Lake Erie and water levels in this unit will fluctuate with Lake Erie water levels. The western unit will be partially connected to Lake Erie. A low berm will be constructed between the eastern and western units. This berm will be constructed to an elevation that will help to ensure successful restoration of proposed habitat types and acreages in the western unit. A spillway will be constructed in the berm to allow excess water to spill over and enter the eastern unit waterway and eventually flow into Lake Erie.

Located to the west and adjacent to the mitigation site is a U.S. Fish and Wildlife Service (USFWS) conservation area. The combined area of the mitigation site and conservation area is approximately 210 acres. Along this conservation area lies a small, shallow ditch that supplies water for the USFWS wetland. Site topography suggests this ditch may have originally traversed the Monroe site and had its own outlet to Lake Erie but was rerouted around the Detroit Edison property. This ditch is named the Davis Drain and falls under the jurisdiction of the Monroe County Drain Commissioner. Drain Commissioner records show the drainage district consists of 641 acres at the Drain's outlet to La Plaisance Creek immediately south of the Monroe site. The watershed is very flat making defining this watershed's size difficult from USGS 5-foot contour maps. **Figure 2** depicts the drain location, approximate watershed area, and proposed mitigation area. Detroit Edison proposes to reroute flow from Davis Drain into the western unit. This design feature will increase water flow into the wetland and also slow floodwater and reduce sediment loading and pollutants from runoff water before it reaches Lake Erie.

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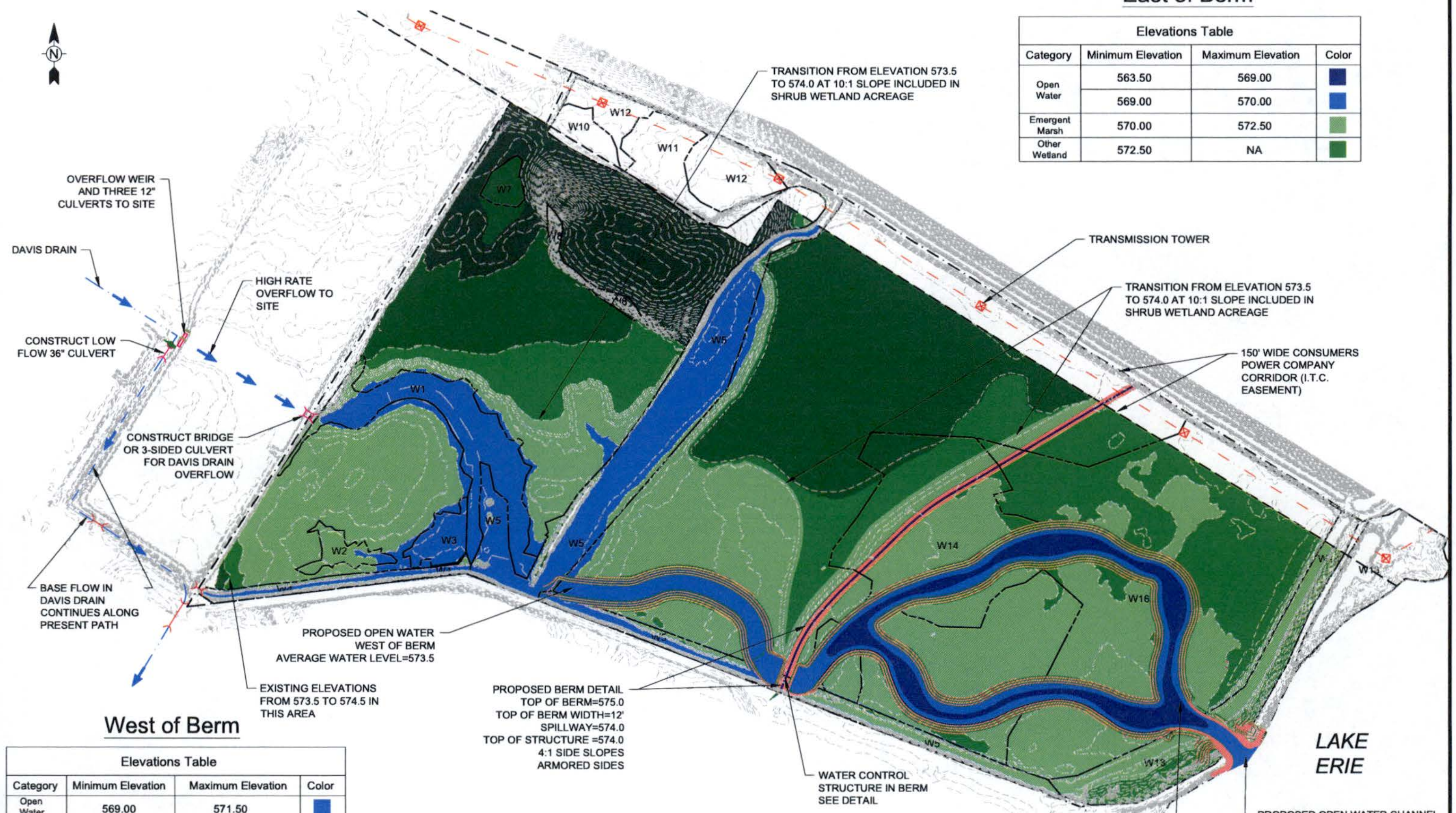

East of Berm

Elevations Table			
Category	Minimum Elevation	Maximum Elevation	Color
Open Water	563.50	569.00	
	569.00	570.00	
Emergent Marsh	570.00	572.50	
Other Wetland	572.50	NA	

West of Berm

Elevations Table			
Category	Minimum Elevation	Maximum Elevation	Color
Open Water	569.00	571.50	
Emergent Marsh	571.50	573.50	
Shrub Wetland	574.00	574.50	
Forested Wetland	574.00	574.50	
Upland	574.50	NA	

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OVERALL SITEPLAN

Project No.: 200-01278-11007
Date: 11/2012
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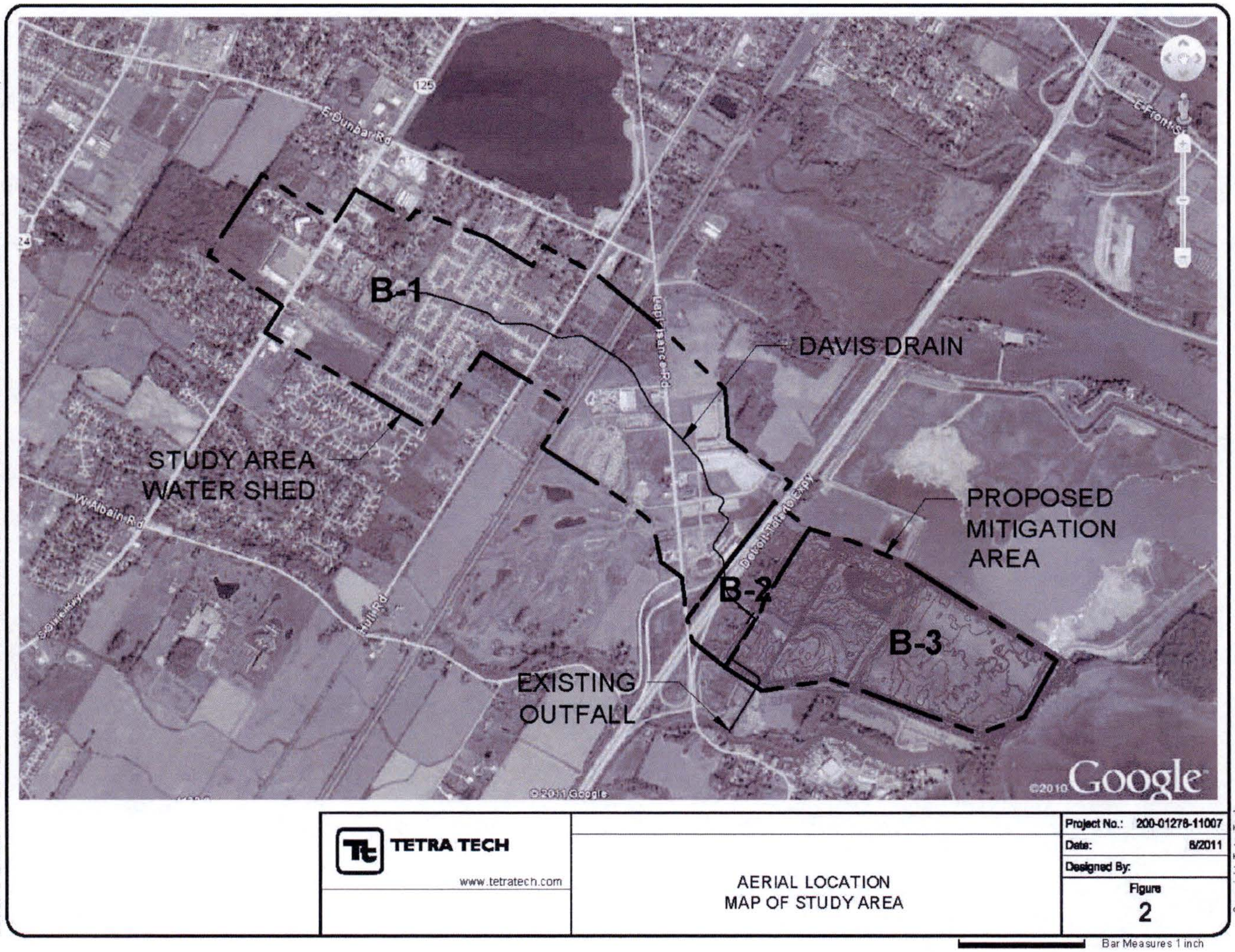
Figure
1

Bar Measures 1 inch


B-1
DAVIS DRAIN
STUDY AREA
WATER SHED
PROPOSED
MITIGATION
AREA
B-2
B-3
EXISTING
OUTFALL
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AERIAL LOCATION
MAP OF STUDY AREA
Project No.: 200-01278-11007
Date: 8/2011
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Figure
2
Bar Measures 1 inch

This report summarizes hydrologic parameters, including estimates of peak flows and average rainfall volume, of the Davis Drain that affect the design of the mitigation wetland. The report also completes water balance calculations for the proposed wetland so its sustainability can be better understood.

SECTION 2

EXISTING CONDITIONS AND STUDY AREA

2.1 EXISTING STUDY AREA

The Monroe site is approximately 210 acres located on Lake Erie. The study area includes the watershed that drains to that property. This report utilizes aerial photography, National Cooperative Soil Survey Soil Maps, as-built drawings for I-75, USGS 5-foot Quadrangle Maps, Monroe County Drain Commissioner records, and field surveys to run hydraulic/hydrologic models to estimate the existing peak flows and average annual volumes. **Figure 2** illustrates the limits of the study.

The Monroe site receives runoff from the Davis Drain watershed. The Davis Drain watershed is 641 acres according to Drain Commissioner records. The watershed is approximately 0.92 square miles, or 584 acres, in size at the western edge of the Monroe site. (Subareas B-1 and B-2) The drain is conveyed under I-75 via a 48-inch culvert as shown in the as-built drawings in **Appendix A**.

2.1.1 Location

The Monroe site is located at the intersection of I-75 and La Plaisance Road approximately 36 miles south of Detroit, Michigan and 17 miles north of Toledo, Ohio. **Figure 3** represents the survey of the Monroe site.

2.1.2 Topography

General land contours were obtained from the USGS Monroe Quadrangle Map and are shown on **Figure 4**. The contours depict Davis Drain, the general slope, and low-lying areas. The topography of the study area is very flat. In general, the elevations of the watershed vary from 600 to 580. The drainage area is difficult to determine due to development and the flat topography. The drainage area depicted in **Figure 4** was compiled in part from the Monroe County Drain Commissioner records.

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SURVEY OF PROPOSED
MITIGATION SITE

Project No.:	200-01278-11007
Date:	6/2011
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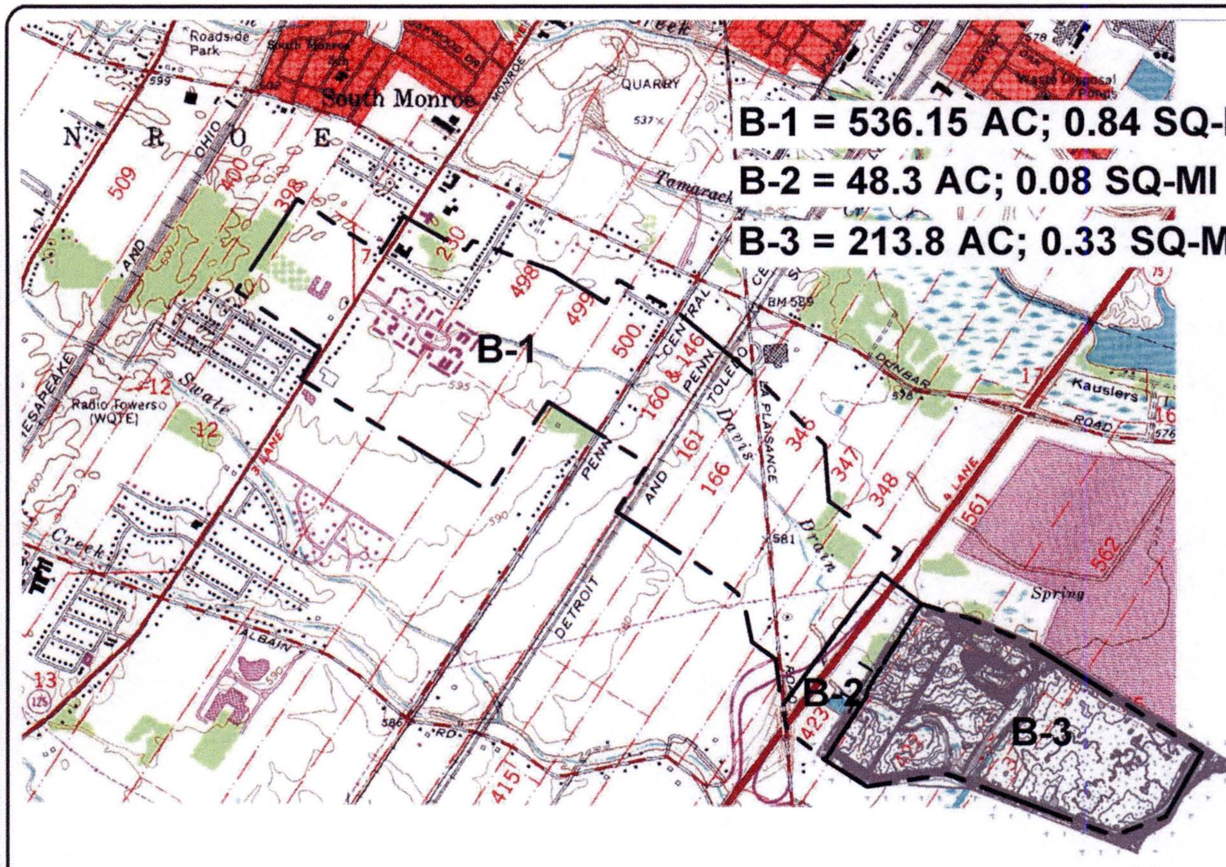
Figure	3

Bar Measures 1 inch

Figure 4 USGS Contour Map



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LEGEND

B-1 HEADWATER OF DAVIS DRAIN WATERSHED
B-2 MIDDLE OF DAVIS DRAIN WATERSHED
B-3 PROPOSED MITIGATION SITE

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USGS CONTOUR MAP

Project No.:	200-01278-11007
Date:	6/2011
Designed By:	
Figure	4

Bar Measures 1 inch

The datum referenced in the USGS Quadrangle Map is the National Geodetic Vertical Datum of 1929 (NGVD 29).

2.1.3 Land Use

The existing land uses in the study area are approximated from aerial photography and are shown on **Figure 5**. The study area is a combination of residential, commercial and open space.

2.1.4 Soils

The soils within the watershed are grouped into hydrologic soil groups based on runoff potential. Group A soils have a high infiltration rate, Group B soils have a moderate infiltration rate, Group C soils have a slow infiltration rate, and Group D soils have a very slow infiltration rate. The study area is comprised of B, B/D, C, and C/D soil groups. Approximately 51% is Lenawee silty clay loam, B/D, and 25% is Blount loam, C. These soils can expect moderate to low infiltration rates into the soil during a storm event. The summary of soil types is shown in **Appendix B.**

2.1.5 Rainfall

A design storm is a one that is equaled or exceeded, on average, once in a prescribed duration of time. Thus, a 10-year storm is equaled or exceeded, on average, once every 10 years. The design storm can also be expressed as a probability of occurring in any one year. Therefore, a 2-year storm has a 50 percent probability of being equaled or exceeded in a given year and a 5-year storm has a 20 percent probability. A summary of design rainfalls for this area is included as **Table 2.1** and is derived from *Rainfall Frequency Atlas of the Midwest* (Huff and Angel 1992).

Figure 5 Land Use Estimated from Aerial Photography

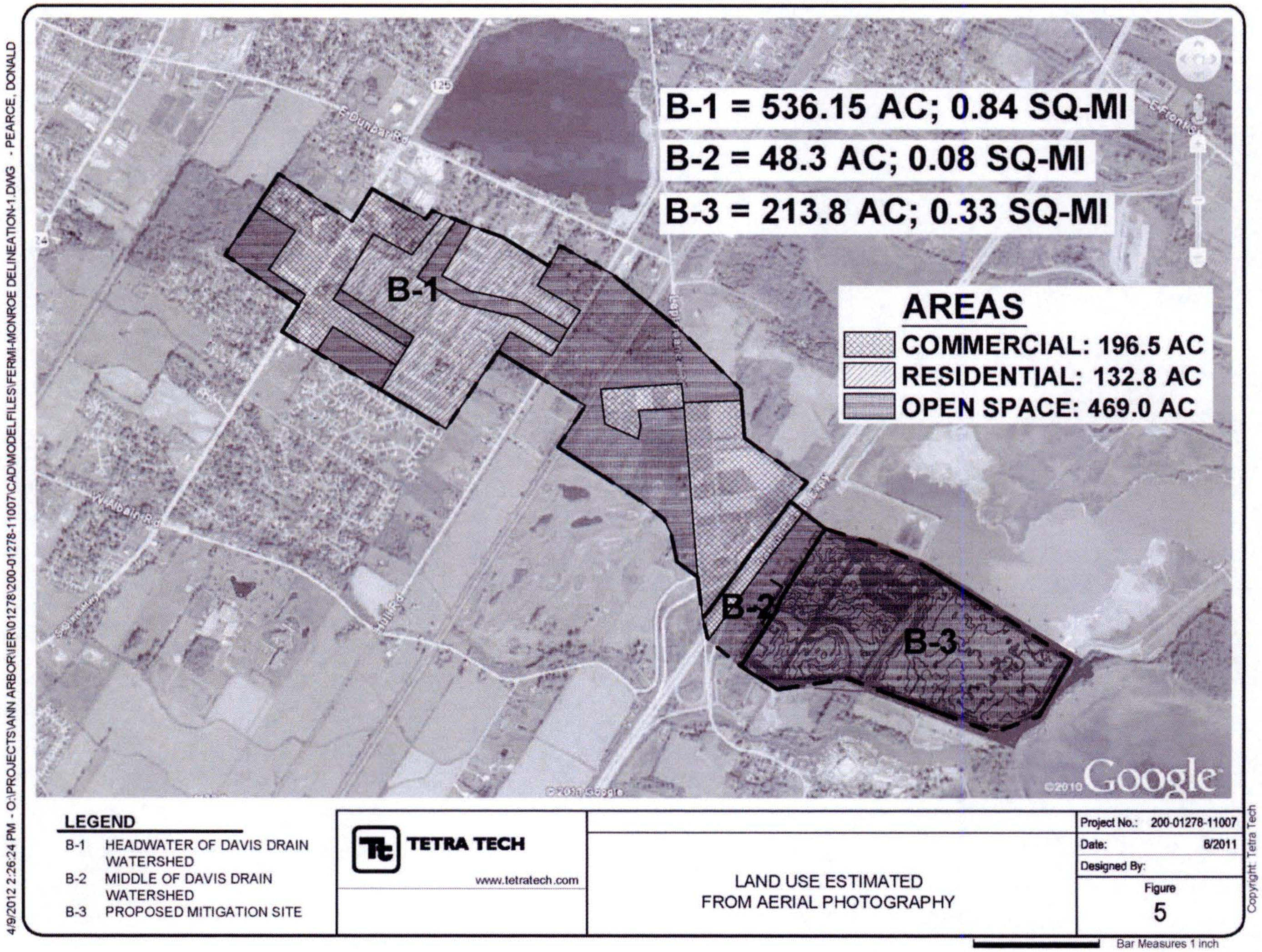


Table 2.1 Rainfall Depth for Design Storm Event

Storm Event	Rainfall (in)
2-year/24-hour	2.26
5-year/24-hour	2.75
10-year/24-hour	3.13
25-year/24-hour	3.60
50-year/24-hour	3.98
100-year/24-hour	4.36

These large storms are not directly relevant for the long-term conditions most relevant for a water balance calculation. However, they are useful for estimating peak flows needed to size design features.

Hydrology can also be estimated for a continuous period of time using historical records. The closest rain gauge with continuous rainfall monitoring is located at Detroit Metropolitan Airport. A 47-year rainfall period of record, from 1959 through 2006, was used to estimate the volume of runoff that should be anticipated within the study area for average conditions.

SECTION 3
HYDROLOGIC AND HYDRAULIC MODELING

3.1 OVERVIEW

Tetra Tech developed two models for the study area. The first Hydrologic and Hydraulic (H&H) model is created with the MWH Soft InfoSWMM 10.0 program to estimate the average annual volume that could potentially enter the proposed mitigation site. This model utilizes the EPA runoff method to develop rainfall runoff for the drainage subbasins which is then routed through the model components to estimate the volume. The second model, used to estimate runoff generated from the wetland itself, will be discussed in Section 4.0.

3.2 InfoSWMM 10.0 Model Methodology

The InfoSWMM 10.0 H&H model was used in the analysis. This model was derived from EPA's SWMM (Stormwater Management Model) Version 5.0.22. InfoSWMM utilizes a dynamic wave solution to simulate runoff and flow routing through the system during a rainfall event. The model simulates such things as infiltration, runoff, hydraulic grade lines, pipe storage, weirs, pump stations, tidal fluctuations, and drainage wells. InfoSWMM is a powerful modeling platform that works within Arc-GIS allowing simplified editing and the ability to present illustrative results.

A model was developed by manually compiling data. The subcatchments were delineated from the USGS topography and a total of three subcatchments were delineated, as shown on **Figure 2**. The culvert information was gathered from the historic construction drawings of I-75, as shown in **Appendix A**. More detailed field survey was conducted of the proposed mitigation site and is shown on **Figure 3**.

Each of the subcatchments estimates runoff using the overland flow method. This method describes the tendency of water to flow across land surfaces when rainfall has exceeded the infiltration capacity into the upper zone of the pervious area; impervious areas do not infiltrate. Impervious and pervious areas used in the model were chosen from typical values for land uses estimated from aerial photography. Assumed land uses are shown on **Figure 5**. Impervious areas include driveways, streets, parking areas, and roofs that are directly connected to the storm sewer system. Pervious areas include lawns, parks, and other grassy or wooded areas. Other watershed data used in the model include ground slope and the shape (width) of subcatchment areas. Slope and width were estimated from the USGS topography based on the specific characteristics of each individual subcatchment. Each subcatchment has a discharge outlet point for the rainfall excess, or runoff, not infiltrated into the soil. In the model these discharge outlet points are represented as nodes. The model does not account for any existing stormwater detention facilities.

The purpose of this model is to assess the runoff, flows, storage, and hydraulic data within the Davis Drain watershed.

3.2.1 Physical Features

The input parameters for the system include subcatchments that represent B-1 and B-2 drainage basins, which discharge through a downstream area that represents B-3 (see **Figure 5** for locations and details of the drainage areas). The Davis Drain drainage area at the edge of the Monroe site is approximately 584 acres of predominantly residential and open space land use. The model includes a rain gauge with approximately 47 years of historic rainfall (1959-2006) collected from the Detroit Metro Airport rain gauge. A continuous simulation was run for the entire 47 years of record. In addition the 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour discrete design storm events were run. A summary of the results is presented in **Tables 3.1 and 3.2**.

3.2.2 Model Results and Flows Defined by Model for Design Storms

The model provides peak discharges for the Davis Drain watershed upstream of the proposed mitigation site at the western boundary of the adjacent conservation area. These values aid in the design of overflow weirs into and out of the site. For values of peak flows and total runoff volume refer to **Table 3.1**.

Table 3.1

Design Storm Peak Flow in Davis Drain

Design Storm	Peak Flow (cfs)	Volume (ft^3)
2-year/24-hour	90	1,575,000
5-year/24-hour	120	1,937,000
10-year/24-hour	145	2,223,000
25-year/24-hour	175	2,589,000
50-year/24-hour	200	2,891,000
100-year/24-hour	230	3,193,000

3.2.3 Model Results and Flows Defined by Model for Continuous Simulation

The continuous simulation model calculated flow volumes for the Davis Drain watershed using rainfall from a period of record from 1959 through 2006. The results are tabulated for the Davis Drain watershed upstream of the proposed mitigation site at the western edge of the adjacent conservation area and are presented in **Table 3.2.**

Table 3.2

Continuous Simulation Statistics for Davis Drain

Month	Minimum (ft^3)	Maximum (ft^3)	Average (ft^3)
January	138,000	2,767,000	1,312,000
February	122,000	3,513,000	1,228,000
March	368,000	3,073,000	1,616,000
April	426,000	3,701,000	2,059,000
May	616,000	5,708,000	2,152,000
June	642,000	4,993,000	2,440,000
July	444,000	4,282,000	2,192,000
August	97,000	5,501,000	2,262,000
September	294,000	5,207,000	1,960,000
October	89,000	4,346,000	1,538,000
November	560,000	4,110,000	1,803,000
December	293,000	4,173,000	1,705,000
		Total	**22,267,000**

The proposed concept of interconnecting the Davis Drain to the wetland involves allowing a small base flow to continue to Lake Erie and the larger storm overflow to the wetland. This is based on allowing a 36-inch culvert to convey base flow to Lake Erie and flow depths above approximately 2.5 feet of depth to overflow into the proposed wetland. The plan also calls for three 12-inch culverts at the same invert elevation as the Davis Drain to divert base flow to the wetland. While these culverts will assist in filling the wetland, their impact is difficult to model due to the varying wetland depths and they have been neglected in this analysis. The actual wetland filling will be quicker than predicted in this report. Because most storms are small, the majority of the annual volume will continue to flow to Lake Erie. **Table 3.3** shows model output for that scenario.

Table 3.3

Davis Drain Runoff Volumes Diverted to the Proposed Wetland

Month	Min (ft^3)	Max (ft^3)	Average (ft^3)	Average (ac-ft)
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	4,000	118,000	31,000	0.71
June	14,000	354,000	170,000	3.9
July	212,400	2,144,000	922,000	21.2
August	48,000	874,000	266,000	6.1
September	116,000	498,000	330,000	7.6
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0

SECTION 4

ONSITE HYDROLOGY OF PROPOSED WETLAND MITIGATION SITE

4.1 OVERVIEW

Tetra Tech developed two models for the study area. The second Hydrologic and Hydraulic (H&H) model is also created with the MWH Soft InfoSWMM 10.0 program to estimate the average annual volume, and the peak flows during the design storms, that fall directly on the proposed mitigation site. This model utilizes the EPA runoff method to develop rainfall runoff volume and flow rates for the drainage subbasins.

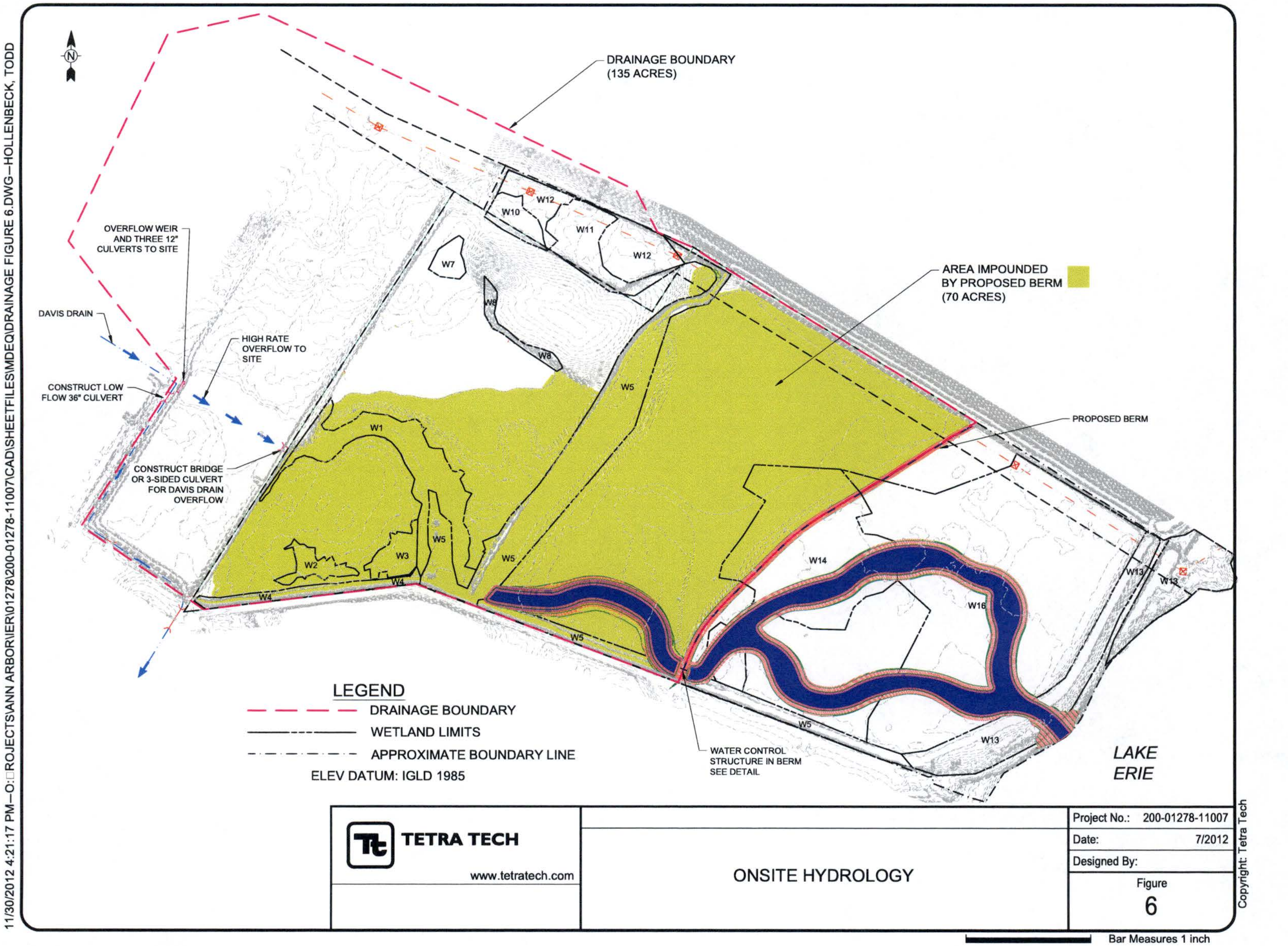
The proposed mitigation site plan is shown on **Figures 1** and **6.** The eastern unit will be under the influence of Lake Erie. The long term monthly mean water levels for Lake Erie are shown in **Figure 7**. The western unit will have stormwater impounded by a constructed berm bisecting the site. The analysis in Section 4 will consider the hydrology of the western unit.

4.2 Physical Features

The input parameters for the system are the 65 acres directly contributing to the impoundment created by the proposed berm (see **Figure 6** for locations and details of the drainage areas).

4.3 Model Results and Flows Defined by Model for Continuous Simulation

The continuous simulation model calculated flow volumes for the 65 acres tributary to the 70 acre proposed impoundment. The results are tabulated and are presented in **Table 4.1**.


11/30/2012 4:21:17 PM–O:\PROJECTS\ANN ARBOR\IER\01278\200-01278-11007\CAD\SHEETFILES\MDEQ\DRAINAGE FIGURE 6.DWG–HOLLENBECK, TODD
N
DRAINAGE BOUNDARY
(135 ACRES)
OVERFLOW WEIR
AND THREE 12"
CULVERTS TO SITE
DAVIS DRAIN
HIGH RATE
OVERFLOW TO
SITE
CONSTRUCT LOW
FLOW 36" CULVERT
CONSTRUCT BRIDGE
OR 3-SIDED CULVERT
FOR DAVIS DRAIN
OVERFLOW
AREA IMPOUNDED
BY PROPOSED BERM
(70 ACRES)
PROPOSED BERM
W1
W2
W3
W4
W5
W7
W8
W10
W11
W12
W13
W14
W16
WATER CONTROL
STRUCTURE IN BERM
SEE DETAIL
LAKE
ERIE
LEGEND
DRAINAGE BOUNDARY
WETLAND LIMITS
APPROXIMATE BOUNDARY LINE
ELEV DATUM: IGLD 1985
TETRA TECH
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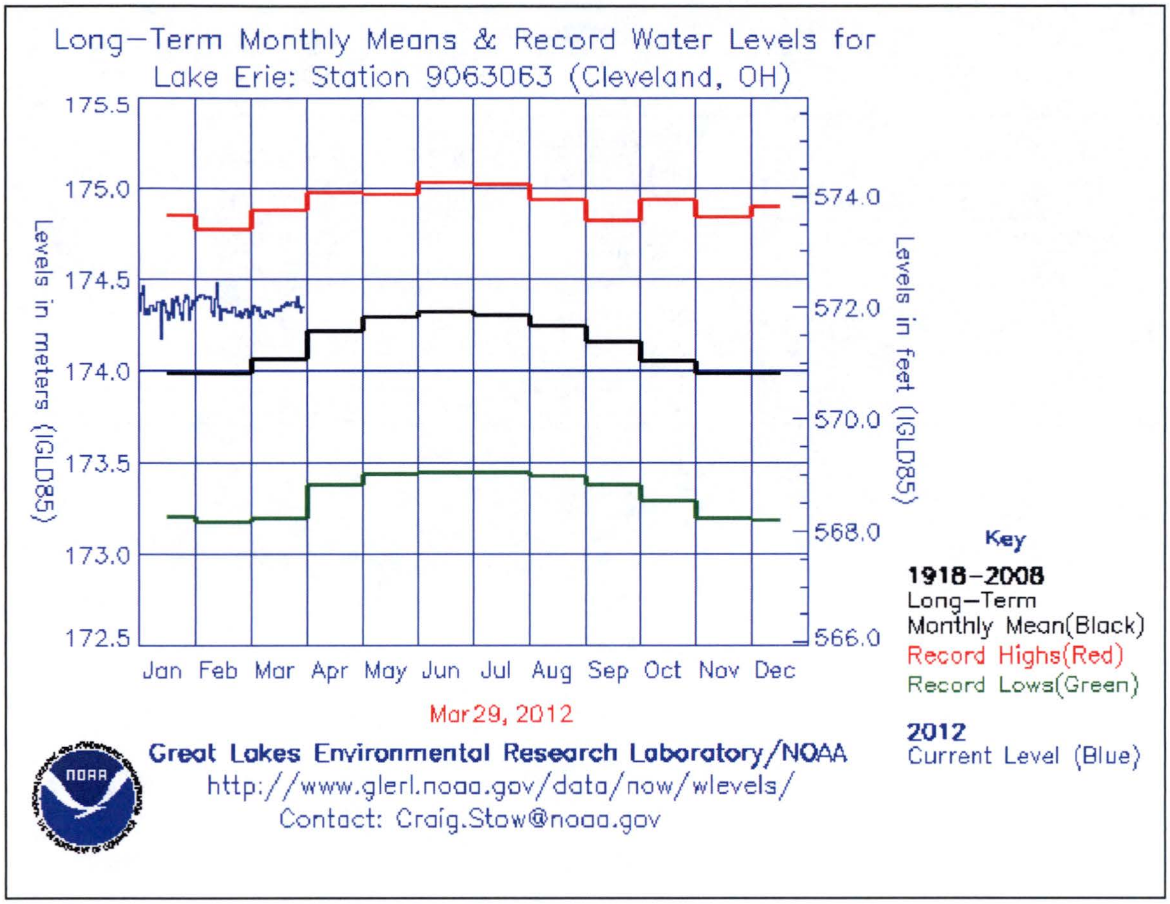

Figure 7. Long Term Lake Erie Water Levels

Table 4.1

Site Runoff

Month	Average (ft^3)	Average (ac-ft)	Month	Average (ft^3)	Average (ac-ft)
January	43,000	1.0	August	185,000	4.2
February	54,000	1.2	September	140,000	3.2
March	52,000	1.2	October	83,000	1.9
April	88,000	2.0	November	70,000	1.6
May	126,000	2.9	December	72,000	1.6
June	194,000	4.4			
July	184,000	4.2	**Total**	**1,291,000**	**29.4**

SECTION 5
WATER BUDGET

5.1 Overview

With the hydrology of the Davis Drain and site watersheds characterized, a water budget for the constructed wetland can be calculated. The calculations assume an impoundment of approximately 70 acres will be created in the western unit behind the proposed berm. The average depth of this impoundment is approximately 2 feet and the storage approximately 140 acre-ft.

5.2 Water Budget Methodology

The water budget was prepared following the guidelines in the Michigan Department of Transportation Drainage Manual (MDOT 2006) and MDEQ "General Guidelines for Calculating a Water Budget" (MDEQ 2010).

Input factors are described below and calculations are summarized in Appendix C:

Precipitation – Based on the monthly average precipitation falling on the 70 acre impoundment.

Infiltration – Soil borings taken onsite were shown to have uniform classifications of clay. Two of these borings were analyzed in the laboratory for hydraulic conductivity. The tests confirmed that a negligible amount of infiltration will be expected from the site. See Appendix D for the laboratory test results.

Site Runoff – Based on results of SWMM.

Davis Drain Overflow – Based on results of SWMM.

Potential Evapotranspiration (PET) – Based on calculations described in Appendix C.

Ground Water Flow – Piezometer readings show the groundwater below the ground elevations. Given the impervious clay on the site, there is not expected to be any gain or loss of water to groundwater flow. This is assumed to be negligible for the water balance calculation.

Table 5.1 demonstrates the composite input into the wetland with the Davis Drain overflow included.

Table 5.1

Calculation of Hydrology Input for Average Year

Month	Davis Drain Overflow (ac-ft)[a]	Site Runoff (ac-ft)[b]	Precipitation (ac-ft)[c]	Total Input (ac-ft)
January	0	1.0	12.4	13.4
February	0	1.2	10.9	12.1
March	0	1.2	13.8	15.0
April	0	2.0	18.7	20.7
May	0.71	2.9	20.7	24.4
June	3.9	4.4	18.7	27.1
July	21.2	4.2	20.3	45.6
August	6.1	4.2	22.1	32.4
September	7.6	3.2	16.9	27.7
October	0	1.9	15.5	17.4
November	0	1.6	17.8	19.4
December	0	1.6	15.2	16.8

a. From Table 3.3.
b. From Table 4.1.
c. From Table C.3 in Appendix C.

5.3 Results

5.3.1 Hydrology with Davis Drain Overflow

Table 5.2 is the water balance with this scenario for an average year. The inflows to the western unit of the site greatly exceed the outflows. In this calculation, the wetland will begin to overflow to the eastern unit in the fourteenth month. In each month, inflows equal or exceed outflows, so the wetland will be stable during the typical year. Table 5.2 presents a conservative water balance because the contribution from the three 12-inch culverts connecting the Davis Drain to the western unit was not included due to the complexities involved in modeling that diversion. The western unit is expected to fill in less than 12 months of average precipitation with the contribution from the culverts.

Table 5.2

Water Budget for Average Year with Davis Drain Overflow

Month	Input (ac-ft)[a]	Inflow Depth (ft)[b]	PET (ft)[c]	Ground Water Loss (ft)	Wetland Depth (ft)[d]	Total Storage (ac-ft)	Overflow to Lake (ac-ft)
January	13.4	0.19	0	0	0.19	13.4	0
February	12.1	0.17	0	0	0.37	25.6	0
March	15.0	0.21	0.02	0	0.55	38.8	0
April	20.7	0.30	0.1	0	0.72	50.5	0
May	24.4	0.35	0.3	0	0.79	55.6	0
June	27.1	0.39	0.4	0	0.76	53.0	0
July	45.6	0.65	0.5	0	0.93	65.3	0
August	32.4	0.46	0.4	0	1.0	68.5	0
September	27.7	0.40	0.3	0	1.1	76.2	0
October	17.4	0.25	0.1	0	1.2	83.7	0
November	19.4	0.28	0.05	0	1.4	99.9	0
December	16.8	0.24	0	0	1.7	117	0

a. Total input from Table 5.1.
b. Inflow depth estimated for 70-acre impoundment.
c. PET from Table C.2 in Appendix C.
d. Wetland depth = Inflow depth – PET – GW.

Note: Inflows always exceed outflows.

5.3.2 Hydrology with Site Only

Table 5.3 is the water balance with this scenario for an average year. Table 5.3 shows that while inflows have decreased without Davis Drain input, the inflows still exceed outflows over the course of the average year. Under this scenario, it will be the second year until the wetland completely fills. However, the wetland will have inflows meeting outflows in summer months. In winter months, inflows will exceed outflows (with the excess spilling to the eastern unit of the mitigation wetland next to Lake Erie).

Table 5.3

Water Budget for Average Year for Wetland Site Only

Month	Input (ac-ft)[a]	Inflow Depth (ft)[b]	PET (ft)[c]	Ground Water Loss (ft)	Wetland Depth (ft)[d]	Total Storage (ac-ft)	Overflow to Lake (ac-ft)
Jan	13.4	0.19	0	0	0.19	13.4	0
Feb	12.1	0.17	0	0	0.37	25.6	0
Mar	15.0	0.21	0.02	0	0.55	38.8	0
Apr	20.7	0.30	0.1	0	0.72	50.5	0
May	23.6	0.34	0.3	0	0.78	54.9	0
Jun	23.1	0.33	0.4	0	0.69	48.3	0
Jul	24.5	0.35	0.5	0	0.56	39.5	0
Aug	26.3	0.38	0.4	0	0.52	36.6	0
Sep	20.1	0.29	0.3	0	0.53	36.8	0
Oct	17.4	0.25	0.1	0	0.63	44.2	0
Nov	19.4	0.28	0.05	0	0.86	60.4	0
Dec	16.8	0.24	0	0	1.10	77.2	0

a. Input equal to sum of Site Runoff and Precipitation from Table 5.1.
b. Inflow depth estimated for 70-acre impoundment.
c. PET from Table C.2 in Appendix C.
d. Wetland depth = Inflow depth – PET – GW.

Note: Inflow for year exceeds outflows. Wetland fills in second year.

SECTION 6
CONCLUSIONS

We conclude that the constructed wetland will have a stable hydrology to support a permanent pool behind the proposed berm. The Davis Drain overflow is desired and will ensure that there are fewer fluctuations in water levels from droughts. The proposed wetland will also serve to remove sediments and improve water quality of the Davis Drain before it enters Lake Erie. The calculations also demonstrate that the wetland will have ample inflows to maintain a stable elevation even without the Davis Drain contribution.

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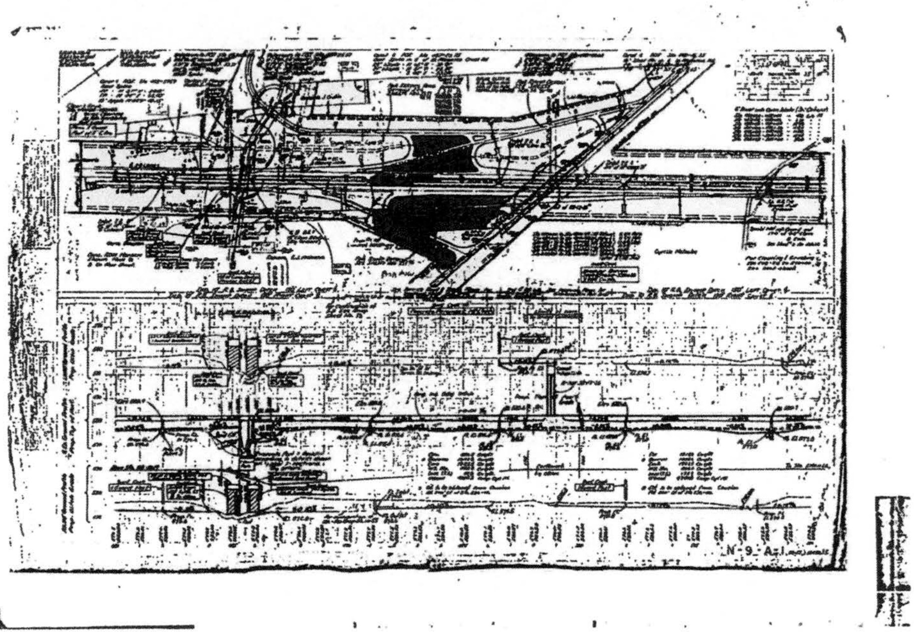
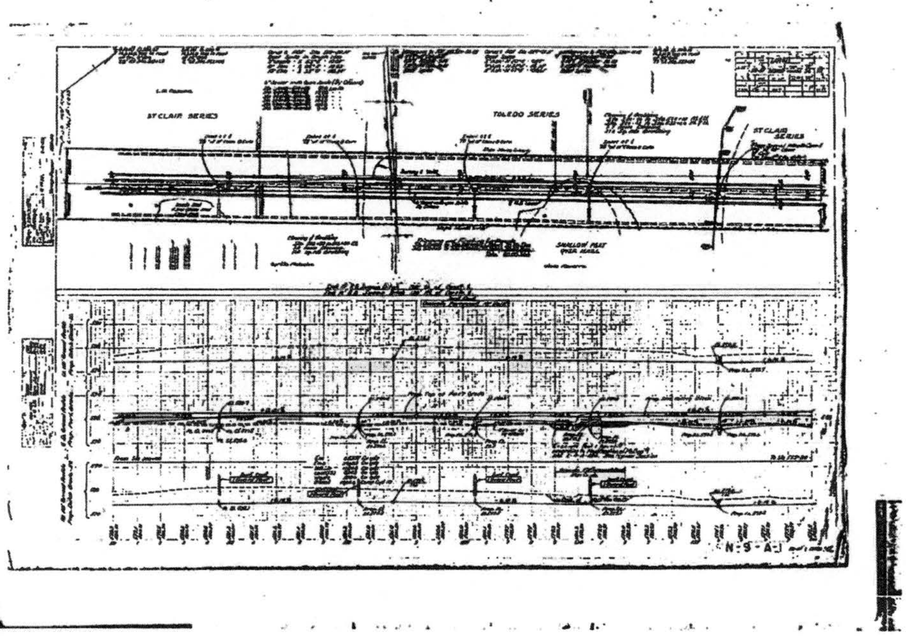
APPENDIX A
I-75 As-Built Drawings

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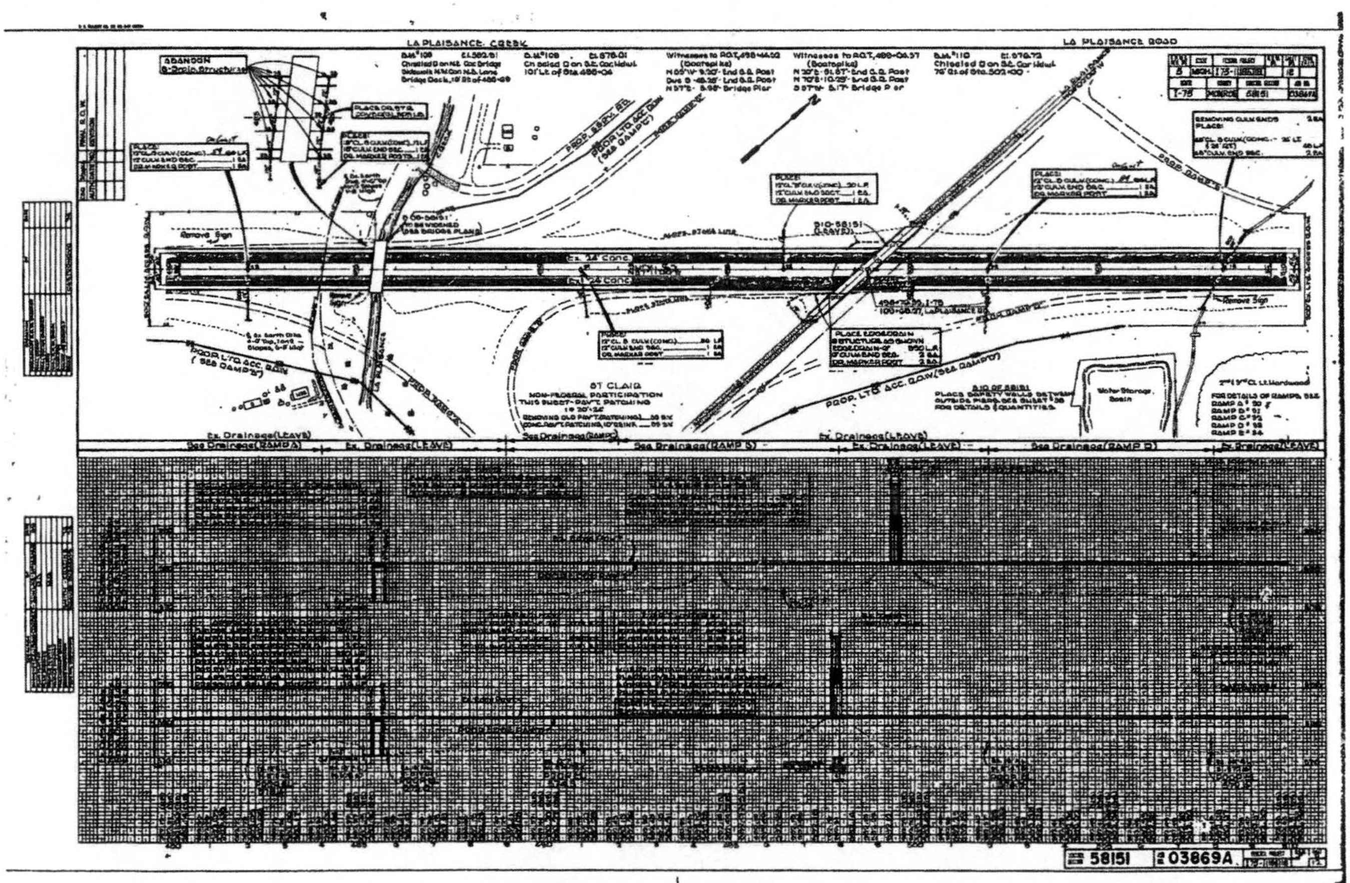
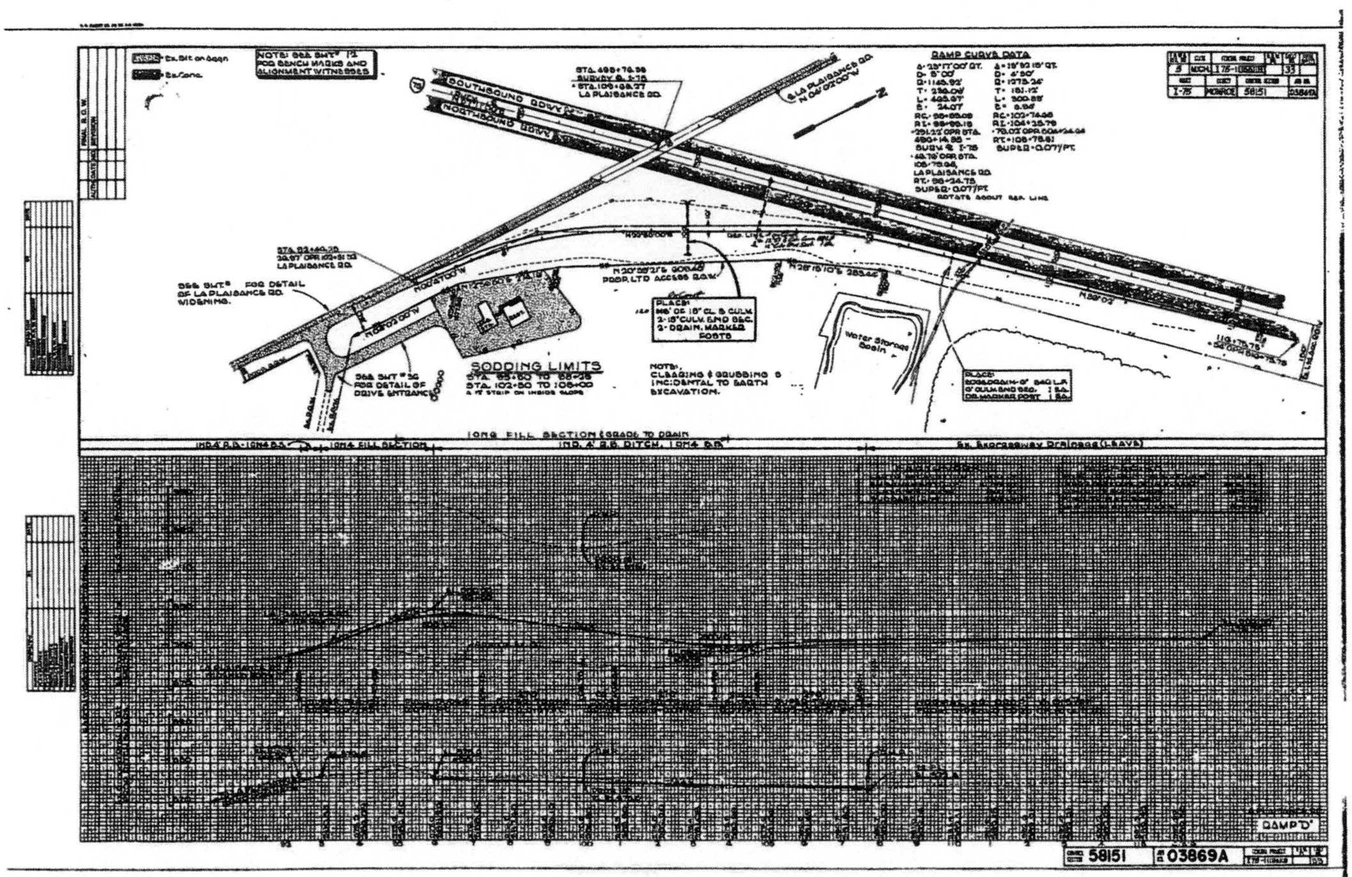
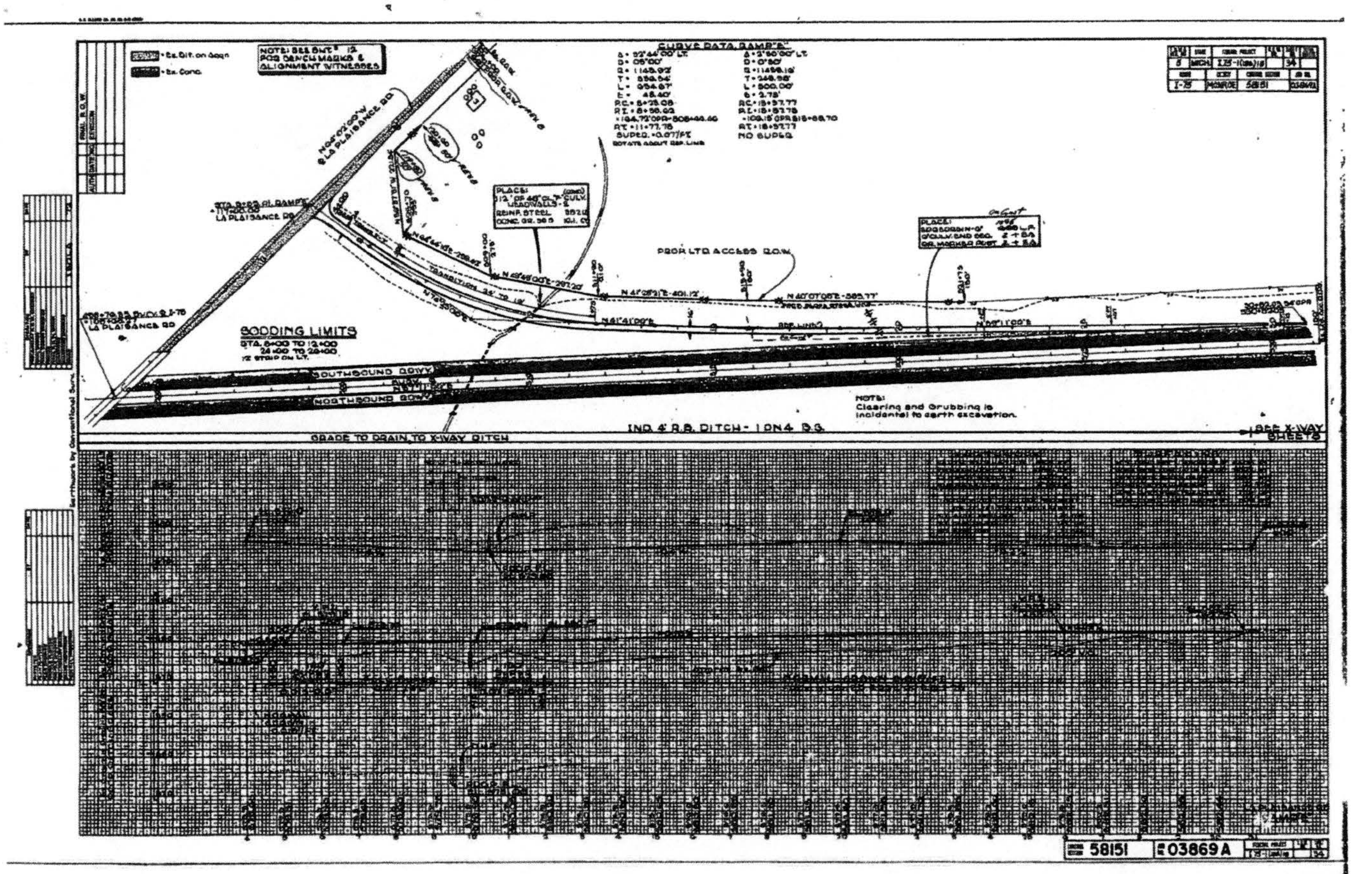
SHALLOW PEAT OVER MARL
N-5-A-1


LA PLAISANCE CREEK
LA PLAISANCE ROAD
Remove Sign
Ex. 24' Conc.
ST CLAIR
NON-FEDERAL PARTICIPATION
Water Storage Basin
Ex. Drainage(LEAVE)
See Drainage(RAMP A)
See Drainage(RAMP B)
See Drainage(RAMP D)
I-75
58151
03869A

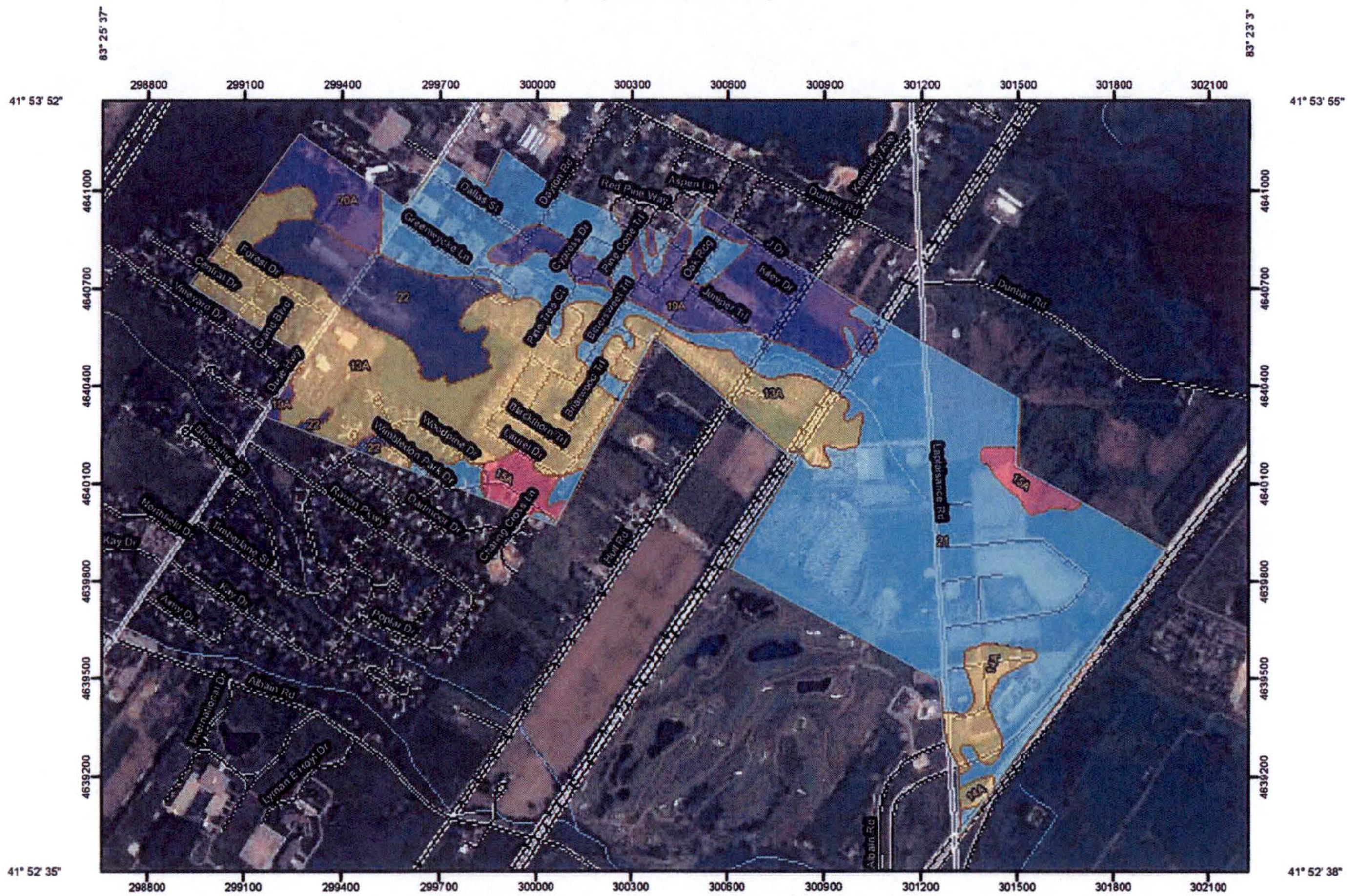

NOTE: SEE SHT. 12 FOR BENCH MARKS AND ALIGNMENT WITNESSES
SOUTHBOUND ROWY.
NORTHBOUND ROWY.
LA PLAISANCE RD.
SEE SHT. FOR DETAIL OF LA PLAISANCE RD. WIDENING.
SEE SHT. 36 FOR DETAIL OF DRIVE ENTRANCE
SODDING LIMITS
STA. 102+50 TO 106+00
PLACE: 2-15" CULV. END SEC. 2-DRAIN. MARKER POSTS
NOTE: CLEARING & GRUBBING INCIDENTAL TO EARTH EXCAVATION.
RAMP CURVE DATA
SUPER. 0.07/FT.
ROTATE ABOUT REF. LINE
Water Storage Basin
LONG FILL SECTION & GRADE TO DRAIN
I-75
MONROE
58151
RAMP "D"
58151
03869A



NOTE: SEE SHT. 12 FOR BENCH MARKS & ALIGNMENT WITNESSES
CURVE DATA RAMP "B"
NO SUPER
PLACE: 12' OF 48" CL. "F" CULV. HEADWALLS - 2
PROP. LTD. ACCESS R.O.W.
SODDING LIMITS
SOUTHBOUND ROWY.
NORTHBOUND ROWY.
NOTE: Clearing and Grubbing is incidental to earth excavation.
GRADE TO DRAIN TO X-WAY DITCH
SEE X-WAY SHEETS
58151
03869A

APPENDIX B
National Cooperative Soil Survey Soils Map

Hydrologic Soil Group—Monroe County, Michigan
(Fermi B-1 Subcatchment)



Map Scale: 1:16,900 if printed on A size (8.5" x 11") sheet.

Meters: 0, 200, 400, 800, 1,200

Feet: 0, 500, 1,000, 2,000, 3,000

N

Note: Area defined for soil characterization differs slightly from the subbasins shown on Figure 4 of the Report. The difference does not materially affect the soil data that was applied to the modeling of flows in the drainage subbasins.

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:16,900 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Monroe County, Michigan
Survey Area Data: Version 8, Jun 22, 2009

Date(s) aerial images were photographed: 7/10/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Monroe County, Michigan				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
13A	Blount loam, 0 to 3 percent slopes	C	144.8	25.2%
14A	Del Rey silt loam, 0 to 3 percent slopes	C	13.5	2.3%
15A	Fulton silty clay loam, 0 to 3 percent slopes	D	15.3	2.7%
19A	Selfridge loamy sand, 0 to 3 percent slopes	B	50.2	8.8%
20A	Selfridge-Pewamo complex, 0 to 3 percent slopes	B	15.6	2.7%
21	Lenawee silty clay loam	B/D	292.7	51.0%
22	Pewamo clay loam	C/D	41.5	7.2%
Totals for Area of Interest			**573.5**	**100.0%**

Note: Area defined for soil characterization differs slightly from the subbasins shown on Figure 4 of the report. The difference does not materially affect the soil data that was applied to the modeling of flows in the drainage subbasins.

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C
Calculations

Potential Evapotranspiration

Table C.1. Correction Factors for Monthly Sunshine Duration[a]

Latitude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
50N	0.71	0.84	0.98	1.14	1.28	1.36	1.33	1.21	1.06	0.90	0.76	0.68
41°52'N	0.78	0.88	0.99	1.11	1.22	1.27	1.25	1.16	1.04	0.93	0.83	0.76
40N	0.80	0.89	0.99	1.10	1.20	1.25	1.23	1.15	1.04	0.93	0.83	0.78

a. Values for 50 and 40 degrees north from Table 3.D.1 in MDOT 2006. Value for Monroe site (41°52'N) calculated by interpolation.

The PET is calculated using the Thornthwaite equation:

$$PET = 16\left(\frac{10T_a}{I}\right)^a$$

Where:

PET = potential evapotranspiration in mm/mo

T_a = mean monthly air temperature (°C)

$a = 0.49 + 0.0179I - 0.0000771I^2 + 0.000000675I^3 = 1.25$

The monthly heat index (I) is calculated over a 12-month interval by:

$$I = \sum_{i=1}^{12}\left(\frac{T_a}{5}\right)^{1.5}$$

The correction factor from Table C.1 is applied to the uncorrected PET derived with the Thornthwaite equation. The results are presented in Table C.2. Given the proposed project is a vegetated wetland with shallow depths and established vegetation, ET is more appropriate loss than evaporation alone.

Table C.2. Potential Evapotranspiration for average year

Month	T_a (°F)[a]	T_a (°C)	$(Ta/5)^{1.5}$	Uncorrected PET (mm/mo)	Correction Factor	PET (mm/mo)	PET (in/mo)	PET (ft/mo)
January	25.6	-3.6	0	0	0.78	0	0	0
February	28.1	-2.2	0	0	0.88	0	0	0
March	36.7	2.6	0.37	7.44	0.99	7.4	0.29	0.02
April	48.3	9.1	2.44	35.35	1.11	39.2	1.54	0.1
May	59.9	15.5	5.45	68.80	1.22	83.9	3.30	0.3
June	70.2	21.2	8.73	101.82	1.27	129.3	5.09	0.4
July	74.4	23.5	10.22	116.08	1.25	145.1	5.71	0.5
August	72.5	22.5	9.55	109.70	1.16	127.3	5.01	0.4
September	64.5	18.1	6.86	83.34	1.04	86.7	3.41	0.3
October	52.4	11.3	3.41	46.65	0.93	43.4	1.71	0.1
November	41.1	5.1	1.02	17.07	0.83	14.2	0.56	0.05
December	30.1	-1.1	0	0	0.76	0	0	0
			I = 48.05					

a. Mean monthly temperatures from Monroe Station #5558 (1981-2010) available at http://climate.geo.msu.edu/stations/5558/.

Infiltration

Two samples from the Monroe site were tested for hydraulic conductivity in May 2011.

- First Sample i = 5.62×10^{-8} cm/sec
- Second Sample i = 5.11×10^{-8} cm/sec

Average hydraulic conductivity for the two samples was 5.37×10^{-8} cm/sec.

The average infiltration rate is calculated as:

$$5.37 \times 10^{-8}\ \text{cm/sec} \times \frac{2{,}592{,}000\ \text{sec}}{1\ \text{mo}} \times \frac{1\ \text{in}}{2.54\ \text{cm}} \times \frac{1\ \text{ft}}{12\ \text{in}} = 0.0046\ \text{ft/mo}$$

The average infiltration is about 0.05 in/month or less than 0.7 in/year. So, neglect infiltration.

Inflows

SWMM software is used to model every storm for a long-term record. This provides a more accurate estimate of hydrology than only looking at runoff from a few select, large storms.

Precipitation

Precipitation input is estimated using mean monthly rainfall data for the Monroe Station #5558 (available at http://climate.geo.msu.edu/stations/5558/). The volume is estimated as rainfall over the approximately 70-acre impoundment [volume (ac-ft) = rainfall (feet) × 70 acres].

Table C.3 Precipitation Input to Water Budget

Month	Rainfall (inches)	Volume in impoundment (ac-ft)
Jan	2.13	12.4
Feb	1.87	10.9
Mar	2.36	13.8
Apr	3.20	18.7
May	3.56	20.7
Jun	3.21	18.7
Jul	3.48	20.3
Aug	3.80	22.1
Sep	2.90	16.9
Oct	2.66	15.5
Nov	3.06	17.8
Dec	2.60	15.2
Total	34.82	

APPENDIX D
Soil Boring Data

P:\Projects\Tetra Tech NUS\Mitigation Design\Field\Offsite Proposed Geoprobe Locs.mxd

Tetra Tech
710 Avis Drive
Ann Arbor, MI 48108
Telephone: (734) 213-2204
Fax: (734) 213-5008

LOG OF: **GP-11-01**

Site: DTE Monroe		Drilling Company: Terra Probe	
Address: Bolles Harbor		Driller: Steve Bischoff	
City, State: Monroe, MI		Sampling Method: Shelby tube	
Northing: NM	Easting: NM	Logged By: JRN	Checked By: PJM
Total Depth 18' / Elev: NM	Weather: 40°F, Sleet/Rain	Start Date: 4/19/2011	Finish Date: 4/19/2011
Hole Diameter: 3"	PID Model & Lamp eV: LEL Meter	Sand Pack Interval: 0-2'	Bentonite Chip Interval: na
Casing (Interval, Diameter, Type): na	Hole Abandonment: Cuttings	Grout Type & Interval: na	
Groundwater Sample Screen (Interval, Diameter, SLOT Size, Type): 0-2', 1" 10-Slot PVC		Location: Central-south side of property	

Sample Type/No.	Blow Counts	Rec (%)	SOIL DESCRIPTION	Depth (feet)	PID (ppm)	WELL LOG	REMARKS
P-1		95	Brown, dry, CLAY, trace Sand and Silt	2	nm	2	GP-11-01-0.5-2.5' (Shelby Tube Sample) @ 11:30
P-2		100		4 / 6	nm		
P-3		100		8 / 10	nm		
P-4		100	Gray, dry CLAY , trace Sand and Silt	12 / 14	nm		
P-5		100		16	nm		
			Boring terminated at 18 ft	18 / 20			

Tetra Tech
710 Avis Drive
Ann Arbor, MI 48108
Telephone: (734) 213-2204
Fax: (734) 213-5008

LOG OF: **GP-11-02**

Site: **DTE Monroe**		Drilling Company: **Terra Probe**	
Address: **Bolles Harbor**		Driller: **Steve Bischoff**	
City, State: **Monroe, MI**		Sampling Method: **Shelby tube**	
Northing: **NM**	Easting: **NM**	Logged By: **JRN**	Checked By: **PJM**
Total Depth **12'** / Elev: **NM**	Weather: **40°F, Sleet/Rain**	Start Date: **4/19/2011**	Finish Date: **4/19/2011**
Hole Diameter: **3"**	PID Model & Lamp eV: **LEL Meter**	Sand Pack Interval: **0-2'**	Bentonite Chip Interval: **na**
Casing (Interval, Diameter, Type): **na**	Hole Abandonment: **Cuttings**	Grout Type & Interval: **na**	
Groundwater Sample Screen (Interval, Diameter, SLOT Size, Type): **0-2', 1" 10-Slot PVC**	Location: **Central-north side of property**		

Sample Type/No.	Blow Counts	Rec (%)	SOIL DESCRIPTION	Depth (feet)	PID (ppm)	WELL LOG	REMARKS
			Brown, dry, CLAY, trace Sand and Silt				GP-11-02-0.5-2.5' (Shelby Tube Sample) @ 12:00
P-1		90		2	nm	2	
				4			
P-2		100		□	nm		
				8			
P-3		100		10	nm		
			Gray, dry CLAY				
			Boring terminated at 12 ft	12			
				14			
				1□			
				18			
				20			

LOG A EWNN07 - GINT STD US.GDT - 5/2/11 15:41 - P:\PROJECTS\TETRA TECH NUS\MITIGATION DESIGN\FIELD\DTE.GPJ

Tetra Tech
710 Avis Drive
Ann Arbor, MI 48108
Telephone: (734) 213-2204
Fax: (734) 213-5008

LOG OF: **GP-11-03**

Site: DTE Monroe		Drilling Company: Terra Probe	
Address: Bolles Harbor		Driller: Steve Bischoff	
City, State: Monroe, MI		Sampling Method: Shelby tube	
Northing: NM	Easting: NM	Logged By: JRN	Checked By: PJM
Total Depth 16' / Elev: NM	Weather: 40°F, Sleet/Rain	Start Date: 4/19/2011	Finish Date: 4/19/2011
Hole Diameter: 3"	PID Model & Lamp eV: LEL Meter	Sand Pack Interval: 0-2'	Bentonite Chip Interval: na
Casing (Interval, Diameter, Type): na	Hole Abandonment: Cuttings	Grout Type & Interval: na	
Groundwater Sample Screen (Interval, Diameter, SLOT Size, Type): 0-2', 1" 10-Slot PVC		Location: Southeast corner of property	

Sample Type/No.	Blow Counts	Rec (%)	SOIL DESCRIPTION	Depth (feet)	PID (ppm)	WELL LOG	REMARKS
P-1		80	Brown to orange, dry CLAY, trace Sand and Silt	2	nm	2	GP-11-03-0.5-2.5' (Shelby Tube Sample) @ 15:00
				4			
P-2		100		□	nm		
				8			
P-3		100		10	nm		
				12			
P-4		100	Gray and brown mottled, dry CLAY, trace Sand and Silt	14	nm		
			Boring terminated at 1□ft	1□			
				18			
				20			

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Tetra Tech
710 Avis Drive
Ann Arbor, MI 48108
Telephone: (734) 213-2204
Fax: (734) 213-5008

LOG OF: **GP-11-04**

Site: DTE Monroe		Drilling Company: Terra Probe	
Address: Bolles Harbor		Driller: Steve Bischoff	
City, State: Monroe, MI		Sampling Method: Shelby tube	
Northing: NM	Easting: NM	Logged By: JRN	Checked By: PJM
Total Depth 16'	Elev: NM / Weather: 40°F, Sleet/Rain	Start Date: 4/19/2011	Finish Date: 4/19/2011
Hole Diameter: 3"	PID Model & Lamp eV: LEL Meter	Sand Pack Interval: na	Bentonite Chip Interval: na
Casing (Interval, Diameter, Type): na	Hole Abandonment: Cuttings	Grout Type & Interval: na	
Groundwater Sample Screen (Interval, Diameter, SLOT Size, Type): na		Location: Northeast corner of property	

Sample Type/No.	Blow Counts	Rec (%)	SOIL DESCRIPTION	Depth (feet)	PID (ppm)	REMARKS
			Brown to slight orange, dry CLAY, trace Sand and Silt			GP-11-04-0.5-2.5' (Shelby Tube Sample) @ 15:45
P-1		85		2	nm	
				4		
P-2		100		□	nm	
				8		
P-3		100		10	nm	
			Gray, dry CLAY, trace Sand and Silt	12		
P-4		100		14	nm	
			Boring terminated at 1□ft	1□		
				18		
				20		

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Tetra Tech
710 Avis Drive
Ann Arbor, MI 48108
Telephone: (734) 213-2204
Fax: (734) 213-5008

LOG OF: GP-11-05
(1 of 1)

Site: DTE Monroe		Drilling Company: Terra Probe	
Address: Bolles Harbor		Driller: Steve Bischoff	
City, State: Monroe, MI		Sampling Method: Shelby tube	
Northing: NM	Easting: NM	Logged By: JRN	Checked By: PJM
Total Depth 20' / Elev: NM	Weather: 40°F, □vercast	Start Date: 4/20/2011	Finish Date: 4/20/2011
Hole Diameter: 2.25"	PID Model & Lamp eV: LEL Meter	Sand Pack Interval: 0-2'	Bentonite Chip Interval: na
Casing (Interval, Diameter, Type): na	Hole Abandonment: Cuttings	Grout Type & Interval: na	
Groundwater Sample Screen (Interval, Diameter, SLOT Size, Type): 0-2', 1" 10-Slot PVC		Location: Northwest corner of property	

Sample Type/No.	Blow Counts	Rec (%)	SOIL DESCRIPTION	Depth (feet)	PID (ppm)	WELL LOG	REMARKS
P-1		90	Brown to black, dry CLAY, trace Sand and Silt	2	nm	2	GP-11-05-0.5-2.5' (Shelby Tube Sample) @ 10:45
				4			
P-2		100	Black to brown and grey mottled, dry CLAY	□	nm		
			Gray to black, dry CLAY	8			
P-3		100		10	nm		
				12			
P-4		100		14	nm		
			Brown, dry CLAY	1□			
P-5		100		18	nm		
			Brown and gray mottled, dry CLAY				
				20			
			Boring terminated at 20 ft				

Tetra Tech
710 Avis Drive
Ann Arbor, MI 48108
Telephone: (734) 213-2204
Fax: (734) 213-5008

LOG OF: **GP-11-06**
(1 of 1)

Site: DTE Monroe		Drilling Company: Terra Probe	
Address: Bolles Harbor		Driller: Steve Bischoff	
City, State: Monroe, MI		Sampling Method: Shelby tube	
Northing: NM	Easting: NM	Logged By: JRN	Checked By: PJM
Total Depth 12' / Elev: NM	Weather: 40°F, □vercast	Start Date: 4/20/2011	Finish Date: 4/20/2011
Hole Diameter: 2.25"	PID Model & Lamp eV: LEL Meter	Sand Pack Interval: 0-2'	Bentonite Chip Interval: na
Casing (Interval, Diameter, Type): na	Hole Abandonment: Cuttings	Grout Type & Interval: na	
Groundwater Sample Screen (Interval, Diameter, SLOT Size, Type): 0-2', 1" 10-Slot PVC	Location: Southwest corner of property		

Sample Type/No.	Blow Counts	Rec (%)	SOIL DESCRIPTION	Depth (feet)	PID (ppm)	WELL LOG	REMARKS
			Dark brown, damp CLAY				GP-11-0□-0.5-2.5' (Shelby Tube Sample) @ 11:45
P-1		□0	Light brown and gray mottled, dry CLAY, trace Sand and Silt	2	nm	2	
				4			
P-2		90		□	nm		
				8			
P-3		90	Brown and gray mottled, dry CLAY, trace Sand and Silt	10	nm		
			Boring terminated at 12 ft	12			
				14			
				1□			
				18			
				20			

May 9, 2011 TTL Project No. 7671.01

Mr. Brian Rubel
Tetra Tech
710 Avis Drive
Ann Arbor, Michigan 48108

Geotechnical Laboratory Testing
DTE Energy
Monroe, Michigan

Dear Mr. Rubel:

At your request, laboratory testing was performed on two Shelby tube samples from the referenced project site. The samples were obtained by Tetra Tech and were labeled GP-11-04 and GP-11-06.

Both samples were tested in accordance with ASTM D 5084 - Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

The sample identified as GP-11-04 was found to have a hydraulic conductivity of $5.62 * 10^{-8}$ cm/sec and the sample identified as GP-11-06 was found to have a hydraulic conductivity of $5.11 * 10^{-8}$ cm/sec.

Detailed results of these tests are attached to this letter report. Should you have any questions or need further information, please feel free to contact us.

Sincerely,

TTL Associates, Inc.

Jeffrey S. Elliott, P.E.
Vice President

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MEASUREMENT OF HYDRAULIC CONDUCTIVITYOF SATURATED POROUS MATERIALS USING A FLEXIBLE WALL PERMEAMETER (ASTM D 5084)

TTL Assoc.Project No.: 7671.01 — Report Date: 05/03/11

Client: Tetra Tech — File: GP-11-04ST-1

Project: Detroit Edison — Permeant: tap water

Sample Number: GP-11-04 ST-1 — Test Start Date: 04/27/11

SAMPLE PROPERTIES

Diameter:	2.8 in.	7.112 cm	Initial Weight of Testing Sample:	611.3 g
Area:	6.154 in²	39.708 cm²	Final Weight of Testing Sample:	629.4 g
Length:	3.080 in	7.823 cm	Initial Moisture Content:	26.8 %
Volume:	0.01097 ft³	310.624 cm³	Final Moisture Content:	29.1 %

Inititial Wet Wt. of M.C. Sample:	295.4 g	Initial Wet Density:	122.9 lb/ft³
Initial Dry Wt. of M.C. Sample:	233 g	Initial Dry Density:	96.9 lb/ft³
Final Wet Wt. of M.C. Sample:	629.4 g	Final Wet Density:	126.5 lb/ft³
Final Dry Wt. of M.C. Sample:	487.4 g	Final Dry Density:	98.0 lb/ft³

DEGREE OF SATURATION

Date	Time	Cell Pressure (psi)	Back Pressure (psi)	Head Pressure (psi)	Confining Pressure Increase (psi) - a	Pore Pressure Increase (psi) - b	Skempton's Parameter (B) (b/a)
05/02/11	7:00 AM	25.0	23.0	23.0	5.0	5.0	1

CONSOLIDATION OF SAMPLE

Date	Time	Cell Pressure (psi)	Back Pressure (psi)	Effective Confining Pressure (psi)	h (cc)	Q (cc)	t (sec)

PERMEABILITY MEASUREMENT

Test No.	Date	Time	Cell Pressure (psi)	Head Pressure (psi)	Back Pressure (psi)	Water Head (cm)	h (cc)	Q (h1-h2) (cc)	t (sec)	T (°C)	k (cm/sec)	k,corr. (cm/sec)
Start	05/02/11	8:00 AM	25.0	22.0	20.0	140.9						
1	05/02/11	9:00 AM	25.0	22.0	20.0	140.9		0.15	3600	21.5	5.83E-08	5.62E-08
2	05/02/11	10:00 AM	25.0	22.0	20.0	140.9		0.15	3600	21.5	5.83E-08	5.62E-08
3	05/02/11	12:00 PM	25.0	22.0	20.0	140.9		0.30	7200	21.5	5.83E-08	5.62E-08
4	05/02/11	4:00 PM	25.0	22.0	20.0	140.9		0.60	14400	21.5	5.83E-08	5.62E-08

AVERAGE HYDRAULIC CONDUCTIVITY (K) 5.62E-08 cm/sec

MEASUREMENT OF HYDRAULIC CONDUCTIVITYOF SATURATED POROUS MATERIALS USING A FLEXIBLE WALL PERMEAMETER (ASTM D 5084)

TTL Assoc.Project No.: 7671.01 — Report Date: 05/03/11

Client: Tetra Tech — File: GP-11-06ST-1

Project: Detroit Edison — Permeant: tap water

Sample Number: GP-11-06 ST-1 — Test Start Date: 04/27/11

SAMPLE PROPERTIES

Diameter:	2.8 in.	7.112 cm	Initial Weight of Testing Sample:	548.1 g
Area:	6.154 in²	39.708 cm²	Final Weight of Testing Sample:	573.1 g
Length:	2.800 in	7.112 cm	Initial Moisture Content:	30.8 %
Volume:	0.009972 ft³	282.385 cm³	Final Moisture Content:	32.5 %

Initial Wet Wt. of M.C. Sample:	204.5 g	Initial Wet Density:	121.2 lb/ft³
Initial Dry Wt. of M.C. Sample:	156.4 g	Initial Dry Density:	92.7 lb/ft³
Final Wet Wt. of M.C. Sample:	572.8 g	Final Wet Density:	126.7 lb/ft³
Final Dry Wt. of M.C. Sample:	432.2 g	Final Dry Density:	95.6 lb/ft³

DEGREE OF SATURATION

Date	Time	Cell Pressure (psi)	Back Pressure (psi)	Head Pressure (psi)	Confining Pressure Increase (psi) - a	Pore Pressure Increase (psi) - b	Skempton's Parameter (B) (b/a)
05/02/11	7:00 AM	25.0	23.0	23.0	5.0	5.0	1

CONSOLIDATION OF SAMPLE

Date	Time	Cell Pressure (psi)	Back Pressure (psi)	Effective Confining Pressure (psi)	h (cc)	Q (cc)	t (sec)

PERMEABILITY MEASUREMENT

Test No.	Date	Time	Cell Pressure (psi)	Head Pressure (psi)	Back Pressure (psi)	Water Head (cm)	h (cc)	Q (h1-h2) (cc)	t (sec)	T (°C)	k (cm/sec)	k,corr. (cm/sec)
Start	05/02/11	8:00 AM	25.0	22.0	20.0	140.9						
1	05/02/11	9:00 AM	25.0	22.0	20.0	140.9		0.15	3600	21.5	5.30E-08	5.11E-08
2	05/02/11	10:00 AM	25.0	22.0	20.0	140.9		0.15	3600	21.5	5.30E-08	5.11E-08
3	05/02/11	12:00 PM	25.0	22.0	20.0	140.9		0.30	7200	21.5	5.30E-08	5.11E-08
4	05/02/11	4:00 PM	25.0	22.0	20.0	140.9		0.60	14400	21.5	5.30E-08	5.11E-08

AVERAGE HYDRAULIC CONDUCTIVITY (K) 5.11E-08 cm/sec

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 3 Wetland Delineation Report

Detroit Edison Fermi 3 Offsite Mitigation Area Wetland Delineation Report

July 2011

Prepared by

Conservation Connects, LLC

Tetra Tech, Inc.

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1.0 INTRODUCTION

1.1 Description of the Project

Detroit Edison has proposed the construction of the Fermi 3 Nuclear Power Plant (Fermi 3) at the Enrico Fermi Atomic Power Plant. The proposed Fermi 3 site is located on the western shore of Lake Erie at Newport, Monroe County, Michigan on a 1,260-acre parcel owned and managed by Detroit Edison. On June 17, 2011, Detroit Edison submitted a Joint Permit Application to the Michigan Department of Environmental Quality (MDEQ) (file number 10-58-0011-P). As part of the mitigation for impacts associated with that permit, an offsite mitigation area has been selected near La Plaisance Creek on the Lake Erie shoreline. The location of this property is shown in Figure 1.

1.2 Site Description

The proposed offsite mitigation area is comprised of a portion of Detroit Edison's Monroe Power Plant Site (Monroe Site). This site is approximately 7.25 miles from the Fermi site and located east of Interstate 75, north of La Plaisance Creek and immediately adjacent to Lake Erie (La Plaisance Bay), Town of Monroe, Monroe County, Michigan, in the Ottawa-Stony Watershed (HUC: 04100001, Figure 2). The area under consideration for use as mitigation consists of a 174-acre agricultural field. The Monroe site is currently farmed and includes small areas of remnant emergent wetlands and dikes which separate it from Lake Erie.

2.0 REVIEW OF AVAILABLE INFORMATION

Prior to initiation of field activities a review of available information was performed to assess the likelihood of the presence of wetland resources on the subject site. Information sources reviewed included available U.S. Geological Survey (USGS) topographic mapping, aerial mapping, soils mapping, and state and federal wetland mapping.

2.1 USGS Mapping

A review of available USGS mapping for the site (Monroe and Stony Point Quadrangles) shows the site to be level with a slight rise in the northwestern corner of the site (Figure 3).

2.2 Aerial Photography/Covertypes

A review of aerial photography for the site shows agriculture as the primary covertype of the site and the site's proximity to both Lake Erie and La Plaisance Creek (Figure 2).

2.3 NRCS Soils Mapping

The Monroe County Soil Survey soil mapping for the site shows the presence of two soil types within the site boundaries (See Figure 4). These soil types include Warners silt loam and Lenawee silty clay loam. The Warners series (mesic fluvaquentic endoaquolls) consists of very deep, very poorly drained soils on nearly level floodplains and seepage areas of hillsides. Warners soils developed in alluvial material overlying marl. The Lenawee series (mesic mollic epiaquepts) consists of very deep, poorly drained and very poorly drained soils in lacustrine deposits. These soils are on lake plains and in depressional areas on moraines, outwash plains, and glacial drainageways. Both mapped soils are hydric.

2.4 NWI/MDEQ Wetland Mapping

Figure 5 shows a composite of the National Wetland Inventory (NWI) and Michigan Department of Environmental Quality (MDEQ) wetland mapping for the site. Two wetland types are mapped on the project site. Palustrine Scrub/Shrub and Palustrine Emergent wetlands are shown. The scrub/shrub wetlands are shown along and adjacent to one of the site drainages on the western third of the parcel. Emergent wetlands are mapped along the southern perimeter of the site as well as adjacent to the scrub/shrub wetlands.

2.5 Site Hydrology

Water is seasonally to permanently present in ditches, swales and small remnant wetlands on the project site. Average annual precipitation is 31.5 inches and generally well distributed throughout the year. The site receives direct, surface runoff from a 250-acre drainage basin (Figure 6) with cropland, wetland and forest as the primary cover types. The hydrology of the site is influenced by extensive tile and ditching for the purpose of draining surface water to facilitate farming. With the exception of small remnant wetlands separated from Lake Erie by perimeter dikes, surface water is restricted to swales and ditches. Figure 6 illustrates the location of ditches, culverts, and direction of flow for surface water drainage. Excess water is pumped from the fields at the northeast corner of the site into the adjacent ash basin. There is no direct hydrological connection between the project site and Lake Erie. Soil borings to 18 inches revealed a compact clay lens and no groundwater penetration suggesting the project site is primarily surface-water driven. Six soil borings were completed onsite prior to the wetland delineation. These borings were advanced to depths between 12 and 20 feet entirely within clay. Groundwater was not encountered. The Davis Drain, a drain under the jurisdiction of the Monroe County Drain Commissioner, flows around the portions of the western and southern perimeter of the site. The Davis Drain carries water from a 641-acre watershed including some runoff from Interstate 75.

3.0 DELINEATION METHODOLOGY

3.1 Wetland Mapping Guidance

The Federal definition of wetlands is "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (USACE, 1987).

Field delineation of wetlands on this site was performed using the definitions and criteria contained in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (USACE, 1987) as modified by the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral/Northeastern Supplement (the Supplement) issued in October 2009 (USACE 2009). In order for an area to be classified as a wetland it must meet three criteria. It must have a predominance of hydrophytic vegetation, possess wetland hydrology and have hydric soils. If any of these criteria is absent then the area cannot be a wetland unless the reason for the criterion's absence is a temporary physical alteration of the site.

3.2 Description of Selected Method

The Routine Onsite Method described in Section D of Part IV in the 1987 Manual was selected for delineating wetlands on this site. There are two ways to apply this method dependent on site size. For sites less than 5 acres, wetlands are identified through inspection of the entire site and delineation of the boundaries. For site larger than 5 acres, the option exists to establish a baseline with a minimum of three transects and delineate those wetland encountered along each transect. Although the site is larger than 5 acres, the former method was used for this delineation.

Each wetland observed on the site was inspected and sampling points were established from which data was collected regarding the vegetation, hydrology and soils each wetland possessed. This information was collected using the form provided in the USACE Supplement referenced above. The information collected at each point was compared to the established indicators or subjected to the prescribed test to determine if each criterion was positive for wetland characteristics. Photographs of each wetland are provided in Appendix A and the completed data forms are provided in Appendix B of this report.

Dominant plant species were identified at each sample point. Herbaceous species within a 5-foot radius were recorded as were their absolute percent cover. Shrubs were recorded within a 15-foot radius and trees and vines in a 30-foot radius. Absolute percent cover was estimated for each recorded dominant species. Subsequent to the collection of this data, tests were performed to determine if an indicator of hydrophytic vegetation was met. The first test used was the rapid test (Indicator 1) whereby, if all of the dominant species have an indicator status of obligate (OBL) or facultative wetland (FACW), the location is determined to have met the vegetative criteria for a wetland. If this test was negative then a dominance test was applied (Indicator 2) which uses a 50/20 rule for each vegetative layer present to determine which species are dominant. If more than 50% of the dominant species have an indicator status of facultative (FAC) or wetter, the plant community is determined to meet the vegetation criteria for a wetland. If a given area did not satisfy Indicators 1 or 2, a prevalence test was performed. This test consists of multiplying the percent total cover of dominant species grouped by wetland indicator status by the specified number on the USACE data sheet. The results are then totaled and divided by the total percent cover for all groups to derive a number used to determine wetland plant prevalence. Results at or below 3.0 are considered to meet this indicator and the vegetation criteria for a wetland is considered to be met.

At each sampling point a hole is dug to at least 20 inches using a shovel (tile spade). The soil horizons were identified and determinations were made as to whether hydric indicators were present.

Hydrology was also investigated at each location. Depth to observed groundwater, surface water depth or other hydrologic indicators were noted and recorded on the data forms.

Wetland boundaries were marked in the field with numbered flags and the locations of these flags were surveyed by a licensed surveyor. This survey data was imported into a geographic information system for generation of the figures contained in this report.

Subsequent to completion of the delineation effort, a field review with MDEQ and USACE personnel was conducted on June 28 and 29, 2011 to verify the delineated boundaries (MDEQ WIP 11-58-0001-WA). Several boundaries were modified during this exercise and the information in this report reflects the modified boundaries.

4.0 RESULTS

A total of 13 wetland areas (Figure 7) were identified on the site totaling 74.52 acres. These wetlands are distributed throughout the site with the greatest concentration of wetland areas observed adjacent to site drainage (ditches) and the near shore areas adjacent to the berm separating the site from Lake Erie. Figure 7 provides an overview of delineated wetlands in relation to site topography and state and federal Ordinary High Water Marks (OHWMs). Figure 8 is a series of maps providing greater detail on individual wetland boundaries.

4.1 General Description of Wetland Resources

Observed wetland cover-types at the mitigation site included historic and current agricultural field (Wetlands 1, 2, 3, 7, and 16), wet-mesic flatwoods (Wetlands 8 and 10), floodplain forest (Wetlands 5 and 13), southern shrub-carr (Wetlands 4 and 11), and intermittent wetland (Wetland 14). Wetland 12 was not assigned a community type due to its highly disturbed condition associated with its location in the power line right-of-way. In many instances the observed wetlands are heavily impacted by prior agricultural activities and manipulation of site hydrology either through drainage ditches or pumping over the dikes. Figure 9 provides an illustration of delineated wetlands and the location of past and ongoing agricultural activity.

4.2 Wetland Descriptions

4.2.1 W1

Wetland W1 is 4.51 acres in size and is in a level area on the west side of the property with a drainage feature bisecting it. Reed Canary Grass (*Phalaris arundinacea*) is the dominant plant species. The vegetation was determined to have a prevalence index of 2.53. Soils in this wetland consist of silty clay loams with a depleted matrix (Hydric Soil Indicator F3). The wetland was inundated at the time of the delineation to a depth of up to 3 inches.

4.2.2 W2

Wetland W2 is 0.74 acres in size and abuts the southwestern edge of W1. Common Reed (*Phragmites australis*) is the only dominant species in this wetland. Soils consist of loams with a depleted matrix. This wetland was shallowly inundated (0-1 inches in depth) at the time and soils are saturated.

4.2.3 W3

Wetland W3 is 0.90 acres in size and lies in a depression on the southwest corner of the site. The dominant species in this wetland include Common Reed and Meadow Foxtail (*Alopecurus pratensis*). Site soils are loams with a depleted matrix. The wetland was inundated with approximately 10 inches of water.

4.2.4 W4

Wetland W4 is 1.23 acres in size and consists of a linear riparian scrub/shrub wetland adjacent to the drainage ditch on the south side of the site. Dominant species include Silver Maple (*Acer saccharinum*), Mulberry (*Morus alba*), Gray dogwood (*Cornus racemosa*), Pennywort (*Hydrocotyle spp.*), Common Reed, and Canada Thistle (*Cirsium arvense*). The site soils have a sandy clay loam surface horizon and a silty clay loam subsurface horizon. This soil has a depleted matrix. Saturated soils and inundation was observed in this wetland.

4.2.5 W5

Wetland W5 is 11.84 aces in size and is a linear scrub/shrub wetland which parallels a drainage ditch. Dominant species include Cottonwood (*Populus deltoides*), Box Elder (*Acer negundo*), reed canary grass and common reed. The soils have a depleted matrix and consist of silty clay loams. The soils were not saturated but surface water was present adjacent to this wetland and crayfish burrows were common.

4.2.6 W7

This wetland is located on the western edge of the site in a depression within an agricultural field. It is 0.55 acres in size. Dominant vegetation in this wetland includes cottonwood, common fleabane (*Erigeron philadelphius*), Canada thistle, reed canary grass, and goldenrod (*Solidago altissima*). The wetland is inundated and soils are saturated. Soils consist of silt with a depleted matrix.

4.2.7 W8

W8 (0.59 acres) is a palustrine scrub/shrub forested wetland that is situated at the toe of a gentle slope. Dominant species include cottonwood, box elder, silky dogwood (*Cornus amomum*), chokecherry (*Prunus virginiana*), common buckthorn (*Rhamnus cathartica*), tall fescue (*Festuca elatior*), garlic mustard (*Alliaria petiolata*), and riverbank grape (*Vitis riparius*). No inundation or saturation was observed but reduced iron was present thereby satisfying the hydrology criteria. Soils are silty clay loams grading to clay loam at depth. The soil possesses a depleted matrix.

4.2.8 W10

Wetland W10 is palustrine forested wetland 0.95 acres in size and is located at the toe of a slope on the northern side of the site. Dominant species include cottonwood, common buckthorn, chokecherry, silky dogwood, garlic mustard, reed canary grass, poison ivy (*Toxicodendron radicans*), and riverbank grape. The wetland was inundated and soils were saturated. Soils are a silty clay loam with a depleted matrix.

4.2.9 W11

This wetland which is 2.29 acres in size contains palustrine scrub/shrub and forested cover types. Dominant vegetation species include box elder, silky dogwood, riverbank grape and meadow fescue (*Festuca pratensis*). The wetland had saturated soils in some areas and inundation. The soils are silty clay loams with a depleted matrix.

4.2.10 W12

Wetland W12 is 3.06 acres in size and is situated in a power line easement. The vegetation is dominated by common reed and riverbank grape. Soils were saturated from 0-12 inches and are comprised of silty clay loams with a depleted matrix.

4.2.11 W13

This wetland lies along the southern and eastern edges of the site and cover 8.55 acres. It supports a forested cover type with cottonwood, silky dogwood, hackberry (*Celtis occidentalis*), garlic mustard, riverbank grape, poison ivy, and Virginia creeper (*Parthenocissus cinquefolia*) as dominant species. The wetland was inundated in some places and the soils are saturated to the surface in others. Soils consist of silts and silty clay loams with depleted matrices.

4.2.12 W14

W14 is 11.77 acres in size and is situated in a flat terrace area of the site in a former agricultural field. Dominant species include Torrey's rush (*Juncus torreyi*) and soft rush (*Juncus effusus*). It was inundated in some areas and soil saturation is observed within 10 inches of the surface in this wetland. Soils are silty clay loams with a depleted matrix. This wetland is connected to Wetland 16.

4.2.13 W16

At 27.54 acres, this is the largest wetland on the site and is similar in characteristic to W14. Dominant species include Torrey's rush and reed canary grass. The wetland exhibited inundation and saturated soils throughout and the soils are comprised of silty clay loams. The soil possesses a redox dark surface (Hydric Soil Indicator F6).

4.3 Wetland Condition and Function Assessment

A functional assessment based on the USACE New England Highway Method was conducted during the wetland delineations. Field observations of wetlands within the mitigation site included a refined assessment of vegetation communities and other wetland characteristics to further describe the condition, functions and services of the wetlands at the mitigation site. Data collection and analysis methods were based on the Michigan Rapid Assessment Method for Wetlands (MiRAM) and the Delaware Rapid Assessment Procedure and included metrics such as wetland size and connectivity, adjacent area use, hydrologic alterations and soil disturbance, habitat structure, and presence of invasive species.

Wetlands 1-5, 7, 11-14, and 16 were ranked low to medium quality based on factors including hydrological disturbance, presence of invasive species, adjacent land use, fragmentation, human activity (repeated tiling and agricultural activities), deforestation, etc. Three of these wetlands (Wetlands 11, 13 and 14) ranked medium quality based on presence of more native, diverse vegetation species. The remaining two wetlands (Wetlands 8 and 10) were given high ecological value based solely on their rare and imperiled status in Michigan even though condition ratings were low (MiRAM guidance). A description of each wetland is presented in Section 4.2. Depending on condition, the principal functions and services provided by wetlands on the mitigation site include flood flow alteration, sediment/toxicant retention, nutrient removal, and wildlife habitat. Additionally, no state or federally protected species were identified during the site activities.

5.0 SUMMARY

The wetland delineation performed on the Monroe offsite mitigation site for the proposed Fermi 3 project has identified a total of 74.52 acres of existing wetlands. Many of the wetlands identified in this effort are significantly impacted by previous and on-going disturbances on this property (Figures 6 and 9) including use of the site for agriculture and manipulation of water levels to accommodate this agricultural use. These wetlands will benefit from the mitigation activities proposed for this site.

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7.0 WETLAND INVESTIGATION PERSONNEL

Soils and Hydrology Sampling

Brandon Kinter is a Senior Project Engineer/Wetlands Specialist with Tetra Tech with over 12 years of experience in conducting wetland delineations throughout the U.S. Mr. Kinter has assisted and lead numerous wetland services including over 600 wetland delineations, wetland functional analysis and mitigation, floristic quality assessments, and wildlife habitat assessments for residential, Department of Transportation, agricultural, and utility right-of-way projects in Illinois, Michigan, Pennsylvania, Maryland, and Oregon.

Vegetation Sampling

John Hassett is a Staff Scientist for Tetra Tech, with over 10 years of experience in diverse areas of the environmental sciences. Prior to earning his Master's Degree in Terrestrial Resource Ecology and Management at the University of Michigan in 2003, Mr. Hassett worked in environmental education and ecosystem restoration projects for private and governmental organizations. While a doctoral candidate in Natural Resources at the University of Michigan, Mr. Hassett served as a teaching assistant for graduate-level courses in ecosystem restoration and soil ecology, and has been the lead instructor for Soil Ecology. He served as an assistant to the Associate Dean of Natural Resources during accreditation review of the School of Natural Resources' forestry curriculum by the Society of American Foresters, and was the recipient of a two-year, National Science Foundation funded fellowship addressing biosphere/atmosphere interactions in ecology and climate science. Mr. Hassett has published two peer-reviewed papers addressing forest regeneration and nutrient cycling, and has given original research oral presentations at meetings of the Ecological Society of America.

Report Preparation and Coordination

Sheila Hess has over 17 years experience in wetland ecology, natural resource conservation and aquatic resource mitigation. She worked for 12 years with a non-profit conservation organization focusing on landscape level planning and restoration of wetland systems in 18 states across the Great Lakes and Atlantic Region. She has coordinated several watershed-based planning efforts and has worked extensively with conservation organizations, watershed groups and regulatory staff to developed wetland avoidance, minimization and compensation strategies for individuals, agencies and corporations. Sheila formed Conservation Connects in 2009 and now works directly with communities and corporations to integrate natural resource conservation into economic development and facilitate the creation of sustainable growth models.

TABLES

Table 1. Wetland Attributes

Wetland ID	Michigan Habitat Classification	Global/State Rank	Area (acres)	Condition
W1	Historic and current agricultural field	-	4.51	Highly disturbed by recent agricultural activities
W2	Historic and current agricultural field	-	0.74	Highly disturbed by recent agricultural activities
W3	Historic and current agricultural field	-	0.90	Highly disturbed by recent agricultural activities
W4	Southern Shrub-Carr	GU/S5	1.23	Highly disturbed by drainage ditches
W5	Floodplain Forest	G3/S3	11.84	Highly disturbed by drainage ditch
W7	Historic and current agricultural field	-	0.55	Highly disturbed by recent agricultural activities
W8	Wet-mesic Flatwoods	G2G3/S2	0.59	Hydrology and the surrounding land type have been disturbed by recent agricultural. The wetland is listed as high quality based off of the G2G3/S2 habitat ranking
W10	Wet-mesic Flatwoods	G2G3/S2	0.95	Hydrology and the surrounding land type have been disturbed by recent agricultural activities to the south and electrical power line ROW to the north. The wetland is listed as high quality based off of the G2G3/S2 habitat ranking
W11	Southern Shrub-Carr	GU/S5	2.29	Hydrology and the surrounding land type have been disturbed by recent agricultural activities to the south and electrical power line ROW to the north; however, the diversity of the vegetation and quality of habitat off set the disturbances.
W12	none	-	3.06	Highly disturbed by power line ROW
W13	Floodplain Forest	G3/S3	8.55	The hydrology of the wetland has been disturbed by drainage ditches and access roads that were constructed through the center of the wetland; however, the quality and diversity of the vegetation and habitat off set the disturbances.

Table 1. Wetland Attributes (continued)

Wetland ID	Michigan Habitat Classification	Global/State Rank	Area (acres)	Condition
W14	Intermittent Wetland*	-	11.77	The soils and hydrology have been highly disturbed by recent agricultural activities; however, the vegetation is diverse and consists of high quality species and habitat off set the disturbances. Areas of inundation observed
W16	Historic and current agricultural field	-	27.54	Highly disturbed by recent agricultural activities. Areas of inundation observed
		Total Wetland Acreage	74.52	

Note

* Has the vegetation and hydrology, but not the sandy soils.

FIGURES

Figure 1. Site Location Map

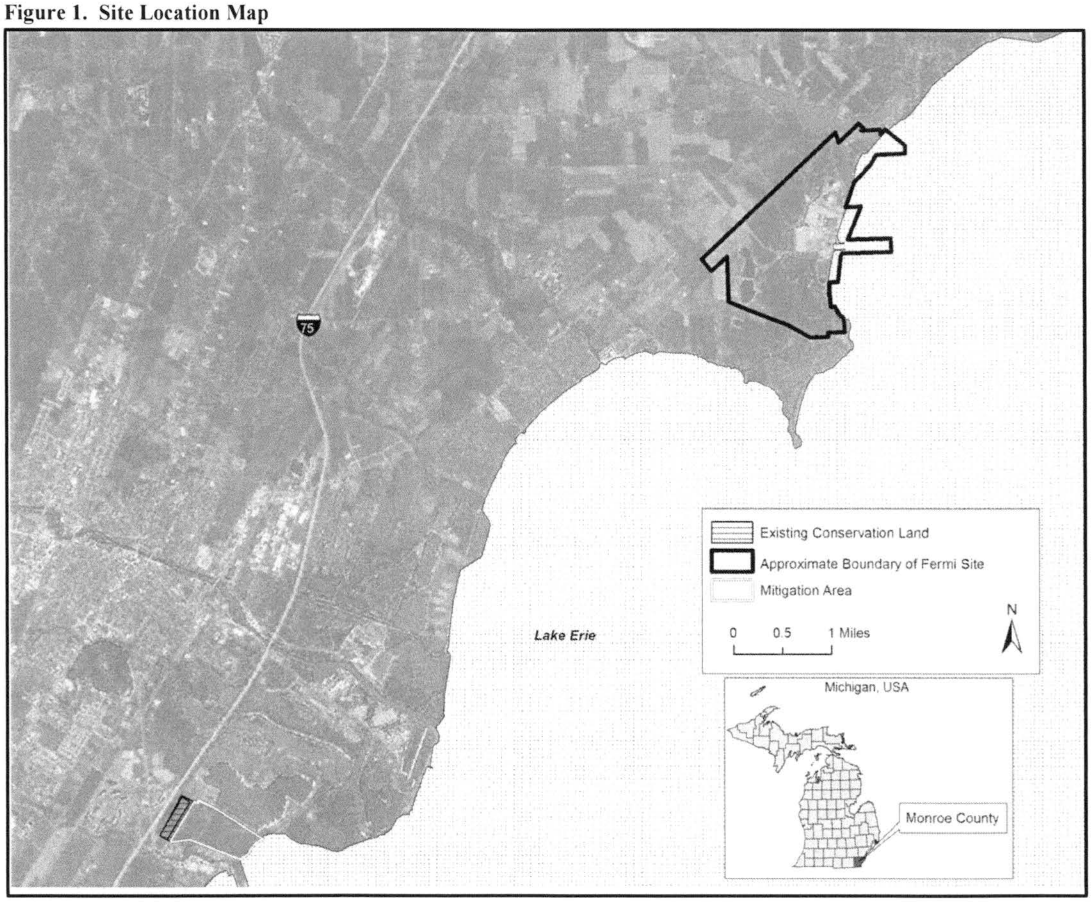


Figure 2. Aerial Photograph of Site

Figure 3. USGS Topographic Map

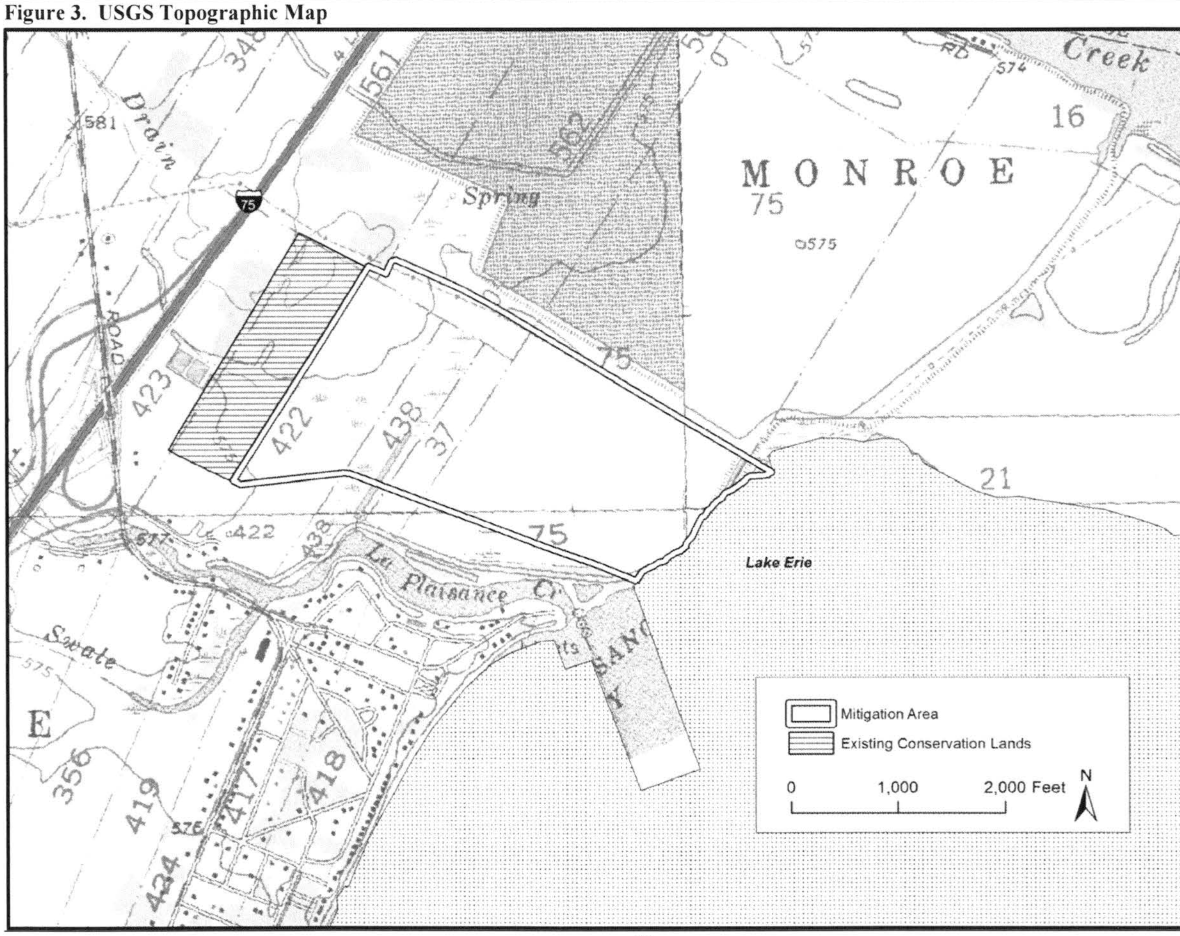
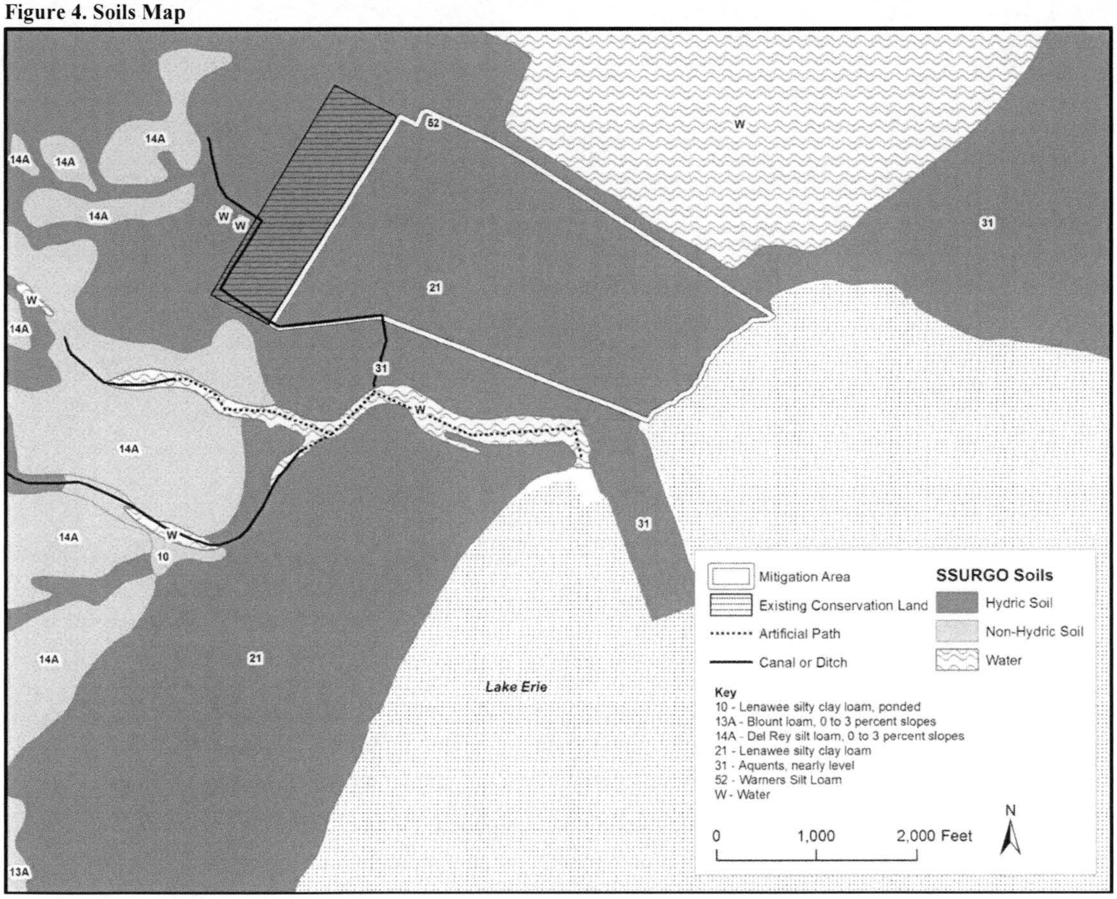
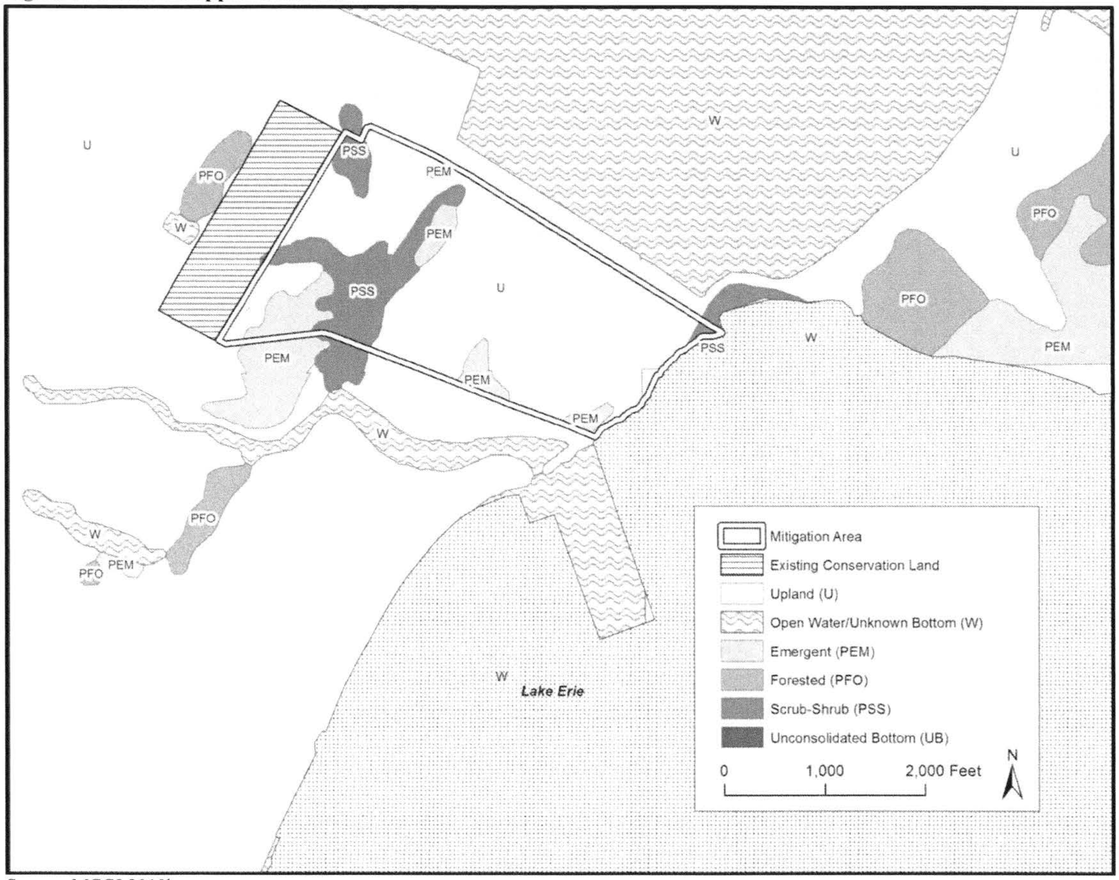


Figure 4. Soils Map



Sources: USGS 2010 and MCGI 2010a

Figure 5. Federal Mapped Wetlands



Source: MCGI 2010b

Figure 6. Site Hydrology

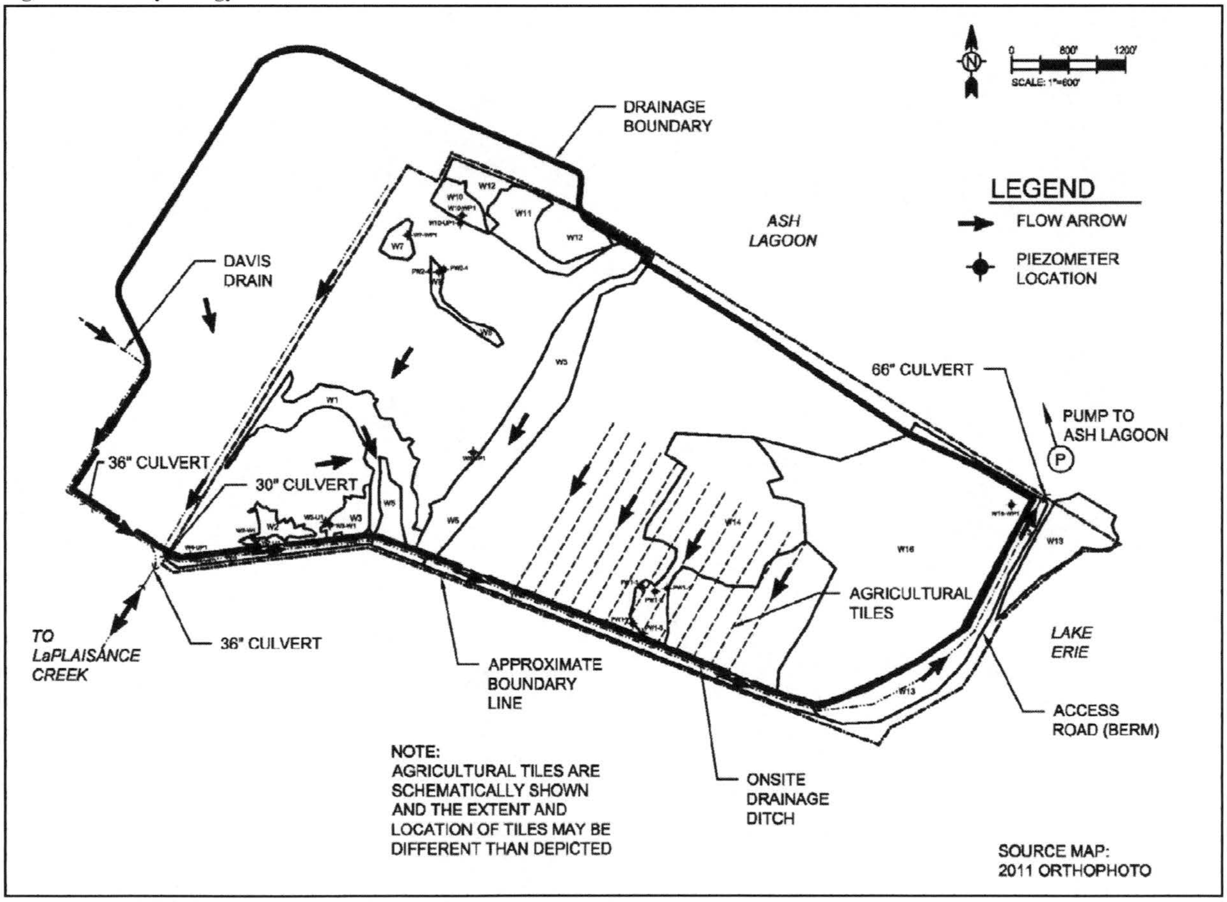


Figure 7. Delineated Wetland Map, Topography, and OHWMs

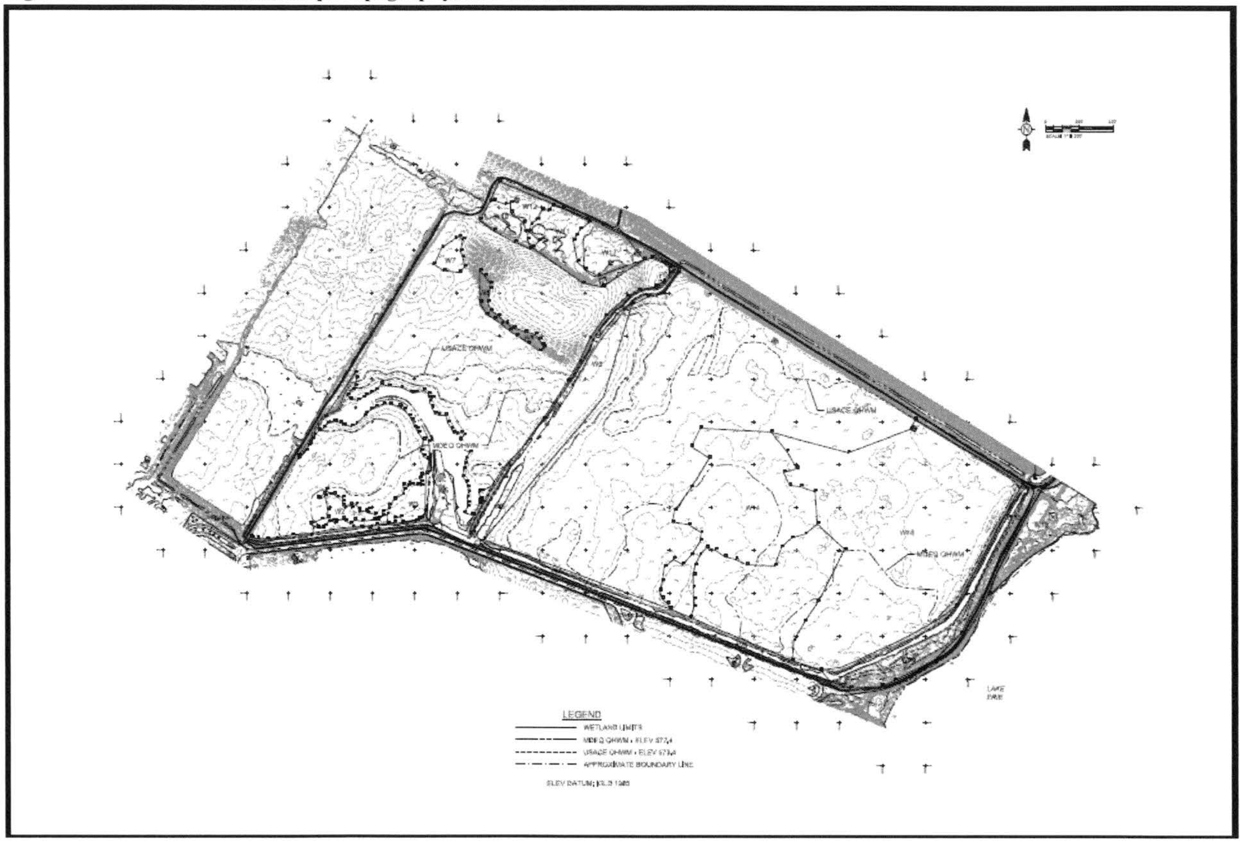


Figure 8. Delineated Wetland Map Set

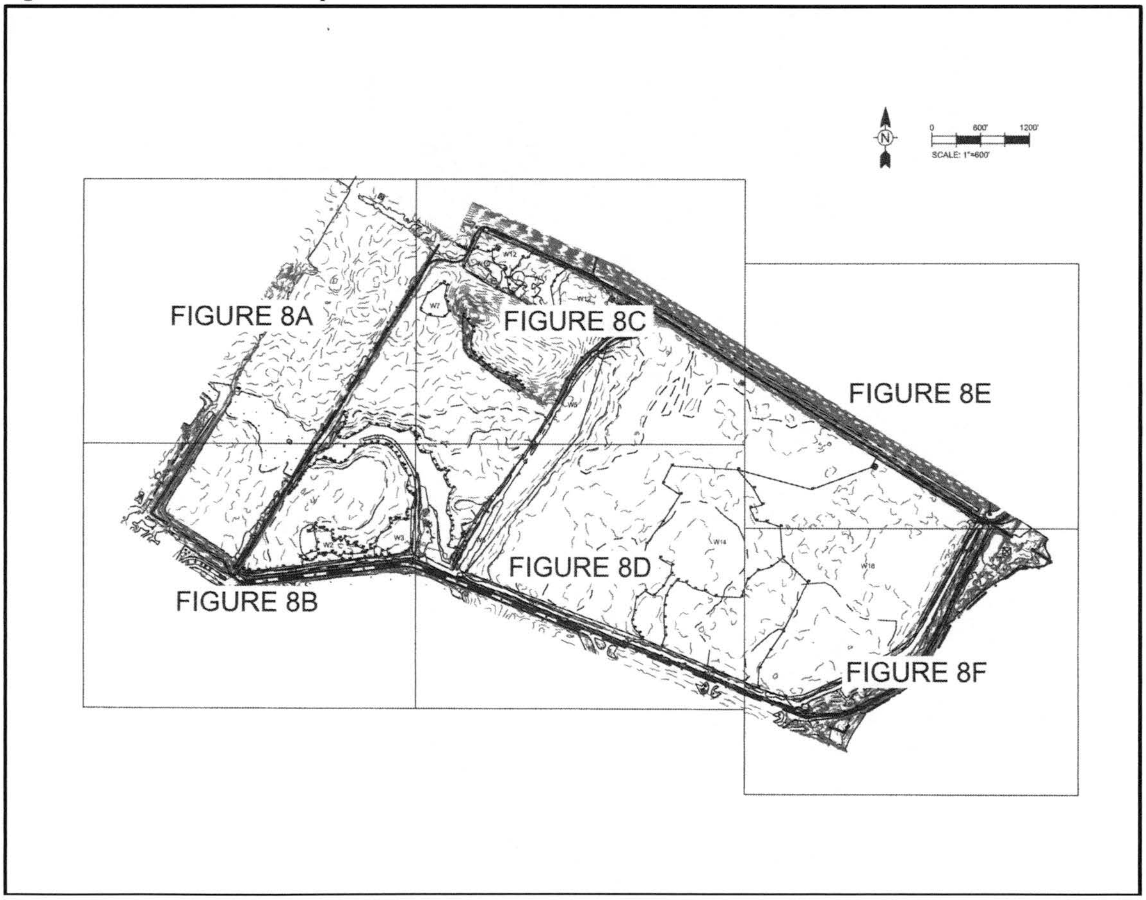


Figure 8. Delineated Wetland Map Set (Sheet 8A)

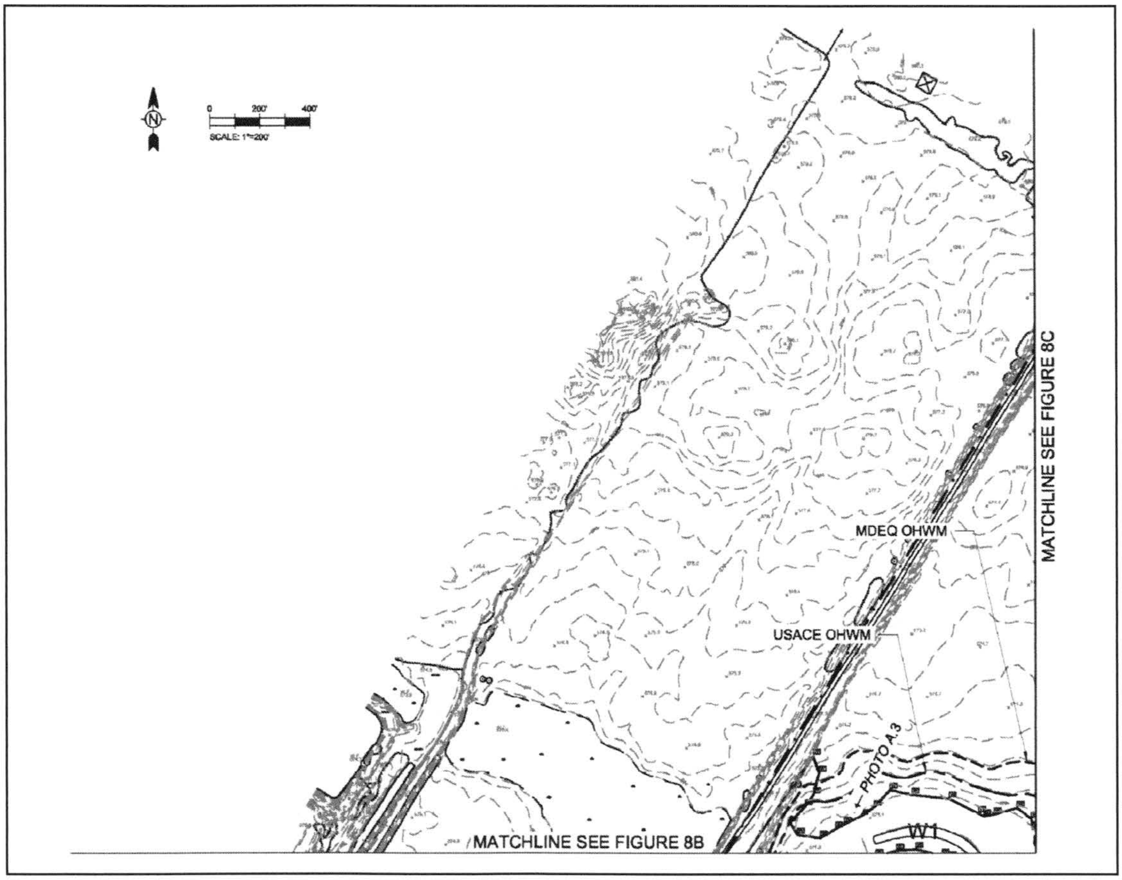


Figure 8. Delineated Wetland Map Set (Sheet 8B)

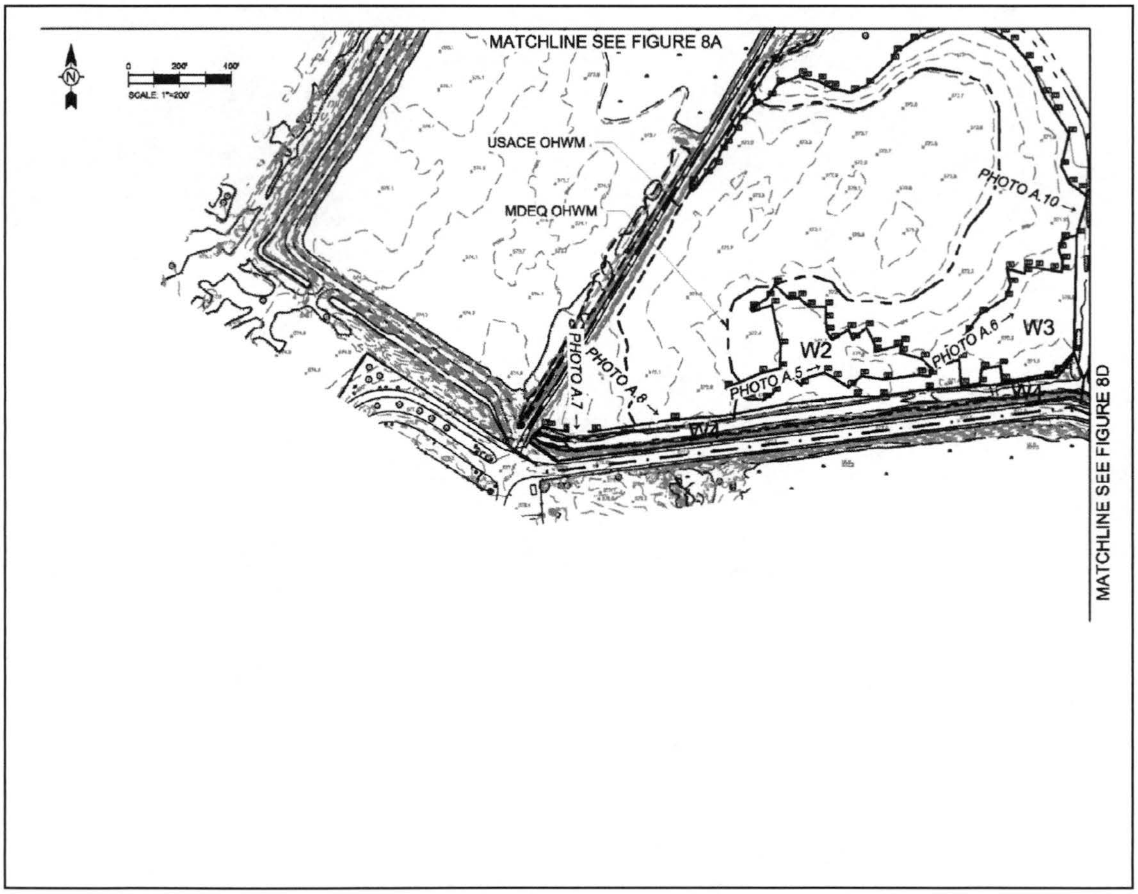


Figure 8. Delineated Wetland Map Set (Sheet 8C)

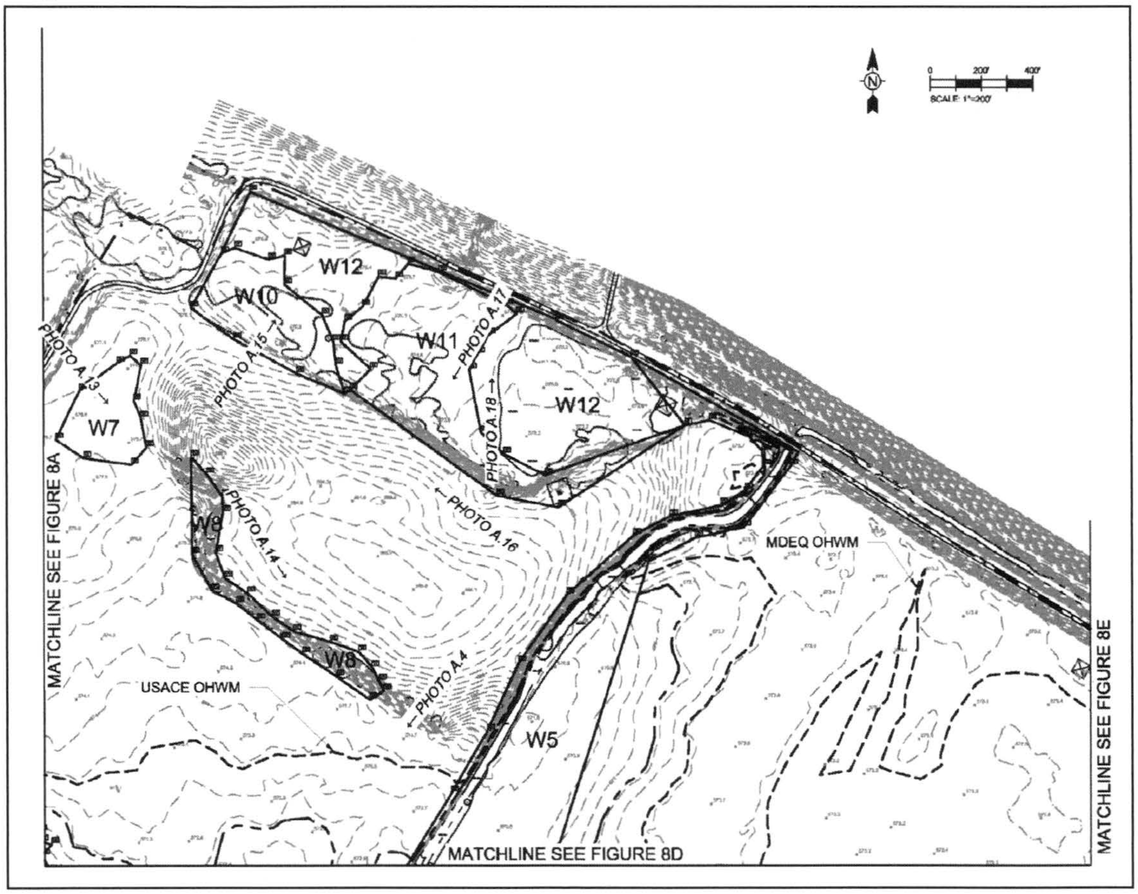


Figure 8. Delineated Wetland Map Set (Sheet 8D)

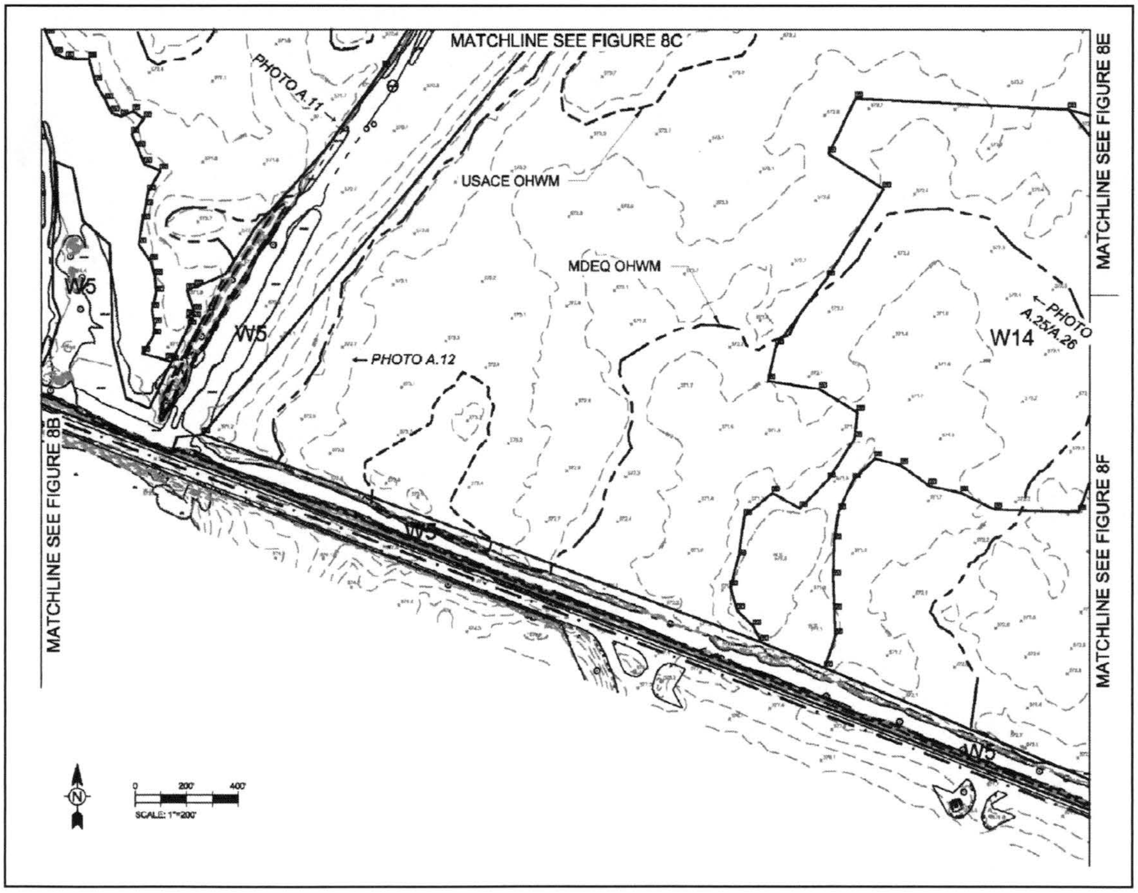


Figure 8. Delineated Wetland Map Set (Sheet 8E)

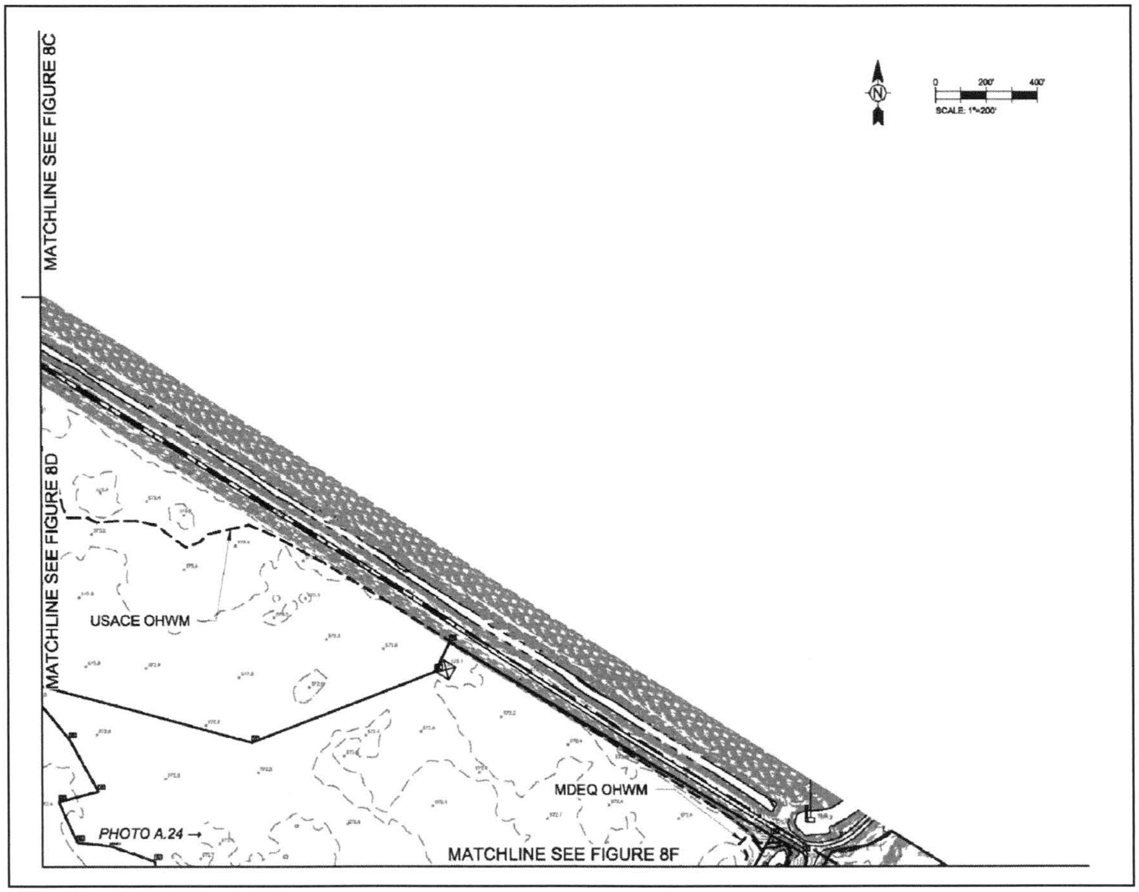


Figure 8. Delineated Wetland Map Set (Sheet 8F)

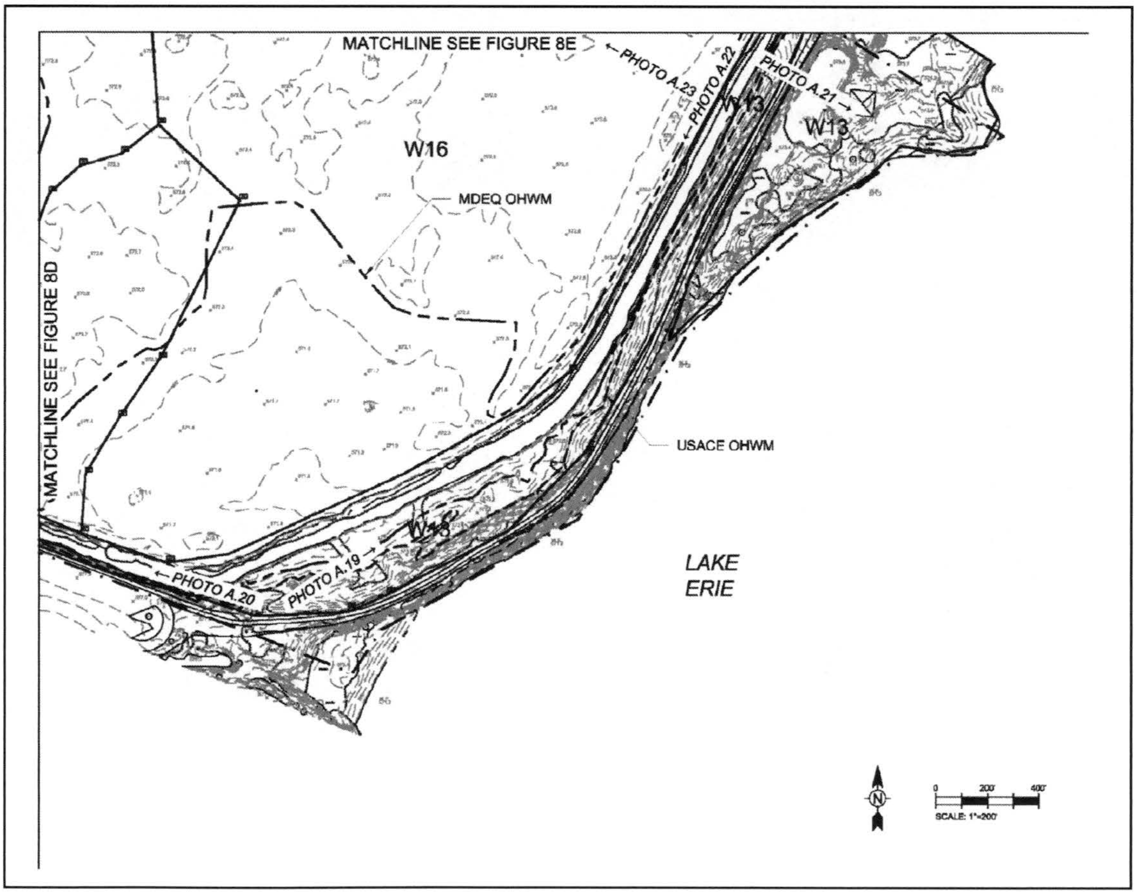
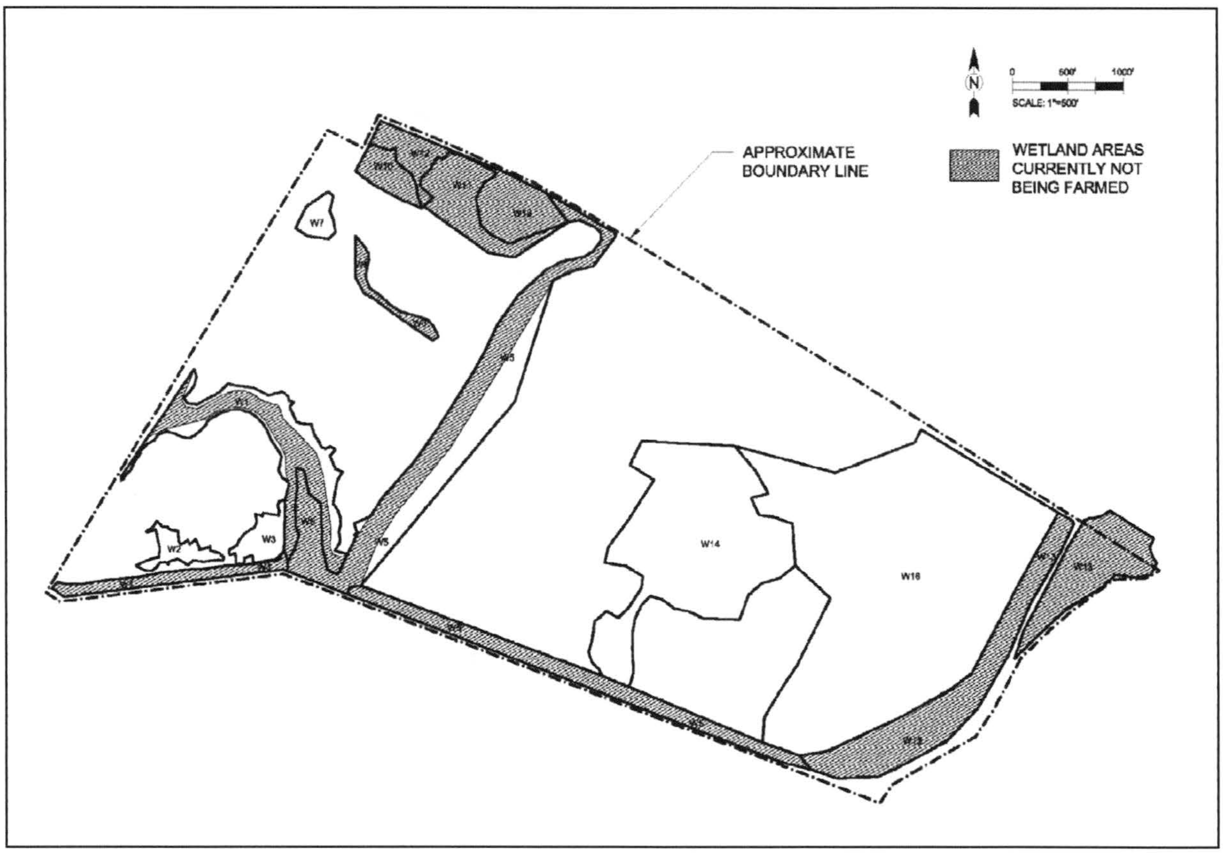


Figure 9. Delineated Wetland Map and Agricultural Activity



APPENDIX A – SITE PHOTOGRAPHS

PHOTO A.1
SOIL CORE FROM WETLAND 1, SOIL PIT 1: TOP OF CORE AT LEFT; DISTINCT REDOX FEATURES TO RIGHT; KNIFE IS 12 INCHES LONG

PHOTO A.2
SOIL PIT 2 IN FAR WESTERN SECTION OF WETLAND 1, SHOWING SUBSURFACE INUNDATION

PHOTO A.3
LOOKING SOUTHWEST FROM NORTH BOUNDARY OF WETLAND 1, WITH DISTURBED VEGETATION IN RIGHT FOREGROUND

PHOTO A.4
THISTLE DOMINATED VEGETATION REPRESENTITIVE OF COVER IN DISTURBED AREAS, LOOKING SOUTHWEST BETWEEN WETLAND 8 AND WETLAND 5

PHOTO A.5
LOOKING EAST ACROSS WETLAND 2, FROM SOIL PIT 1 IN WETLAND 2; BORDER WITH WETLAND 4 ALONG RIGHT SIDE OF FRAME

PHOTO A.6
LOOKING NORTHEAST FROM WESTERN END OF WETLAND 3; TREES AND DENSE *PHRAGMITES* STANDS OF WETLAND 5 VISIBLE IN BACKGROUND

PHOTO A.7
LOOKING SOUTHEAST INTO WETLAND 4, FROM WETLAND 4 UPLAND SOIL PIT

PHOTO A.8
LOOKING SOUTHEAST INTO WETLAND 4 DITCH, FROM WETLAND 4 UPLAND SOIL PIT

PHOTO A.9
LOOKING NORTH FROM WETLAND 5, INTO WETLAND 1

PHOTO A.10
LOOKING EAST ACROSS INUNDATED DITCH IN WETLAND 1, TOWARDS SHRUBS ON SPOIL MOUNDS IN WETLAND 5

PHOTO A.11
LOOKING SOUTHEAST INTO WETLAND 5 FROM DISTURBED VEGETATION ALONG WESTERN BOUNDARY OF WETLAND 5

PHOTO A.12
LOOKING WEST TOWARDS WETLAND 5, FROM UPLAND AREA BETWEEN WETLAND 5 AND WETLAND 14

PHOTO A.13
LOOKING SOUTHEAST ACROSS WETLAND 7 FROM ROAD, TOWARDS WETLAND 8 IN CENTER OF FRAME; TREES OF WETLAND 5 VISIBLE IN DISTANCE

PHOTO A.14
LOOKING SOUTHEAST FROM NORTHWEST END OF WETLAND 8, AT TOP OF SLOPE

PHOTO A.15
LOOKING NORTHEAST FROM SOUTHERN EDGE OF WETLAND 10;
WETLAND 12 VISIBLE IN BACKGROUND THROUGH TREES

PHOTO A.16
LOOKING NORTHWEST ACROSS FAR SOUTHEASTERN BOUNDARY
OF WETLAND 11, ADJADENT TO DISTURBED FIELD

PHOTO A.17
BOUNDARY OF WETLAND 11 AND WETLAND 12, LOOKING SOUTHWEST FROM ACCESS ROAD

PHOTO A.18
BOUNDARY OF WETLAND 11 AND WETLAND 12, LOOKING NORTH FROM SOUTHERN LOBE OF WETLAND 11

PHOTO A.19
LOOKING NORTHEAST THROUGH WETLAND 13 FROM FAR SOUTHERN PORTION OF PROPERTY, DRAINAGE DITCH VISIBLE AT LEFT

PHOTO A.20
LOOKING NORTHWEST THROUGH CENTER OF WETLAND 5 DITCH, FROM WETLAND 13

PHOTO A.21
LOOKING SOUTHEAST INTO FENCED-OFF FAR EASTERN AREA OF WETLAND 13, FROM ROAD

PHOTO A.22
W ETLAND 16 AND WETLAND 13, LOOKING SOUTHWEST ALONG BOUNDARY FROM FURTHEST EASTERN EXTENT OF WETLAND 16

PHOTO A.23
LOOKING NORTHWEST FROM FAR EASTERN EXTENT OF WETLAND 16, WITH WETLAND 5 IN FAR DISTANCE AT LEFT

PHOTO A.24
LOOKING EAST ACROSS WETLAND 16, FROM NEAR BOUNDARY WITH WETLAND 14, SHRUBS AND TREES OF WETLAND 13 VISIBLE IN DISTANCE TO RIGHT OF TRANSMISSION LINE TOWER

APPENDIX B – DATA FORMS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

0920

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 5/31/2011

Applicant/Owner: DTE State: MI Sampling Point: W1-W1

Investigator(s): BDK, JEH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): toe of road Local relief (concave, convex, none): convex

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee silty clay loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil ___, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

toe of access road. Standing water present. Disturbed veg and hydrology. low quality wetland for habitat ~~and~~ heavy rain over the past 2 months. delineation based on topography and vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ___	Depth (inches): 0-3
Water Table Present?	Yes ✓	No ___	Depth (inches): 0-5
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 0-5

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: heavy rains over the past 2 months, surface water present over ≈ 40% of wetland

5/31/11
0940

VEGETATION – Use scientific names of plants. Sampling Point: W1-W1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	______ = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	______ = Total Cover		
Herb Stratum (Plot size: 5 m Rad.)			
1.			
2. Crepis [illegible]	5%	N	FACU
3. Festuca pratensis	10%	N	FACU-
4. Panicum capillare	10%	N	FAC
5. Phalaris arundinacea	25%	Y	FACW+
6. Setaria italica (Dried/last yr)	<1%	N	FACU
7.			
✱ 8. Avena fatua	25%	Y	NI
9. Echinochloa crusgalli	10%	N	FACW
10. Calamagrostis cf. [illegible]	15	N	FACW
11. Thlaspi arvense	<1%	N	NI
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
	______ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B) (N)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	50	x 2 = 100
FAC species	10	x 3 = 30
FACU species	15	x 4 = 60
UPL species	0	x 5 = 0
Column Totals:	75 (A)	190 (B)

Prevalence Index = B/A = 2.53 Y

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
N Dominance Test is >50%
Y Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Periphery of disturbed ag. field, at base of slope near road.

✱ = Annual dominant

5/31/2011 0940

SOIL

Sampling Point: W1-W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	98	10YR 4/6	2	RM	M	SCL	Sat
10-18	10YR 5/4	70	10YR 5/6	30	RM	M	SCL	↓

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7) **(LRR R, MLRA 149B)**
- __ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- __ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- __ Loamy Mucky Mineral (F1) **(LRR K, L)**
- __ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- __ Coast Prairie Redox (A16) **(LRR K, L, R)**
- __ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- __ Dark Surface (S7) **(LRR K, L)**
- __ Polyvalue Below Surface (S8) **(LRR K, L)**
- __ Thin Dark Surface (S9) **(LRR K, L)**
- __ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- __ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ✓ No ____

Remarks:

Saturated, 0"

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

5/31/2011

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/1-4/08
Applicant/Owner: DTE State: MI Sampling Point: W1-U
Investigator(s): BDK JFH Section, Township, Range: ______
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave
Slope (%): 2 Lat: ______ Long: ______ Datum: ______
Soil Map Unit Name: Lenawee Silty Clay loam NWI classification: ______
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes ___ No X	If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)
Heavy rain for the past 2 months, more rain than average.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
___ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 13
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 13

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Heavy rain over the past 2 months, ~~high~~ water table is at 13" bgs. BK

5/31/11

VEGETATION – Use scientific names of plants.

Sampling Point: W1-U1

Tree Stratum (Plot size: ______)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: ______)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Canada thistle (Circium arvense)	99%		FACU
2. Panicum spp. (cf. capillare)	1%		FAC
3. Hawkweed (Crepis runcinata)	<1%		FACW
4. Hordeum jubatum	<1%		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: ______)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	1	x 3 = 3
FACU species	99	x 4 = 396
UPL species		x 5 =
Column Totals:	100 (A)	399 (B)

Prevalence Index = B/A = 3.99

Hydrophytic Vegetation Indicators:

- N Rapid Test for Hydrophytic Vegetation
- N Dominance Test is >50%
- N Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Disturbed Ag. field; Dominant thistles 99% cover, misc. early successional grasses.

5/31/11

SOIL

Sampling Point: W1-U1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2	100					SCL	
13-20	10YR 5/4	65	10YR 5/6	35			SCL	Redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

top 13 inches is 10YR 3/2 w/ no observed redoximorphic features. Soil is moist.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 5/31/11

Applicant/Owner: DTE State: MI Sampling Point: W1-W2

Investigator(s): B. Kister, J. Hassett. Section, Township, Range: ______

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): —

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present? Yes X No ___		
Wetland Hydrology Present? Yes X No ___	If yes, optional Wetland Site ID: W1	

Remarks: (Explain alternative procedures here or in a separate report.)
adjacent to ditch. Phrag is dominate. heavy rain totals the past 2 months. ditch collects water from ag. fields surrounding it. area is disturbed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0-6"

Water Table Present? Yes X No ___ Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: low area adjacent to drainage ditch

5/31/11 1125

VEGETATION – Use scientific names of plants. Sampling Point: W1-W2

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Phragmites australis	30%	Y	FACW
2. Phalaris arundinacea	30%	Y	FACW
3. Cirsium arvense	20%	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

Y Rapid Test for Hydrophytic Vegetation

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks: (Include photo numbers here or on a separate sheet.)

Disturbed

5/31/11 1125

SOIL

Sampling Point: W1-W2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					L	Sat.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________________

Depth (inches): ______________________

Hydric Soil Present? Yes X No ____

Remarks:

Saturated 0"-18", no redox features observed

1135

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 5/31/11
Applicant/Owner: DTE State: MI Sampling Point: W1-Up
Investigator(s): J. Hassett, B. Kinter Section, Township, Range: ____
Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Slope
Slope (%): 2-3 Lat: ____ Long: ____ Datum: ____
Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes ____ No X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
upland pit associated w/ W1-WL. topography and Veg. used to determine boundary. disturbed area. Heavy rains over the past 2 months.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- B Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 3"
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 3"

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: heavy rains over the past 2 months

573MI N35

VEGETATION – Use scientific names of plants.

Sampling Point: W1-U2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cirsium arvense	70%	Yes	FACU
2. Phalaris arundinacea	28%	Yes	FACW
3. ~~Aster novae-angliae~~ Erigeron pulchellus	<1%	N	FACU
4.	—	—	—
5. Rumex crispus	2%	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	28	x 2 = 56
FAC species	2	x 3 = 6
FACU species	70	x 4 = 280
UPL species	0	x 5 = 0
Column Totals:	100 (A)	(B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Disturbed, Dominated by thistles,

5/31/11 1135

SOIL

Sampling Point: W1-U2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					L	Sat.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

5/31/11 1520

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: W2-W1

Applicant/Owner: DTE State: MI Sampling Point: ______

Investigator(s): BDK, AH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): ~~Convex~~ Concave

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ______
Hydric Soil Present?	Yes X	No ______
Wetland Hydrology Present?	Yes X	No ______

Is the Sampled Area within a Wetland? Yes X No ______

If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

Heavy rain the last 2 months, disturbed area from ag and drainage tiles/ditches. topo and veg used to delineate boundary.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ______	Depth (inches): ≈1"
Water Table Present?	Yes X	No ______	Depth (inches): 0-10"
Saturation Present? (includes capillary fringe)	Yes X	No ______	Depth (inches): 0-10"

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Redox in Soil

5/31/11 1520

VEGETATION – Use scientific names of plants. Sampling Point: W2-W1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cirsium arvense	10%	N	FACU
2. Phragmites australis	80%	Y	FACW
3. Phalaris arundinacea	10%	N	FACW
4. Crepis runcinata	<1%	N	FACW
5. Alopecurus pratensis	<1%	N	FACW
6. Triticum aestivum	<1%	N	NI
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

Y Rapid Test for Hydrophytic Vegetation
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

5/31/11 1520

SOIL Sampling Point: Wd-W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	90	10YR 4/4	10	RM	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

disturbed area. sat at 10" bgs. Redox 0-18"

1530

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 5/31/11

Applicant/Owner: DTE State: MI Sampling Point: W2-U

Investigator(s): RDK, JEH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: upl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)
disturbed area from ag and draining tiles / ditches. Used topo and veg to delineate boundary

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______

Water Table Present? Yes X No ___ Depth (inches): 11

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 11

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: heavy rains the last 2 months

5/31/11 1530

VEGETATION – Use scientific names of plants.

Sampling Point: W2-U1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cirsium arvense	80%	Y	FACU
2. [illegible] (rfu)	18%	N	NI
3. Setaria faberi	<1%	N	FACU
4. – (Trailing groundcover, opposite	<1%	N	(?)
5. leaves, long wispy flexible			
6. stalks) → key out			
7. Erigeron philadelphicus	<1%	N	FACU
8. Arabis cf divaricarpa	<1%	N	FACU
9.			
10.			
11.			
12.			
	100% = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	80 (A)		320 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

5/31/11 1530

SOIL

Sampling Point: ~~[illegible]~~ WJ-U1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR2/1	90	10YR 4/4	10	RM	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes X No ___

Remarks:

On a slight hill top adjacent to wetland WJ

US Army Corps of Engineers | Northcentral and Northeast Region – Interim Version

1630

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 5/31/11

Applicant/Owner: DTE State: MI Sampling Point: W3-W1

Investigator(s): BDK, JH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silt Clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID: W3

Remarks: (Explain alternative procedures here or in a separate report.)
depressional area adjacent to 2 drainage ditches. Standing water, disturbed from ag and drainage ditch/tiles. poor quality habitat. Heavy rains the past 2 months.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches): 10	
Water Table Present?	Yes X No ___	Depth (inches): 1	
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches): 1	**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water, adjacent to 2 drainage ditches. drainage ditch at East Edge of wetland spilled into wetland

5/31/11 1630

VEGETATION – Use scientific names of plants.

Sampling Point: W3-W1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Circium arvense	2%	N	FACU
2. Arabis cf. lyrata	5%	N	FACU
3. Hordeum jubatum	<1%	N	FAC
4. Common reed (Phragmites australis)	70%	Y	FACW
5. Crepis runcinata	<1%	N	FACW
6. Alopecurus pratensis	20%	N	FACW
7. Thlaspi arvense	<1%	N	NI
8. Erigeron pulchellus	3%	N	FACU
9.			
10.			
11.			
12.			
	100% = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 =
FACW species	90	x 2 = 180
FAC species	0	x 3 =
FACU species	10	x 4 = 40
UPL species	0	x 5 =
Column Totals:	100 (A)	220 (B)

Prevalence Index = B/A = 2.2

Hydrophytic Vegetation Indicators:

Y Rapid Test for Hydrophytic Vegetation

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

5/31/11 1630

SOIL

Sampling Point: W3-W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Sat at 13"

1640

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 5/31/20

Applicant/Owner: DTE State: MI Sampling Point: W3-U

Investigator(s): BDK, JEH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope

Slope (%): 1-2 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: upl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes ~~X~~	No X

Is the Sampled Area within a Wetland? Yes ______ No X

If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)
top of slope adjacent to wetland 3. change in elevation is 1-2'. disturbed from ag and ditches. Sat/water table at 13" bgs. used topo and veg to delineate boundary

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 13
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 13

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water table is high due to recent precip. yet only at 13" bgs. No redox observed.

5/31/11 1640

VEGETATION – Use scientific names of plants.

Sampling Point: W3-u1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 15m Diam)			
1. Cirsium arvense	60%	Y	FACU
2. Erigeron pulchellus	<1%	N	FACU
3. Setaria faberi	<1%	N	FACU
4. Poa compressa	5%	N	FACU
5. Festuca elatior	30%	Y	(NI)
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	0	x 3 = 0
FACU species	95	x 4 = 380
UPL species	0	x 5 = 0
Column Totals:	95 (A)	380 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

5/31/11 1640

SOIL

Sampling Point: W3-U1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7) (**LRR R, MLRA 149B**)
- __ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- __ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- __ Loamy Mucky Mineral (F1) (**LRR K, L**)
- __ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- __ Coast Prairie Redox (A16) (**LRR K, L, R**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- __ Dark Surface (S7) (**LRR K, L**)
- __ Polyvalue Below Surface (S8) (**LRR K, L**)
- __ Thin Dark Surface (S9) (**LRR K, L**)
- __ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- __ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- __ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ____

Remarks:

Sat at 1" bgs

0915

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/11/2011
Applicant/Owner: DTE State: MI Sampling Point: W4-WP1
Investigator(s): BDK, GKS Section, Township, Range: ______
Landform (hillslope, terrace, etc.): top of ditch Local relief (concave, convex, none): none
Slope (%): 0-70 Lat: ______ Long: ______ Datum: ______
Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PSS
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X
Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ______	**Is the Sampled Area within a Wetland?** Yes X No ______
Hydric Soil Present? Yes X No ______	
Wetland Hydrology Present? Yes X No ______	If yes, optional Wetland Site ID: W4

Remarks: (Explain alternative procedures here or in a separate report.)
Edge of drainage ditch that flows W→E to pumping station. W4 is ≈ 4' wide w/ PSS veg. between ditch. Slope of ditch is ≈ 70°. Ditch bank is ≈ Phrag on top of bank and in canal. disturbed when drainage ditch was constructed & heavy rains last 2 months. middle ditch flows W→E then connects w/ 1st ditch. water is overflowing into W4 in middle ditch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
X Surface Water (A1) in areas
X High Water Table (A2)
X Saturation (A3)
__ Water Marks (B1)
__ Sediment Deposits (B2)
__ Drift Deposits (B3)
__ Algal Mat or Crust (B4)
__ Iron Deposits (B5)
__ Inundation Visible on Aerial Imagery (B7)
__ Sparsely Vegetated Concave Surface (B8)
__ Water-Stained Leaves (B9)
__ Aquatic Fauna (B13)
__ Marl Deposits (B15)
__ Hydrogen Sulfide Odor (C1)
X Oxidized Rhizospheres on Living Roots (C3)
X Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Tilled Soils (C6)
__ Thin Muck Surface (C7)
~~X~~ Other (Explain in Remarks) BK ~~Soil damp/not saturated~~

Secondary Indicators (minimum of two required)
__ Surface Soil Cracks (B6)
__ Drainage Patterns (B10)
__ Moss Trim Lines (B16)
__ Dry-Season Water Table (C2)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Stunted or Stressed Plants (D1)
__ Geomorphic Position (D2)
__ Shallow Aquitard (D3)
__ Microtopographic Relief (D4)
__ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes X No X Depth (inches): in areas
Water Table Present? Yes X No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes X No X Depth (inches): ______
Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
adjacent to drainage ditches, water in ditch was ≈ 3.5' lower in grade than bottom of pit is southern ditch, water in middle ditch is over flowing into wetland.

6/1/2011 0915

VEGETATION – Use scientific names of plants. Sampling Point: WY-WP1

Tree Stratum (Plot size: total)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~Cornus racemosa~~			
2. ~~tree maple~~ Silver Maple - Acer saccharinum	5	Y	FACW+
3. Mulberry - Morus alba	5	Y	FAC
4.			
5.			
6.			
7.			
	10% = Total Cover		

Sapling/Shrub Stratum (Plot size: total)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cornus racemosa	40	Y	FACW+
2. ash tree?	8	N	
3. ~~Silver Maple - Acer Saccharinum~~			~~FACW~~
4. Box Elder - Acer Negundo	10	N	
5.			
6.			
7.			
	58 = Total Cover		

Herb Stratum (Plot size: total)	Absolute % Cover	Dominant Species?	Indicator Status
1. Canadian thistle	20	Y	FACU
2. golden rod (tall) - Solidago altissima	5	N	FACU
3. Phragmites australis	20	Y	FACW+
4. Polygonum sagittatum	5	N	OBL
5. Hydrocotyle	15	Y	OBL
6. Galium asprellum	5	N	OBL
7. grape vine - Vitis aestivalis	2	N	
8.			
9.			
10.			
11.			
12.			
	72 = Total Cover		

in Folder

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~grape vine - Vitis aestivalis~~	~~2~~		
2.			
3.			
4.			
	= Total Cover		

in folder

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

6/11/81 0915 W4-WP1 ~~W4 M~~ BK

SOIL

Sampling Point: ~~W4 M~~ W4-WP1 BK

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3-2	95	10YR 4-4	5	RM	PL	Sandy Clay loam	
10-18	10YR 5-2	40	10YR 5-6	40	RM	M	Silty Clay loam	
↳	10YR 3-1	20						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7) **(LRR R, MLRA 149B)**
- __ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- __ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- __ Loamy Mucky Mineral (F1) **(LRR K, L)**
- __ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- __ Coast Prairie Redox (A16) **(LRR K, L, R)**
- __ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- __ Dark Surface (S7) **(LRR K, L)**
- __ Polyvalue Below Surface (S8) **(LRR K, L)**
- __ Thin Dark Surface (S9) **(LRR K, L)**
- __ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- __ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: N/A
Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks: Soil damp - not Saturated

04:30

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

6/1/2011

Project/Site: DTE Monroe City/County: Monroe Sampling Date: ~~W4-UP1-BE~~

Applicant/Owner: DTE State: MI Sampling Point: W4-UP

Investigator(s): BDK, GKJ Section, Township, Range: ______

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none

Slope (%): 0 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: WPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes X	No ___		
Wetland Hydrology Present?	Yes X	No ___	If yes, optional Wetland Site ID: ______	

Remarks: (Explain alternative procedures here or in a separate report.)
Upland pit adjacent to Wetland 4, disturbed due to farming and drainage ditch/tiles. Used topo and veg to delineate boundary

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ______
Water Table Present?	Yes ___	No X	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is damp.

6/11/2011 0930

VEGETATION – Use scientific names of plants. Sampling Point: WY-UP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: ______)			
1. Canadian thistle - Cirsium arvense	80	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ______ No X

Remarks: (Include photo numbers here or on a separate sheet.)

6/11/2011 0930

SOIL

Sampling Point: WY-UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	95	10YR 4/4	5	RM	PL	SCL	Silty clay loam
10-18	10YR 5/2	40	10YR 5/6	40	RM	M	SCL	↓
	10YR 3/1	20						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7) **(LRR R, MLRA 149B)**
- __ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- __ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- __ Loamy Mucky Mineral (F1) **(LRR K, L)**
- __ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- __ Coast Prairie Redox (A16) **(LRR K, L, R)**
- __ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- __ Dark Surface (S7) **(LRR K, L)**
- __ Polyvalue Below Surface (S8) **(LRR K, L)**
- __ Thin Dark Surface (S9) **(LRR K, L)**
- __ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- __ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ____

Remarks:

Soil is damp, but no sat.

1100

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/1/2011

Applicant/Owner: DTE State: MI Sampling Point: W5-WP1

Investigator(s): B. Kinker, G. Jones Section, Township, Range: ______

Landform (hillslope, terrace, etc.): ______ Local relief (concave, convex, none): none

Slope (%): 0-80 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Warners silt loam Lenawee silty clay loam NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___ Hydric Soil Present? Yes X No ___ Wetland Hydrology Present? Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___ If yes, optional Wetland Site ID: Wetland 5

Remarks: (Explain alternative procedures here or in a separate report.)
PSS wetland adjacent to N-S drainage ditch in middle of property. The wetland consists of PSS veg ~5-10' width w/ a drainage ditch flowing through it. Additional wetlands (W15, W6, W1 and W4, and W13) are adjacent to W5. Soil, hydrology and veg are disturbed from agricultural practices and drainage ditches / tiles. upland pit W6-UP1 serves as upland pit for W5 as well.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
X Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
X Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
X Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): in ditch ~1'
Water Table Present? Yes ___ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
water in drainage ditch. crayfish borrows throughout.

1245

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE - Monroe City/County: Monroe Sampling Date: 6/1/11

Applicant/Owner: DTE State: MI Sampling Point: W5-Upl / W6-Upl

Investigator(s): B. Kinter, G. Jones Section, Township, Range: ______

Landform (hillslope, terrace, etc.): top of ridge Local relief (concave, convex, none): convex

Slope (%): 3-5 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ~~Warners silt loam~~ lenawee silty clay loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ______ No X	Is the Sampled Area within a Wetland? Yes ______ No X
Hydric Soil Present?	Yes X No ______	
Wetland Hydrology Present?	Yes X No ______	If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)
upland pit W6-upl used for both wetlands 5 and 6. W5-Upl equals W6-upl. Only the 1st page of W5-UPl was completed. for more info refer to form W6-UPl.
upland pit located on ridge between wetlands 5 and 6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: topography and Veg used to delineate boundary.

6/21/2011
1100

VEGETATION – Use scientific names of plants.

Sampling Point: WE-WP1

Tree Stratum (Plot size: 5 m (narrow area) x 20 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	10%	Y	FAC
2. Acer negundo	5%	Y	FACW
3.			
4. (Outside plot: Morus alba)			
5.			
6.			
7.			
	15% = Total Cover		

Sapling/Shrub Stratum (Plot size: 5 m (narrow area) x 20 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	20%	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		

Herb Stratum (Plot size: 5 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Phalaris arundinacea	15%	Y	FACW
2. Alliaria petiolata	10%	N	FAC
3. Phragmites australis	40%	Y	FACW
4. Galium asprellum	10%	N	OBL
5. Rumex crispus	~2%	N	FAC
6 Viola renifolia	~5%	N	FACW
7. Arctium minus	5%	N	NI
8.			
9.			
10.			
11.			
12.			
	~87% = Total Cover		

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
Y Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

6/11/2011
1100

SOIL

Sampling Point: WS-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	95	10YR 4/4	5	Rm	PL	SCL	damp
10-18	10YR 3/2	80	10YR 4/4	15	Rm	m	SCL	↓
			10YR 5/6	5	Rm	m	SCL	↓

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7) **(LRR R, MLRA 149B)**
- __ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- __ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- __ Loamy Mucky Mineral (F1) **(LRR K, L)**
- __ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- __ Coast Prairie Redox (A16) **(LRR K, L, R)**
- __ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- __ Dark Surface (S7) **(LRR K, L)**
- __ Polyvalue Below Surface (S8) **(LRR K, L)**
- __ Thin Dark Surface (S9) **(LRR K, L)**
- __ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- __ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks: Soil on drainage ditch bank

W-6 12:30

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/1/2011

Applicant/Owner: DTE State: MI Sampling Point: W6-WP1

Investigator(s): BK + GKJ Section, Township, Range: ______

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 3-5 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Len. Silty clay loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

If yes, optional Wetland Site ID: Wetland 6

Remarks: (Explain alternative procedures here or in a separate report.) large amounts of rainfall in recent weeks

area used for ag.
drainage ditch adjacent to W6.
see photo 11-16

topography + veg used to delineate depressional area that connects to middle N/S drainage ditch

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 2"
Water Table Present?	Yes X	No ___	Depth (inches): 2"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 8"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: standing water, depressional area – ~~adjacent to~~ drainage pathway to drainage ditch.

6/11/2011 12:30

VEGETATION – Use scientific names of plants.

Sampling Point: W6-WP-1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: total)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~[illegible]~~ Juncus Torreyi	20	y	FACW
2. canadian thistle - Cirsium arvense	10	y	FACU
3. ~~[illegible]~~ Galium asprellum - Rough Bedstraw	5	n	OBL
4. maple shaped lily pad - Hydrocotyle	10	y	OBL
5. edgy stem w/ clasping leaves - ~~[illegible]~~ Mimulus Ringens	5	n	OBL
6. ~~little red leaved tree~~ Populus Deltoides	5	n	
7. ~~[illegible]~~ common Fleabane (Erigeron philadelphicus)	10	y	FACW
8. other thistle, significantly less lobed, smaller	5	n	
9. ~~Circle leafed aster~~ garlic mustard - Alliaria Petiolata	5	n	FAC
10.			
11.			
12.			
	75% = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

*W6 was dropped from the delineation following site inspection with Susan Jones (MDEQ) and Sabrina Miller (USACE). Hydrophytic vegetation is restricted to a narrow swale connecting to W5. (Site inspection occurred 6/29/2011)

6/1/2011 12:30

SOIL

Sampling Point: W6-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR 3/1	80	10YR 4/4	20	RM	M+PL	loam	water @ 8" bgs

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- _X_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes _X_ No ___

Remarks: soil damp above saturation point (8" below ground surface)
redox in pore lining + matrix

12:45

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE-Monroe City/County: Monroe Sampling Date: 6/1/2011

Applicant/Owner: DTE State: MI Sampling Point: W6-UP-1

Investigator(s): B. Kiter, G. Jones Section, Township, Range: W5-up1

Landform (hillslope, terrace, etc.): top of ridge Local relief (concave, convex, none): convex

Slope (%): 3-5 Lat: Long: Datum:

Soil Map Unit Name: Lenawee silty clay loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.) topography and vegetation used to delineate location is a ridge between W5 and W6.
heavy rain the last 2 months,
area disturbed from ag and photo 13- surrounding upland
drainage ditches/tiles W6.
pit located on a ridge surrounding W6- UP-1 photograph 12 6/1/2011

HYDROLOGY W6-UP1 used as upland pit for Wetland 5 as well.

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: topography + vegetation used to delineate boundary

6/1/2011 12:45

VEGETATION – Use scientific names of plants.

Sampling Point: W6· UP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. canadian thistle	80	y	FACU
2. ~~[illegible]~~ Juncus Torreyi	12	n	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	92 = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- NO Rapid Test for Hydrophytic Vegetation
- NO Dominance Test is >50%
- NO Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ______ No X

Remarks: (Include photo numbers here or on a separate sheet.)

6/11/2011 12:45

SOIL

Sampling Point: W6-UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18"	~~8?~~ 10YR3/1	80	10YR 4-4	20	RM	M	loam	photo V2

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- _X_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: NA
Depth (inches): ______

Hydric Soil Present? Yes _X_ No ___

Remarks: Soil sample on mound

L620

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/11/2014
Applicant/Owner: DTE State: MI Sampling Point: W7-WP1
Investigator(s): B. Kinter & G. Jones Section, Township, Range: ______
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
Slope (%): <1 Lat: ______ Long: ______ Datum: ______
Soil Map Unit Name: Warner's silt Loam NWI classification: PFM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X
Are Vegetation ___, Soil ___, or Hydrology / naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___		Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present? Yes X No ___		
Wetland Hydrology Present? Yes X No ___		If yes, optional Wetland Site ID: Wetland 8

Remarks: (Explain alternative procedures here or in a separate report.)
NWI mapped, depression w/ standing water. adjacent to hill and access road. Canada thistle has infiltrated the wetland and is growing in the standing water. heavy rains the last 2 months. ag and drainage tiles present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- / Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- / Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- / Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 23"
Water Table Present? Yes X No ___ Depth (inches): 0"
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Standing water in middle of depression

6/1/2011 1620

VEGETATION – Use scientific names of plants.

Sampling Point: W7-WP-1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: total)	Absolute % Cover	Dominant Species?	Indicator Status
1. populus deltoides	5	y	FAC+
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	

Herb Stratum (Plot size: total)	Absolute % Cover	Dominant Species?	Indicator Status
1. common fleabane - erigeron philadelphicus	30 ~~40~~	y	FACW
2. goldenrod (tall) - Solidago altissima	15	y	FACU
3. canary reed grass - phalaris arundinacea	15	y	FACW
4. flowering rush - Butomus umbellatus	10	N	OBL
5. canadian thistle - cirsium arvense	20	y	FACU
6. ~~bindweed vine~~ Polygonum sagittatum	5	N	OBL
7. Ranunculus sceleratus	10	N	OBL
8.			
9.			
10.			
11.			
12.			
	95	= Total Cover	

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ~~X~~ Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL 6/11/2014 1620 Sampling Point: WP-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 3/1	100					Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Dark Surface (S7) **(LRR R, MLRA 149B)**
__ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
__ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
__ Loamy Mucky Mineral (F1) **(LRR K, L)**
__ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

__ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
__ Coast Prairie Redox (A16) **(LRR K, L, R)**
__ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
__ Dark Surface (S7) **(LRR K, L)**
__ Polyvalue Below Surface (S8) **(LRR K, L)**
__ Thin Dark Surface (S9) **(LRR K, L)**
__ Iron-Manganese Masses (F12) **(LRR K, L, R)**
__ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
__ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
__ Red Parent Material (TF2)
__ Very Shallow Dark Surface (TF12)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes X No ___

Remarks:

Shells in soil 0"-6" bgs
Shell fragments

US Army Corps of Engineers Northcentral and Northeast Region – Interim Version

1450

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/1/2011

Applicant/Owner: DTE State: MI Sampling Point: W7-UP1

Investigator(s): BDK + GKJ Section, Township, Range: ______

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope

Slope (%): 10 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Warner's Silt Loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes ___ No X

If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)
upland pt to wetland 8. On hillslope ~3' higher in elevation. heavy rains last 2 months (more than typical). disturbed by ag and drainage ditches/tiles.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 10

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: high water table

6/11/2011
1450

VEGETATION – Use scientific names of plants.

Sampling Point: W7-UP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Setaria Faberi - giant foxtail	5	N	FACU
2. Canada Bluegrass - Poa Compressa	5	N	FACU
3. Reed Canary - Phalaris arundinacea	10	N	FACW
4. Canadian Thistle - Cirsium arverse	60	Y	FACU
5. Common Fleabane - Erigeron Philadelphicus	5	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	15	x 2 = 30
FAC species	0	x 3 = 0
FACU species	70	x 4 = 280
UPL species	0	x 5 = 0
Column Totals:	85 (A)	310 (B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL 6/11/11 1450 Sampling Point: W7-UP1 BR

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y 3/1	100					Silty clay loam	
10-18	2.5Y 3/1	80	2.5Y 4/4	20	RM	PL	Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region 1225

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/2/11

Applicant/Owner: DTE State: MI Sampling Point: W8-Wp1

Investigator(s): B. Kister, J. Hassett Section, Township, Range: ______

Landform (hillslope, terrace, etc.): toe of hill Local relief (concave, convex, none): concave

Slope (%): 10 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ~~Wauseon's Silt Loam~~ Lenawee silty clay loam NWI classification: PSS/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

If yes, optional Wetland Site ID: Wetland 8

Remarks: (Explain alternative procedures here or in a separate report.)

PSS/PFO at toe of hill. ~ 10-12 trees, mostly shrub and reed canary grass. ag. and drainage ditch/tiles present in area. heavier than average precip over the last 2 months.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil moist.

6/21/11
1115

VEGETATION – Use scientific names of plants. Sampling Point: W8-WP1

Tree Stratum (Plot size: 15 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	50%	Y	FAC
2. Morus alba	85%	N	FAC
3. Acer negundo (12-28" diam)	15%	N	FACW
4.			
5.			
6.			
7.			
	150% = Total Cover		

Sapling/Shrub Stratum (Plot size: 15 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cornus amomum	30%	Y	FACW
2. Rosa multiflora	5%	N	FACU
3. Celtis occidentalis	5%	N	FAC
4. Prunus virginiana	10%	Y	FAC
5. Rhamnus cathartica	10%	Y	FACU
6.			
7.			
	60% = Total Cover		

Herb Stratum (Plot size: 15 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Phalaris arundinacea	5%	N	FACW
2. Poa annua	5%	N	FAC
3. Avena fatua	10%	N	NI
4. Solidago rigida	<1%	N	FACU
5. Grass #3 cf. Festuca elatior	20%	Y	NI
6. Ambrosia trifida	<1%	N	FAC
7. Rumex crispus	<1%	N	FAC
* 8. Alliaria petiolata	30%	Y	FAC
9. Bedstraw (Galium aparine)	<1%	N	FACU
10. Lesser burdock (Arctium minus)	10%	N	NI
11. Daucus carota	<1%	N	NI
12. Taraxacum officinale	<1%	N	FACU
	85 = Total Cover		

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Parthenocissus cinquefolia	10%	N	FAC
2. Vitis riparia	30%	Y	FACW
3. Solanum spp. (cf. dulcamara)	<1%	N	FAC
4.			
	40% = Total Cover		

Dominance Test worksheet: (All strata)

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
Y Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Herbs:
Brassica cf. kaber <1% Thlaspi arvense <1%
Urtica dioica <1%
Common fleabane <1%
Cirsium arvense 5% FACU

* = Annual Dominant

6/21/11 1225

SOIL Sampling Point: W8-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
4-18 ~~0-18~~	10YR 3/1	80	10YR 4/2	15	R	M	Silty Clay loam	
~~0-4~~	~~10YR 3/2~~ BK		10YR 5/6	5	Rm	M	↓	
0-4	10YR 3/2	100					Silt loam	~~tot~~ root system, top soil w/organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks: Moist 0-18"

1215

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/2/11

Applicant/Owner: DTE State: MI Sampling Point: W8-Up

Investigator(s): BDK, JEH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex

Slope (%): 10 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ~~[illegible] silt loam~~ Lenawee silty clay loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ______	No X	Is the Sampled Area within a Wetland?	Yes ______ No X
Hydric Soil Present?	Yes X	No ______		
Wetland Hydrology Present?	Yes X	No ______	If yes, optional Wetland Site ID: ______	

Remarks: (Explain alternative procedures here or in a separate report.)
hillslope adjacent to wetland 8, disturbed by ag and drainage ditch/tiles, found tile pieces in pit. heavy rains the last 2 months (~~[illegible]~~ more than average)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): ______
Water Table Present?	Yes ______	No X	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No X	Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: redox present in soil. however soil was dry

6/21/11 1215

VEGETATION – Use scientific names of plants.

Sampling Point: W8-upl

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 1.5 m dia)			
1. Cirsium arvense	70%		FACU
2. Avena fatua	10%		NI
3. Poa compressa	10%		FACU
4. Erigeron cf. philadelphicus	<1%		FACW
5. Triticum aestivum	5%		NI
6. Solidago cf. rigida	<1%		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	1%	x 2 = 2
FAC species	0	x 3 = 0
FACU species	81	x 4 = 324
UPL species	0	x 5 = 0
Column Totals:	82 (A)	326 (B)

Prevalence Index = B/A = 3.98

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

6/2/11 1215

SOIL

Sampling Point: W8-UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1	80	10YR 4/2	15	[illegible]	M	Silty clay loam	
			10YR 5/6	5	Rm	M	✓	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

dry w/ heavy rootsystem 0-6"

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region 1115

Project/Site: DTE - Monroe City/County: Monroe Sampling Date: June 2, 2011
Applicant/Owner: DTE State: MI Sampling Point: W9-WP1
Investigator(s): B. Kinter, J. Hassett Section, Township, Range:
Landform (hillslope, terrace, etc.): hilltop depression Local relief (concave, convex, none): concave
Slope (%): 1-2 Lat: Long: Datum:
Soil Map Unit Name: ~~Warner's Bksilt loam~~ Lenawee Silty clay loam NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___
Hydric Soil Present? Yes X No ___
Wetland Hydrology Present? Yes X No ___

Is the Sampled Area within a Wetland? Yes X No ___
If yes, optional Wetland Site ID: Wetland 9

Remarks: (Explain alternative procedures here or in a separate report.)
wetland located in depressional area w/ drainage pathways located on top of hill. Standing water present. disturbed by ag and drainage ditch/tiles. heavy rains last 2 months.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2
Water Table Present? Yes X No ___ Depth (inches): 10
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: depressional area w/ drainage pathways (swales)
Standing water.
* W9 area was dropped from final delineation in consultation with Susan Jones (MDEQ) and Sabrina Miller (USACE) during site inspection on 6/29/2011. At that time drainage pathways had become >80% covered by Cirsium arvense, with hydrophytes restricted to a ~0.1 acre area in a small depression at high landscape position (perch).

6-2-11 11:15 AM

VEGETATION – Use scientific names of plants.

Sampling Point: W9-WP1

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Alopecurus pratensis	15%	Y	FACW
2. Juncus torreyi ??	15%	Y	FACW
3. Solidago rigida	10%	Y	FACU
4. Erigeron philadelphicus	10%	Y	FACW
5. Typha spp.	5%	N	OBL
6. Populus deltoides (new seedlings)	~1%	N	FAC
7. Trifolium [illegible]	~1%	N	FACU
8. Reed canary grass	5%	N	FACW
9. "Herb 1" 1-key	~1%	N	?
10. "Grass 1" -key (Festuca pratensis)	5%	N	FACU
11. (Foxtail barley) Hordeum jubatum	~1%	N	FAC
12. Poa compressa	5%	N	FACU
	~75% = Total Cover		

Woody Vine Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. h			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	45	x 2 = 90
FAC species	2	x 3 = 6
FACU species	20	x 4 = 80
UPL species		x 5 =
Column Totals:	72 (A)	181 (B)

Prevalence Index = B/A = 2.51

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vitis riparia <1% FACW (Not Dominant)

6/4/11
1115

SOIL Sampling Point: W9-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/1	98	10YR4/6	2	RM	PL	Silty loam	moist
8-18	10YR3/1	60	10YR 4/3	40	RM	M	Silty clay loam	saturated 10"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes X No ___

Remarks: redoximorphic features present.

1125

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE - Monroe City/County: Monroe Sampling Date: 6/2/2011

Applicant/Owner: DTE State: MI Sampling Point: W9-U

Investigator(s): B. Kinter, J. Hassett Section, Township, Range: ______

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex

Slope (%): 5 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ~~Warners Silt Loam~~ Lenawee silty clay loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ______	No X	**Is the Sampled Area within a Wetland?**	Yes ______ No X
Hydric Soil Present?	Yes X	No ______		
Wetland Hydrology Present?	Yes X	No ______	If yes, optional Wetland Site ID: ______	

Remarks: (Explain alternative procedures here or in a separate report.)
hillslope adjacent to wetland W9. disturbed by ag and drainage ditch/tiles. change in elev. ~ 3 ft

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
redox in soil matrix

11:25

VEGETATION – Use scientific names of plants.

Sampling Point: W9-UP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 15 m. diam)			
1. Cirsium arvense	90%	Y	FACU
2. Erigeron cf. philadelphicus	~1%	N	FACW
3. Solidago gigantea	~2%	N	FACU
4. Avena (?fatua)	5%	N	NI
5. Populus deltoides seedlings	<1%	N	FAC
6. Poa compressa	~2%	N	FACU
7. Trifolium repens	<1%	N	FACU
8.			
9.			
10.			
11.			
12.			
		= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	1	x 3 =	3
FACU species	94	x 4 =	376
UPL species	0	x 5 =	0
Column Totals:	96 (A)		381 (B)

Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
N Dominance Test is >50%
N Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

1125 6/2/11

SOIL

Sampling Point: W9-UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	70	10YR 5/4	20	RM	M	silty clay loam	dry
			10YR 5/3	10	RM	M	↓	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

dry. w/ redox in matrix

1430

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/2/11

Applicant/Owner: DTE State: MI Sampling Point: W10-WP1

Investigator(s): Brandon Kinzer, John Hassett Section, Township, Range: ______

Landform (hillslope, terrace, etc.): toe of hill Local relief (concave, convex, none): Concave

Slope (%): <5 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	Yes X No ____
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID:	Wetland 10

Remarks: (Explain alternative procedures here or in a separate report.)
PFO at toe of Hill. adjacent to PEM and PSS/PFO wetlands. heavy rains over the last 2 months.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- __ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ Microtopographic Relief (D4)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 0-4"

Water Table Present? Yes X No ____ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 8"

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

6/14/11 2:30 pm

VEGETATION – Use scientific names of plants.

Sampling Point: W10WP1

Tree Stratum (Plot size: ~15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	10%	N	FACW
2. Salix spp. cf. exigua	10%	N	OBL
3. Carya cf. ovata?	5%	N	FACU
4. Acer saccharinum	5%	N	FACW
5. Populus deltoides	70%	Y	FAC
6.			
7.			
	100 = Total Cover		

Sapling/Shrub Stratum (Plot size: ~15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cornus amomum	20%	Y	FACW
2. Morus alba	10%	Y	FAC
3. Carya cf. ovata?	<1%	N	FACU
4. Rhamnus cathartica	10%	Y	FACU
5. Prunus virginiana	10%	Y	FAC
6.			
7.			
	~50% = Total Cover		

Herb Stratum (Plot size: ~15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
X 1. Alliaria petiolata	20%	Y	FAC
2. Rumex crispus	<1%	N	FAC
3. Phalaris arundinacea	20%	Y	FACW
4. Arctium minus	5%	N	—
5. "Herb 1" (marked for keying)	<1%	N	?
6. Phragmites australis	5%	N	FACW
7. Festuca pratensis	10%	N	FACU
8. Ambrosia trifida	<1%	N	FAC
9. Cirsium arvense	5%	N	FACU
10. Toxicodendron radicans	20%	Y	FAC
11. Solidago gigantea	5%	N	FACW
12. Enemion biternatum	<1%	N	FAC
Rubus parviflorus 5%			
	~95% = Total Cover		

Woody Vine Stratum (Plot size: ~15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Vitis riparia	15%	Y	FACW
2. Parthenocissus quinquefolia	5%	N	FAC
3. Toxicodendron radicans	10%	Y	FAC
4.			
	30% = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 90% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

Y Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

More veg: Ribes cynosbati <1% NI

Poa compressa 5% FACU

X = Annual Dominant

6/2/11

SOIL Sampling Point: W10-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	60	10YR 4/3	40	D	M	SCL	Saturated @ 8"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Dark Surface (S7) (**LRR R, MLRA 149B**)
__ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
__ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
__ Loamy Mucky Mineral (F1) (**LRR K, L**)
__ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

__ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
__ Coast Prairie Redox (A16) (**LRR K, L, R**)
__ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
__ Dark Surface (S7) (**LRR K, L**)
__ Polyvalue Below Surface (S8) (**LRR K, L**)
__ Thin Dark Surface (S9) (**LRR K, L**)
__ Iron-Manganese Masses (F12) (**LRR K, L, R**)
__ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
__ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
__ Red Parent Material (TF2)
__ Very Shallow Dark Surface (TF12)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:

Encountered large Dk. Brown leach @ 4", approx ~5" long, 1" wide

6/21/11

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

2:50 PM

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/21/11
Applicant/Owner: DTE State: MI Sampling Point: W10-U
Investigator(s): Brandon Kinter, John Hassett Section, Township, Range: ____
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope
Slope (%): 10 Lat: ____ Long: ____ Datum: ____
Soil Map Unit Name: Warners silt loam/ Lenawee silty clay loam NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Upland pit for wetlands ~~W9~~ W8 W10, W11 and W12. on hillslope. ag and drainage ditch/tile present or recent

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil was moist.

6/2/11 W10-UP1

VEGETATION – Use scientific names of plants.

Sampling Point: ~~W10-UP10~~

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	______ = Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	______ = Total Cover		

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cirsium arvense	80%	Y	FACU
2. Avena fatua	15%	N	NI
3. Erigeron annuus	5%	N	FAC
4. Plantago major	<1%	N	FAC
5. Taraxacum officinale	<1%	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	______ = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	______ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	6	x 3 =	18
FACU species	81	x 4 =	324
UPL species	0	x 5 =	0
Column Totals:	87 (A)		342 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

6/H/11 2:50 PM

SOIL

Sampling Point: W10-UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y3/1	90%	2.5Y5/4	10%	D	M	SCL	Damp
8-18	2.5Y4/1	60%	2.5Y5/6	30%	D	M	SCL	10% 2.5Y5/4 RM/M

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Many earthworms present in pit area

15/15

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6-2-2011

Applicant/Owner: DTE State: MI Sampling Point: W11-WP1

Investigator(s): B. Kinter, J. Hassety Section, Township, Range: ______

Landform (hillslope, terrace, etc.): toe of hill Local relief (concave, convex, none): Concave

Slope (%): 1-2 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Warner's Silt Loam. NWI classification: PSS / PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID: Wetland 11

Remarks: (Explain alternative procedures here or in a separate report.)
PSS wetland w/ some trees throughout, adjacent to PFO wetland (W10) and a PEM (W12) at toe of hill. Power line easement adjacent to north. Surface water in areas, heavy rains over the past 2 months

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2"

Water Table Present? Yes X No ___ Depth (inches): 0-12" in areas

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-12" in areas

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

6/2/11 1515

VEGETATION – Use scientific names of plants.

Sampling Point: W11 = WP9

Tree Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo (4" DBH)	10%	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10% = Total Cover		

Sapling/Shrub Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cornus amomum	50%	Y	FACW
2. Rhamnus cathartica	10%	N	FACU
3. Prunus americana (Top of slope)	10%	N	UPL
4.			
5.			
6.			
7.			
	70% = Total Cover		

Herb Stratum (Plot size: 15 meters dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Festuca pratensis	~1%	N	FACU
2. Geum urbanum	<1%	N	NI
3. Phalaris arundinacea	30%	Y	FACW
4. Solidago [illegible]	<1%	N	FACU
5. Phragmites australis	5%	N	FACW
6. Rubus hispidus	<1%	N	FACW
7. Avena fatua	10%	Y	NI
8.			
9.			
10.			
11.			
12.			
	50% = Total Cover		

Woody Vine Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Vitis riparia (on shrubs)	20%	Y	FACW
2.			
3.			
4.			
	20% = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	[illegible]	x 1 = [illegible]
FACW species	[illegible]	x 2 = [illegible]
FAC species	[illegible]	x 3 = [illegible]
FACU species	[illegible]	x 4 = [illegible]
UPL species	[illegible]	x 5 = [illegible]
Column Totals:	[illegible] (A)	[illegible] (B)

Prevalence Index = B/A = [illegible]

Hydrophytic Vegetation Indicators:

✓ Rapid Test for Hydrophytic Vegetation
Y Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Shrubs heavily overgrown with Vitis, some show signs of stress/or are dead (likely killed by grape).

6/2/11 150

SOIL Sampling Point: W11-wp1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	60	10YR 4/3	40	D	m	SCL	Sat ≥ 8"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

16:00

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6-2-2011

Applicant/Owner: DTE State: MI Sampling Point: W12-W

Investigator(s): B. Kistler, J. Hassett Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Flat / slight depression Local relief (concave, convex, none): Concave

Slope (%): 1-2 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Varner's Silt Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___	
Hydric Soil Present? Yes X No ___		
Wetland Hydrology Present? Yes X No ___	If yes, optional Wetland Site ID: Wetland 12	

Remarks: (Explain alternative procedures here or in a separate report.)

Phrag stand between 2 other wetlands (W10 and W11). Wetland 12 is located under over head power lines in Easement. and adjacent to access road. heavy rains over the past 2 months.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 0-12

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-12

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

6-2-2011
BK ~~16:00~~
1600

VEGETATION – Use scientific names of plants.

Sampling Point: W12-WP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 10 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Phragmites australis	90%	Y	FACW
2. Rubus parviflorus	~1%	N	FACU
3. Alliaria petiolata	~1%	N	FAC
4. Daucus carota	~1%	N	NI
5. Erigeron cf. philadelphicus	2%	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: 10 m dia)	Absolute % Cover	Dominant Species?	Indicator Status
1. Vitis riparia	5%	Y	FACW
2.			
3.			
4.			
	5% = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	92	x 2 = 184
FAC species	1	x 3 = 3
FACU species	1	x 4 = 4
UPL species	0	x 5 = 0
Column Totals:	94 (A)	191 (B)

Prevalence Index = B/A = 2.03

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
Y Dominance Test is >50%
Y Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Thick stand of Phragmites stems; little standing water, grape vines occasionally growing up/on/over reed stems.

6-2-2011 16:00

SOIL

Sampling Point: W12-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	80	10YR 4/3	20	RM	m	SCL	damp/moist at point Sat. in some areas of wetland

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11

Applicant/Owner: DTE State: MI Sampling Point: W13-wpt

Investigator(s): B. Hinter, J. Hassett Section, Township, Range: ______

Landform (hillslope, terrace, etc.): terrace (riparian) Local relief (concave, convex, none): none

Slope (%): 3 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No X (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ______ No X

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ______	Is the Sampled Area within a Wetland?	Yes X No ______
Hydric Soil Present?	Yes X No ______		
Wetland Hydrology Present?	Yes X No ______	If yes, optional Wetland Site ID:	Wetland 13

Remarks: (Explain alternative procedures here or in a separate report.)
PFO w/ some SS along canal ~~back~~ banks. Canal (drainage ditch) flows through wetland 13. Trees are located in riparian of ditch. Access roads are located on the adjacent uplands along the southern and Eastern boundaries. No upland pt was done due to no upland besides access roads ~~and~~ See photos. heavy rains over the past 2 months includes mapped NWI wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- X Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ Marl Deposits (B15)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ Microtopographic Relief (D4)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ______	Depth (inches):	< 6"
Water Table Present?	Yes X	No ______	Depth (inches):	0"+
Saturation Present? (includes capillary fringe)	Yes X	No ______	Depth (inches):	0"+

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water in flood plain in several areas of wetland. Sat at pit was not observed, but was in soil borings collected in other locations inside wetland boundary

6/31/11 1345

VEGETATION – Use scientific names of plants. Sampling Point: W13-WP1

Tree Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Hackberry (Celtis occidentalis)	5%	N	FAC
2. Acer saccharinum	15%	N	FACW
3. Acer negundo	10%	N	FACW
4. Populus deltoides	60%	Y	FAC
5.			
6.			
7.			
	90% = Total Cover		

Sapling/Shrub Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Hackberry (Celtis occidentalis)	10%	Y	FAC
2. Populus deltoides	<1%	N	FAC
3. Cornus amomum	15%	Y	FACW
4.			
5.			
6.			
7.			
	25% = Total Cover		

Herb Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
* 1. Garlic mustard (Alliaria petiolata)	40%	Y	FAC
2. Cornus amomum	<1%	N	FACW
3. Flesserk burdock	5%	N	NI
4. Dandelion (Taraxacum officinale)	<1%	N	FACU
5. Phalaris arundacea	5%	N	FACW
6. Toxicodendron radicans	10%	N	FAC
7. Acer saccharinum	<1%	N	FACW
8. Cf Smilax herbacea	<1%	N	FAC
9. Rubus hispidus	<1%	N	FACW
10. Solanum spp? (cf. dulcamara)	<1%	N	FAC
11. Parthenocissus cinquefolia	[illegible]	N	FAC
12.			
	~70% = Total Cover		

Woody Vine Stratum (Plot size: 15 m dia.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Vitis riparia	15%	Y	FACW
2. Toxicodendron radicans	5%	Y	FAC
3. Parthenocissus cinquefolia	5%	Y	FAC
4.			
	25% = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
Y Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

* = Annual Dominant.

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SOIL

Sampling Point: W13-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Silt	
2-18	10YR 5/2	70	10YR 5/6	20	RM	M	SCL	
			10YR 5/1	10	RM	M	↓	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Redoxomorphic features present 2-18" bgs. Soil was moist 0-18" bgs

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/31/11

Applicant/Owner: DTE State: MI Sampling Point: W14-W

Investigator(s): BDK, JEH Section, Township, Range: ____

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): flat

Slope (%): <1 Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Lenawee Silty clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

If yes, optional Wetland Site ID: ~~PEM~~ Wetland 14

Remarks: (Explain alternative procedures here or in a separate report.)
former ag field. drainage ditch/tiles throughout field. wetland 14 is predominantly rushes and other obligate veg surrounded by thistle and reed canary. W14 was delineated based on vegetation. No upland pit was conducted as no uplands were adjacent to W14. Includes mapped NWI PEM wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 2"
Water Table Present?	Yes X	No ____	Depth (inches): ranges
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water in places, ~~water would~~ Soil was "squishy" when walked on.

VEGETATION – Use scientific names of plants. Sampling Point: W14-WP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rush - Juncus torreyi	50%	Y	FACW
2. Juncus effusus	20%	Y	OBL
3. Phalaris arundinacea	10%	N	FACW
4. Avena fatua	5%	N	NI
5. Populus deltoides (seedlings)	<1%	N	FAC
6. Cirsium arvense	10%	N	FACU
7. Senecio glabellus	<1%	N	OBL
8.			
9.			
10.			
11.			
12.			
	~95%	= Total Cover	

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	10	x 2 = 20
FAC species	1	x 3 = 3
FACU species	10	x 4 = 40
UPL species		x 5 =
Column Totals:	41 (A)	83 (B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
Y Dominance Test is >50%
Y Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Dense rush meadow in central area, aggrading to thinner rushes w/ mixed grasses + thistles in topographic rises.

Noted broken drainage tile fragments

W14-WP1

SOIL Sampling Point: W18-UP1 B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1	98%	10YR 4/6	2%	RM	PL	SCL	DRY (relative to W18-WP1

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

1200

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11
Applicant/Owner: DTE State: MI Sampling Point: W15-WP1
Investigator(s): BDK, JEH Section, Township, Range: ______
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): flat
Slope (%): <1 Lat: ______ Long: ______ Datum: ______
Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID:	Wetland 15

Remarks: (Explain alternative procedures here or in a separate report.) Former ag field w/ drainage ditches/tiles. predominantly thistles, reed canary, and phrag. heavy rains over the past 2 months. No upland pit was conducted as wetland 15 is surrounded by other wetlands and an access road to the north

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes ___	No X	Depth (inches): ___	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 8-12"	Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Cracked soil macros, sat soil in others. Crayfish burrows throughout.
* In consultation with Susan Jones (MDEQ), Sabrina Miller (USACE) and Kathy David (MDEQ), during site inspections 6/28 and 6/29/2011, parts of delineated wetland originally designated W15 were added to the delineated wetlands W14 and W16; remaining "W15" area was determined to be upland. Border of Upland area is approximately correspondent to Ordinary High Water mark for Lake Erie.

6/3/11 1200

SOIL

Sampling Point: W15-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	95	10YR 4/6	5	RM	M	SCL	
6-18	10YR 4/1	60	10YR 5/6	28	RM	M	↓	
			10YR 3/1	10	RM	M	↓	
			10YR 3/6	2	RM	M	↓	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks: took multiple soil cores throughout wetland W15 to confirm that the soil is homogenous throughout wetland. Soil cores confirmed that soil is F3 hydric.

6/3/11 1200

VEGETATION – Use scientific names of plants. Sampling Point: W15-WP1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size:)			
1. Rush ~ Juncus torreyi	5%	N	FACW
2. Phalaris arundinacea	5%	N	FACW
3. Circium arvense	60%	Y	FACU
4. Trifolium repens	<1%	N	FACU
5. Poa compressa	5%	N	FACU
6. Populus deltoides	5%	N	FAC
7. Medicago lupulina	<1%	N	FAC
8. Avena fatua	5%	N	NI
9. Triticum aestivum	15%	N	NI
10.			
11.			
12.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	10	x 2 = 20
FAC species	6	x 3 = 18
FACU species	65	x 4 = 260
UPL species		x 5 =
Column Totals:	81 (A)	298 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation
N Dominance Test is >50%
N Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ~~__~~ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Dense stands of thistle with pockets of primarily reed canary & wheat; rushes are occasional and usu. single

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11

Applicant/Owner: DTE State: MI Sampling Point: W16-WP1

Investigator(s): BDK, JEH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): flat

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present? Yes X No ___	
Wetland Hydrology Present? Yes X No ___	If yes, optional Wetland Site ID: Wetland 16

Remarks: (Explain alternative procedures here or in a separate report.)

PEM wetland w/ rushes, Red canary grass, and some thistle. Soil is sat in areas and cracked soil in others. Crayfish borrows throughout, Was agriculture in past years, drainage ditch adjacent and drainage tile piece found. No upland pit conducted as W16 is surrounded by wetland 15. Veg used to delineate boundary

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches): 0-3"	
Water Table Present?	Yes X No ___	Depth (inches): 0" +	
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches): 0" +	**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

6/31/11

VEGETATION – Use scientific names of plants. Sampling Point: W16-WP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 15 m diam)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cirsium arvense	15%	N	FACU
2. Triticum aestivum	5%	N	NI
3. Avena fatua	5%	N	NI
4. Trifolium repens	<1%	N	FACU
5. Medicago lupulina	<1%	N	FAC
6. Poa compressa	<1%	N	FACU
7. Phalaris arundinacea	20%	Y	FACW
8. Juncus torreyi	25%	Y	FACW
9. Juncus effusus	10%	N	OBL
10. Senecio glabellus	<1%	N	OBL
11.			
12.			
	~80% = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	11	x 1 = 11
FACW species	45	x 2 = 90
FAC species	1	x 3 = 3
FACU species	17	x 4 = 68
UPL species	0	x 5 = 0
Column Totals:	74 (A)	172 (B)

Prevalence Index = B/A = 2.32

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Rushes less dense than W14; more bare, cracked, dried areas, greater presence of reed canary + thistles.

6/31/11

SOIL

Sampling Point: W16-WP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	95	10YR 4/6	5	RM	M	SCL	
6-18	10YR 4/2	80	10YR 5/6	15	RM	M	↓	
			10YR 3/1	5	RM	M	↓	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- _X_ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes _X_ No ___

Remarks:

took multiple soil cores throughout wetland to confirm homogenous soils

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region 1500

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11

Applicant/Owner: DTE State: MI Sampling Point: W17-WP1

Investigator(s): BDK, JEH Section, Township, Range: ______

Landform (hillslope, terrace, etc.): toe of hill Local relief (concave, convex, none): Concave

Slope (%): <1 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ~~X~~ BK	No X
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes ~~X~~ BK No X

If yes, optional Wetland Site ID: Wetland 17

Remarks: (Explain alternative procedures here or in a separate report.)
toe of hill and part of hill slope. adjacent to drainage ditch. cracked soil w/ crayfish burrows, recently ag.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______

Water Table Present? Yes ___ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
toe of hill and part of hillslope adjacent to drainage ditch
* Initial delineation W17 was ultimately dropped from the final delineation due to: 1) Lack of hydrophytic vegetation, and 2) lack of substantial evidence of hydric soils (aside from problematic indicators). Area was in depression between W11/W12 unit and W5.

W17-WP1

VEGETATION – Use scientific names of plants.

Sampling Point: ~~W17-WP1~~ BK

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 15 m dia)			
1. Cirsium arvense	40%	Y	FACU
✗ 2. Avena fatua	20%	Y	NI
3. Thlaspi arvense	5%	N	NI
4. Triticum aestivum	5%	N	NI
5. Trifolium repens	<1%	N	FACU
6. Populus deltoides (seedlings)	<1%	N	FAC
7. Erigeron philadelphicum	<1%	N	FACW
8. Lisin burdock	<1%	N	NI
9. Phalaris arundacea	~1%	N	FACW
10. Juncus torreyi	5%	N	FACW
11. (Herb 1) → key out	1%	N	(?)
12.			
	~80% = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	6%	x 2 =	12
FAC species	1%	x 3 =	3
FACU species	41	x 4 =	164
UPL species		x 5 =	
Column Totals:	48 (A)		179 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

✗ = Annual Dominant

6/3/11 15:00

SOIL

Sampling Point: W17-WP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/1	90%	10YR4/4	10%	RM	PL	SCL	
12-18	10YR4/2	50%	10YR3/1	45%	RM	M	SCL	2.5YR3/6 15% RM M

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Damp, 0-18"

1515

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11

Applicant/Owner: DTE State: MI Sampling Point: W17-U

Investigator(s): BDK, JEH Section, Township, Range: ____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Slope

Slope (%): 10 Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
hillslope adjacent to Wetland 17. ~ 6' higher in Elevation. disturbed by recent ag activities and drainage ditch/ tiles.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

6/3/11 15:15

VEGETATION – Use scientific names of plants. Sampling Point: W17-UP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 15 m dia)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cirsium arvense	80%	Y	FACU
2. Avena fatua	10%	N	NI
3. Acer negundo (seedlings)	<1%	N	FACW
4. Thlaspi arvense	<1%	N	NI
5. Triticum aestivum	5%	N	NI
6. Taraxacum officinale	<1%	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	~95% = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	1	x 2 = 2
FAC species	0	x 3 = 0
FACU species	80	x 4 = 320
UPL species	0	x 5 = 0
Column Totals:	81 (A)	322 (B)

Prevalence Index = B/A = 3.98

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No N

Remarks: (Include photo numbers here or on a separate sheet.)

6/31/11 1515

SOIL Sampling Point: W17-UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	95%	10YR 4/4	5%	RM	PL	SCL	
12-18	10YR 4/2	50%	10YR 3/1	35%	RM	M	SCL	10YR 4/6 15% RM M

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

1585

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11

Applicant/Owner: DTE State: MI Sampling Point: W218-WP1

Investigator(s): BDK, JH Section, Township, Range: ____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Slope

Slope (%): 2 Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ~~X~~ No X	Is the Sampled Area within a Wetland? Yes ~~X~~ No ✓
Hydric Soil Present? Yes X No ____	
Wetland Hydrology Present? Yes X No ____	If yes, optional Wetland Site ID: Wetland 18

Remarks: (Explain alternative procedures here or in a separate report.)

hillside seep. impacted from past ag usage and drainage ditch/tiles. heavy rains over the past 2 months

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Seep on hillside

* Initially delineated W18 area was dropped from final delineation on basis of absent hydrophytic vegetation and minimal evidence of hydric soils. Area was a midslope depression roughly halfway between W5 and W8, approximately 3/4 of way upslope from W5.

15:45

W18 - WP1

VEGETATION – Use scientific names of plants.

Sampling Point: ~~[illegible]~~ BK

Tree Stratum (Plot size: ________)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: ________)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Herb Stratum (Plot size: 5 m (small area))	Absolute % Cover	Dominant Species?	Indicator Status
1. Veg Same as W18-W1			
2. Plus:			
3. ~~Solidago spp. (Solidago gigantea?)~~	<1%	N	FACW
4. Cirsium arvense	30%	Y	FACU
5. Juncus torreyi	10%	N	FACW
6. Erigeron philadelphicus	~2%	N	FACW
7. Thlaspi arvense	~2%	N	NI
8. Avena fatua	10%	N	NI
9. Phalaris arundinacea	<1%	N	FACW
10.			
11.			
12.			
	~55%	= Total Cover	

Woody Vine Stratum (Plot size: ________)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 =
FACW species	13%	x 2 = 26
FAC species	0	x 3 =
FACU species	30	x 4 = 120
UPL species		x 5 =
Column Totals:	43 (A)	146 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Lots of bare, soft "squishy" soil w/out vegetation

15:45

SOIL

Sampling Point: W18-[illegible]P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1	98%	10YR4/6	2%	RM	PL	SCL	Orange throughout

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___________

Depth (inches): ___________

Hydric Soil Present? **Yes** X **No** ___

Remarks:

1600

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: DTE Monroe City/County: Monroe Sampling Date: 6/3/11

Applicant/Owner: DTE State: MI Sampling Point: W18-upl

Investigator(s): [illegible], BDK Section, Township, Range: ____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope

Slope (%): 10 Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Lenawee Silty Clay Loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
hillslope adjacent to W18. disturbed by ag activity.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____ No |	Depth (inches): ____	
Water Table Present?	Yes ____ No |	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes ____ No |	Depth (inches): ____	Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: dry soil

6/3/11 16:00

VEGETATION – Use scientific names of plants. Sampling Point: W18-UP1

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 15 m dia)			
1. Cirsium arvense	90%		FACU
2. Avena fatua	5%		NI
3. Medicago lupulina	<1%		FAC
4. Triticum aestivum	<1%		NI
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	91 (A)		363 (B)

Prevalence Index = B/A = 3.99

Hydrophytic Vegetation Indicators:

N Rapid Test for Hydrophytic Vegetation

N Dominance Test is >50%

N Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Dense thistles, some w/ clorotic coloration @ tops but no apparent hydrophytes.

6/3/11 16:00

SOIL

Sampling Point: W18-upl

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1	98	10YR 4/6	2	RM	PL	SCL	~~Damp~~ DBK dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

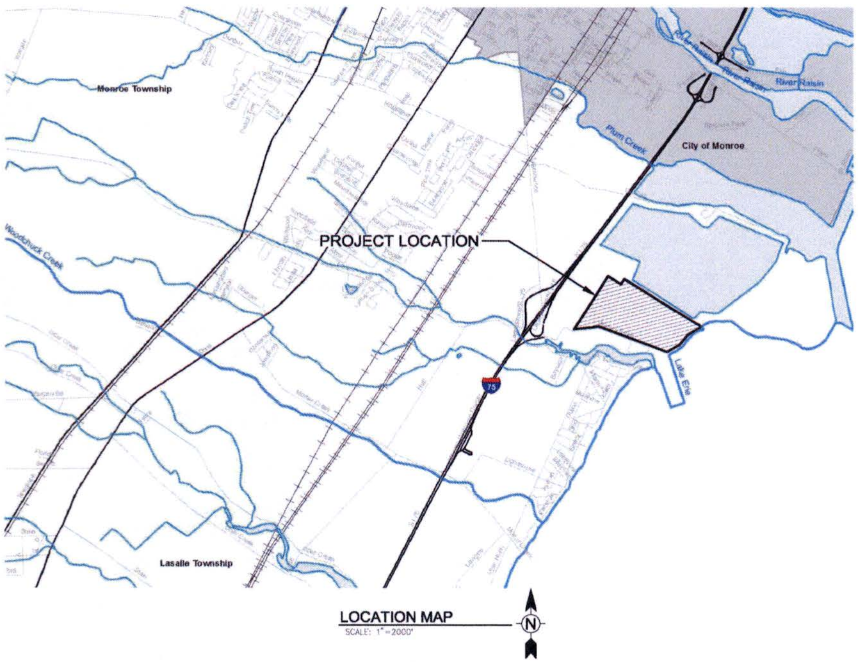
Hydric Soil Present? Yes X No ___

Remarks:

Fermi 3 Aquatic Resource Mitigation Strategy Report – Part 4 Plans

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

710 AVIS DRIVE
ANN ARBOR, MI 48108
PHONE: (734) 665-6000 FAX (734) 665-2570
www.tetratech.com
TETRA TECH



LOCATION MAP
SCALE: 1"=2000'

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
	COVER SHEET
G001	LEGEND, GENERAL NOTES
C101	OVERALL EXISTING SITE PLAN
C102	SESC SITE PLAN AND LEGEND
C103	OVERALL GRADING PLAN
C104	ENLARGED GRADING PLAN
C105	ENLARGED GRADING PLAN
C106	ENLARGED GRADING PLAN
C107	ENLARGED GRADING PLAN
C108	ENLARGED GRADING PLAN
C109	ENLARGED GRADING PLAN
C110	ENLARGED GRADING PLAN
C111	ENLARGED GRADING PLAN
C112	PROPOSED PROFILES - PROFILE A-A
C113	PROPOSED PROFILES - PROFILE B-B
C114	PROPOSED PROFILES - PROFILE C-C
C115	PROPOSED PROFILES - PROFILE D-D, E-E
C116	PROPOSED PROFILES - PROFILE F-F, G-G
C501	CHANNEL CUT DETAILS
C502	EMERGENCY SPILLWAY AND WATER CONTROL STRUCTURE DETAILS
C503	DAVIS DRAIN OVERFLOW 3-SIDED CULVERT
C504	DAVIS DRAIN OVERFLOW & LOWFLOW CULVERT DETAILS
L101	OVERALL PLANTING PLAN

PROJECT LOCATION:
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN

CLIENT INFORMATION:
DTE ENERGY COMPANY
DETROIT, MICHIGAN

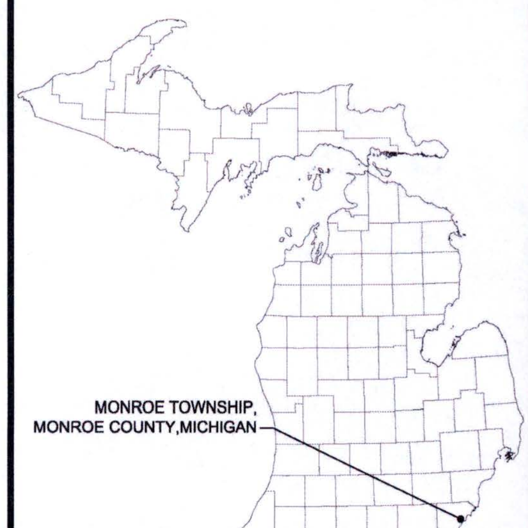
Tt PROJECT No.:
200-01278-11007

CLIENT PROJECT No.:

PROJECT DESCRIPTION / NOTES:
FERMI 3 OFFSITE MITIGATION AREA

ISSUED:
6/1/2012 - FINAL SUBMITTAL
7/20/2012 - REVISED
10/30/2014 - REVISED
11/6/2014 - REVISED

VICINITY MAP:



FERMI 3 OFFSITE MITIGATION AREA

LEGEND - SITE IMPROVEMENTS

STRUCTURES

- PROPOSED SUPERSTRUCTURE
- STRUCTURE (TANKS, ETC.)
- EXISTING SUPERSTRUCTURE
- EXISTING UNDERGROUND STRUCTURE
- FUTURE STRUCTURE

UTILITY LINES

12"SS	GRAVITY SANITARY SEWER
8"FM	SANITARY FORCEMAIN
8"C	COMBINED SEWER
8"SD	STORM SEWER
12"CMP	CULVERT WITH HEADWALL
12"W	WATER MAIN
4"G	GAS
E	ELECTRIC CONDUIT
UG	UNDERGROUND ELECTRIC CABLE
DB	DUCT BANK
OE	OVERHEAD ELECTRIC
OT	OVERHEAD TELEPHONE
OU	OVERHEAD UTILITY
T	TELEPHONE
FO	FIBER OPTIC
TV	TV CABLE
	PROP. UTILITY LINE 36" AND LARGER (PLAN)
36"S	EXISTING UTILITY LINE 36" AND LARGER (PLAN)
36"S	PROP. UTILITY LINE 36" AND LARGER (PROFILE)
36"S	EXIST. UTILITY LINE 36" AND LARGER (PROFILE)
36"CP	CASING PIPE

FEATURE LINES

- FENCE
- GUARDRAIL
- SOIL EROSION CONTROL
- EDGE OF WATER SURFACE
- CENTERLINE OF DITCH
- WETLAND LINE
- EXISTING WETLAND AREA
- RAILROAD
- PAVED ROADWAYS
- PROPOSED PAVED ROADWAYS
- GRAVEL ROADWAYS
- ROADWAY WITH CURB AND GUTTER
- 640 — PROPOSED CONTOUR & ELEVATION
- 640 — EXISTING CONTOUR & ELEVATION
- EX. APPROXIMATE CONTOUR (GROUND OBSCURED)
- CENTERLINE
- MATCH LINE
- PROPERTY LINE
- SECTION LINE
- ADJACENT PROPERTY W/ SAME OWNER
- EASEMENT LINE
- SETBACK LINE
- TREE/BRUSH LINE
- GRADING LIMITS

UTILITY SYMBOLS

	EXISTING MANHOLE
	PROPOSED MANHOLE
CO	CLEAN OUT
ILFC	IN-LINE FLUSHING CONNECTION
ARS	AIR RELEASE STRUCTURE
	EXISTING DRAINAGE STRUCTURE
	PROPOSED DRAINAGE STRUCTURE
MH	VALVE MANHOLE
CS	CURB STOP AND BOX
	VALVE AND BOX
WELL	WELL
	FIRE HYDRANT ASSEMBLY
G	GAS VALVE BOX
G	GAS LINE MARKER
	UTILITY, POWER, OR TEL. POLE
	GUY ANCHOR
	LIGHT - POLE OR FIXED TO STRUCTURE
TS	TRAFFIC SIGNAL POLE
EB	ELECTRIC BOX
TB	TELEPHONE BOX
TEL	TELEPHONE
TV	CABLE BOX
FO	FIBER OPTIC BOX

MISCELLANEOUS SYMBOLS

SB	SOIL BORING
FI	PROPERTY IRON- FOUND
FM	PROPERTY MONUMENT- FOUND
SI	PROPERTY IRON- SET
SM	PROPERTY MONUMENT- SET
	SURVEY CONTROL POINT
100	STAKEOUT COORDINATE POINT
5	HORIZONTAL CURVE NUMBER
PW-1	SOIL BORING LOCATION AND NUMBER
BM-1	BENCH MARK
12"	DECIDUOUS TREE AND SIZE
12"	EVERGREEN TREE AND SIZE
	BUSH
12"	STUMP
R	ROCK
P	POST
PM	PARKING METER
MB	MAIL BOX
S	SIGN
	PROPOSED TRAFFIC SIGN
	HANDICAPPED PARKING SPACE
(120.00)	FINISH GRADE AT STRUCTURE
100.00	PROPOSED SPOT ELEVATION
100.00	EXISTING SPOT ELEVATION
26	SOIL EROSION CONTROL MEASURE
W	WETLAND FLAG

NOTE: HEAVIER LINE WEIGHTS INDICATE PROPOSED WORK.

GENERAL NOTES

1. THE INTENT OF THE DRAWINGS IS THAT THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND TRANSPORTATION NECESSARY FOR THE PROPER EXECUTION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE PROJECT IN AN ACCEPTABLE MANNER, READY FOR USE, OCCUPANCY, OR OPERATION BY DETROIT EDISON.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO WORK ALL APPLICABLE DRAWINGS AND THE APPROPRIATE SPECIFICATIONS AS A UNIT. ANY OMISSIONS, DELETIONS, OR CONFLICTS ARISING AS A RESULT OF FAILURE TO INCORPORATE ALL DRAWINGS AND SPECIFICATIONS WHICH APPLY SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND/OR ENGINEER.
3. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL APPLICABLE OSHA REGULATIONS.
4. CONTRACTOR TO COORDINATE ALL WORK WITH OTHER ONGOING CONSTRUCTION.
5. A GEOTECHNICAL ENGINEERING STUDY EXPLORING THE SUBSURFACE CONDITIONS IS LOCATED AS AN APPENDIX TO THE SPECIFICATIONS.
6. INDIVIDUAL TREES WHICH DO NOT HAVE A SIZE SHOWN ARE LESS THAN 8-INCHES IN DIAMETER. REMOVAL OF TREES LESS AND BRUSH THAN 8-INCHES IN DIAMETER ARE CONSIDERED INCIDENTAL CLEARING AND MACHINE GRADING PAY ITEMS.
7. ANY DISTURBED OR DAMAGE DONE OUTSIDE THE GRADING LIMITS SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
8. THE CONTRACTOR IS TO MAINTAIN ACCESS TO ALL RESIDENTIAL AND COMMERCIAL PROPERTIES AT ALL TIMES.
9. ALL EQUIPMENT BROUGHT TO THE SITE WILL BE THOROUGHLY CLEANED OF ALL SOIL BEFORE ENTRY INTO ANY MITIGATION ZONES. ALL SOIL MATERIALS AND AMENDMENTS BROUGHT TO THE MITIGATION SITE FROM OFFSITE LOCATIONS WILL REQUIRE PRE-APPROVAL BY THE ENGINEER TO ENSURE THAT THESE ARE NOT SOURCES OF POTENTIAL INVASIVE SPECIES CONTAMINATION.

SURVEY & UTILITY NOTES

1. EFFORTS HAVE BEEN MADE TO INDICATE LOCATIONS OF EXISTING STRUCTURES, PIPING, UTILITIES AND TOPOGRAPHY. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT SIZES AND LOCATIONS OF ALL EXISTING ITEMS BEFORE INITIATING ANY CONSTRUCTION OPERATIONS. ANY EXISTING STRUCTURE, PIPING, OR UTILITY DISTURBED OR DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION OPERATIONS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND/OR ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION ACTIVITIES WITH THE OWNER OF ANY FACILITY DISTURBED OR PLANNED TO BE DISTURBED.
2. CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AT CROSSINGS.
3. HAND DIG TO LOCATE AND EXPOSE EXISTING UTILITIES AT CONNECTION POINTS AND UTILITY CROSSINGS.
4. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND CONDITIONS AT THE SITE. ANY DISCREPANCIES BETWEEN THE ACTUAL MEASUREMENTS AND CONDITIONS SHOWN ON THE DRAWINGS SHALL BE DOCUMENTED BY THE CONTRACTOR IN WRITING AND SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR CONSIDERATION AND DECISION BEFORE THE WORK PROCEEDS.
5. TOPOGRAPHIC SURVEY WAS PERFORMED APRIL 2012 BY TETRA TECH, INC. HORIZONTAL DATUM IS MICHIGAN STATE COORDINATE SYSTEM SOUTH ZONE AND VERTICAL DATUM IS IGLD 1985.
6. ALL SECTION CORNERS, MONUMENT BOXES, PROPERTY CORNERS AND BENCHMARKS SHALL BE RESERVED, WHETHER SHOWN OR NOT. DISTURBED OR DAMAGED SECTION CORNERS, MONUMENT BOXES, PROPERTY CORNERS AND BENCHMARKS SHALL BE REPLACED AND/OR REINSTALLED BY A PROFESSIONAL SURVEYOR HIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND/OR ENGINEER.

MDOT STANDARD DETAILS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON PLANS THEY ARE TO BE CONSTRUCTED ACCORDING TO THE MOST RECENT M.D.O.T. STANDARD PLAN. THE MOST COMMONLY USED DETAILS ARE SHOWN BELOW.

R83-B UTILITY TRENCHES

R96-E SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

TETRA TECH
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710 AVIS DRIVE
ANN ARBOR, MI 48108
PHONE (734) 665-6000 FAX (734) 665-2570

MARK	DATE	DESCRIPTION	BY

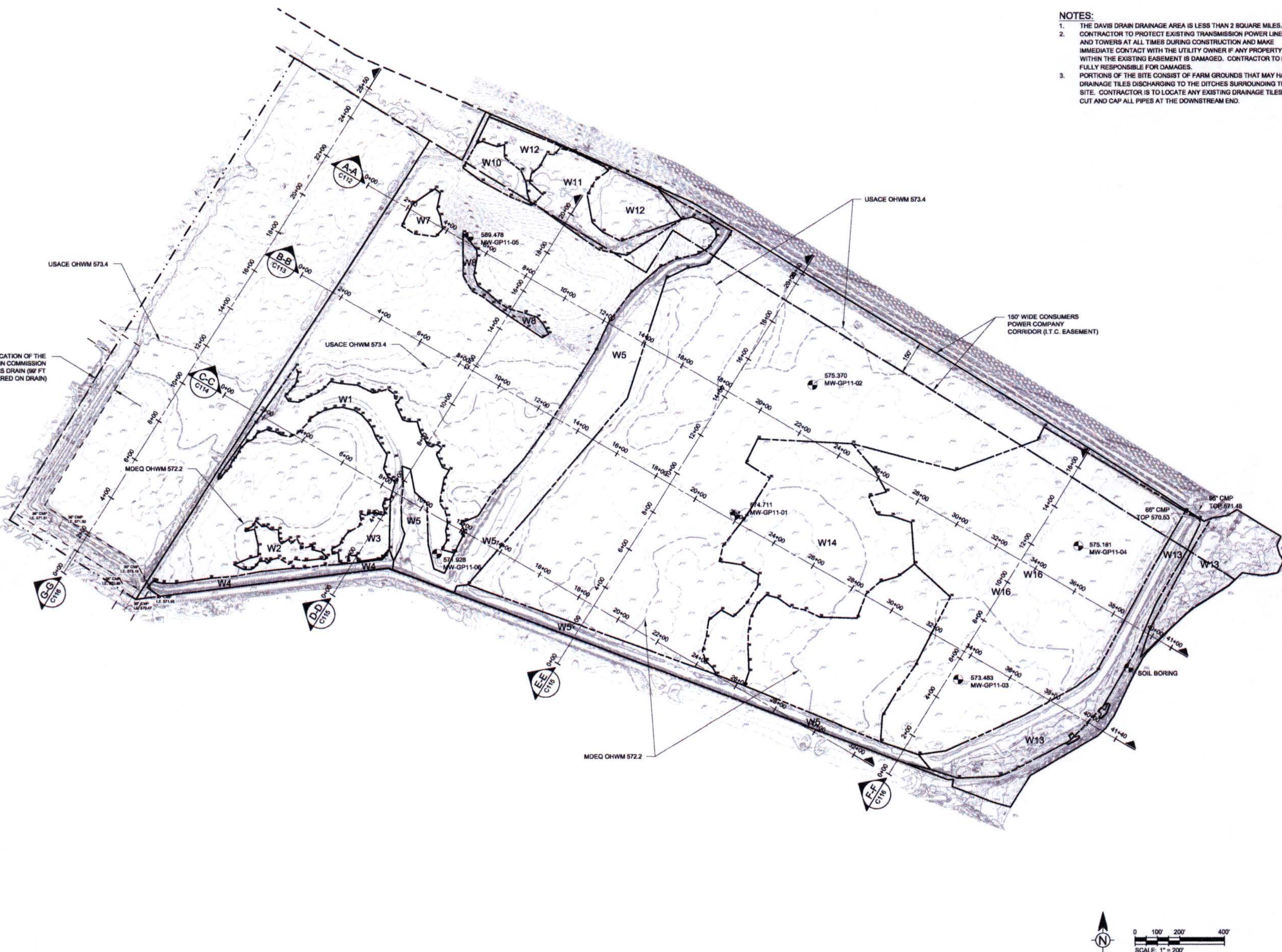
DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

LEGEND,
GENERAL NOTES

Project No.:	200-01276-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

G001

Bar Measures 1 inch



NOTES:

1. THE DAVIS DRAIN DRAINAGE AREA IS LESS THAN 2 SQUARE MILES.
2. CONTRACTOR TO PROTECT EXISTING TRANSMISSION POWER LINES AND TOWERS AT ALL TIMES DURING CONSTRUCTION AND MAKE IMMEDIATE CONTACT WITH THE UTILITY OWNER IF ANY PROPERTY WITHIN THE EXISTING EASEMENT IS DAMAGED. CONTRACTOR TO BE FULLY RESPONSIBLE FOR DAMAGES.
3. PORTIONS OF THE SITE CONSIST OF FARM GROUNDS THAT MAY HAVE DRAINAGE TILES DISCHARGING TO THE DITCHES SURROUNDING THE SITE. CONTRACTOR IS TO LOCATE ANY EXISTING DRAINAGE TILES AND CUT AND CAP ALL PIPES AT THE DOWNSTREAM END.

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

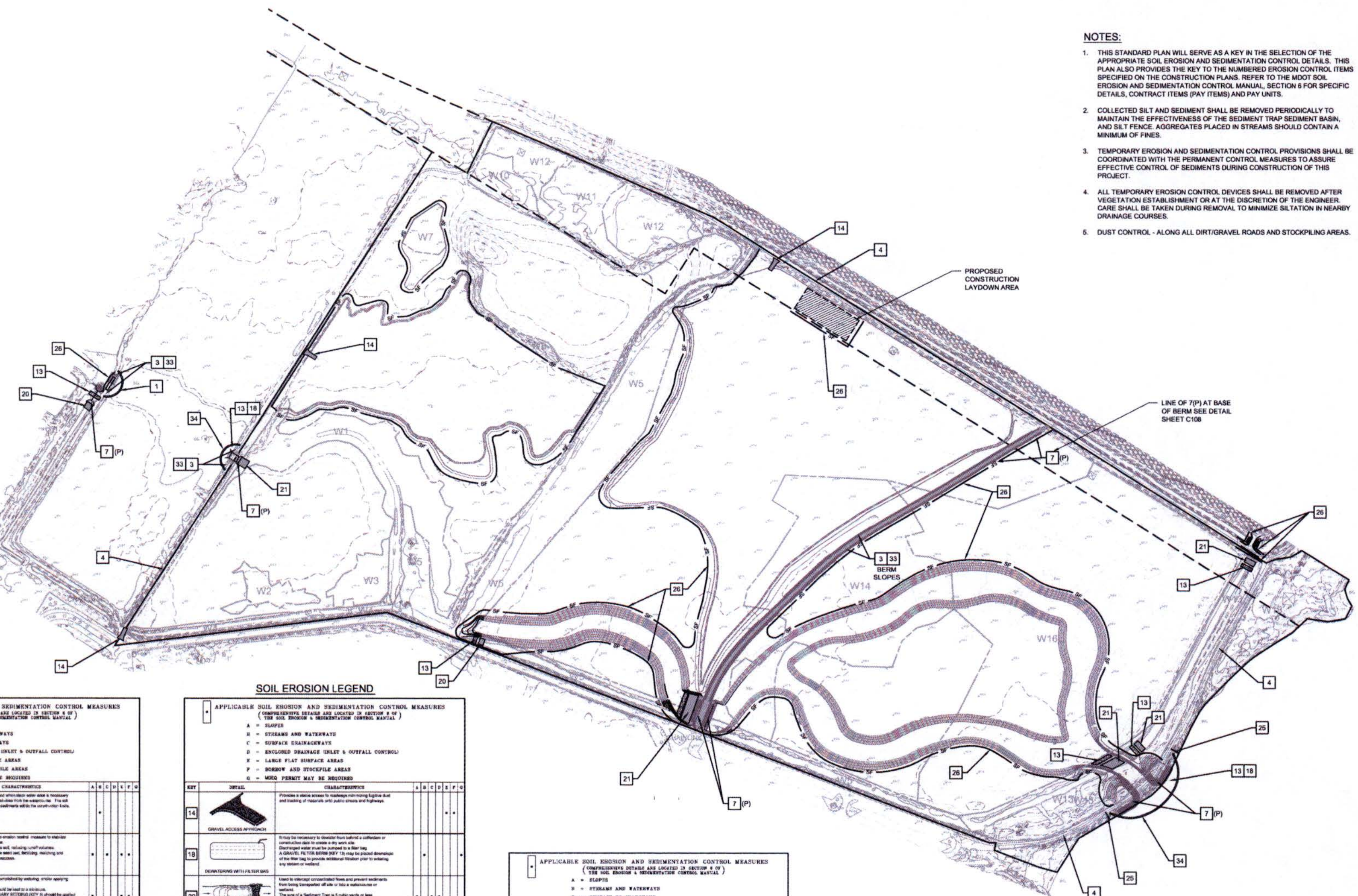
OVERALL EXISTING SITE PLAN

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C101

Bar Measures 1 inch

7/17/2012 9:01:40 AM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CADSHEETFILES\C101 OVERALL EXISTING.DWG - HOLLENBECK, TODD



NOTES:

1. THIS STANDARD PLAN WILL SERVE AS A KEY IN THE SELECTION OF THE APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL DETAILS. THIS PLAN ALSO PROVIDES THE KEY TO THE NUMBERED EROSION CONTROL ITEMS SPECIFIED ON THE CONSTRUCTION PLANS. REFER TO THE MDOT SOIL EROSION AND SEDIMENTATION CONTROL MANUAL, SECTION 6 FOR SPECIFIC DETAILS, CONTRACT ITEMS (PAY ITEMS) AND PAY UNITS.
2. COLLECTED SILT AND SEDIMENT SHALL BE REMOVED PERIODICALLY TO MAINTAIN THE EFFECTIVENESS OF THE SEDIMENT TRAP SEDIMENT BASIN, AND SILT FENCE. AGGREGATES PLACED IN STREAMS SHOULD CONTAIN A MINIMUM OF FINES.
3. TEMPORARY EROSION AND SEDIMENTATION CONTROL PROVISIONS SHALL BE COORDINATED WITH THE PERMANENT CONTROL MEASURES TO ASSURE EFFECTIVE CONTROL OF SEDIMENTS DURING CONSTRUCTION OF THIS PROJECT.
4. ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AFTER VEGETATION ESTABLISHMENT OR AT THE DISCRETION OF THE ENGINEER. CARE SHALL BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.
5. DUST CONTROL - ALONG ALL DIRT/GRAVEL ROADS AND STOCKPILING AREAS.

SOIL EROSION LEGEND

• APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
(COMPREHENSIVE DETAILS ARE LOCATED IN SECTION 6 OF THE SOIL EROSION & SEDIMENTATION CONTROL MANUAL)

A = SLOPES
B = STREAMS AND WATERWAYS
C = SURFACE DRAINAGEWAYS
D = ENCLOSED DRAINAGE INLET & OUTFALL CONTROL
E = LARGE FLAT SURFACE AREAS
F = BORROW AND STOCKPILE AREAS
G = MDEQ PERMIT MAY BE REQUIRED

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
1	TURBIDITY CURTAIN	A Turbidity Curtain is used when slack water area is necessary to isolate construction activities from the watercourse. The still water area contains the sediments within the construction limits.		•					
3	PERMANENT/TEMPORARY SEEDING	Inexpensive but effective erosion control measure to stabilize flat areas and mild slopes. Permits runoff to infiltrate soil, reducing runoff volumes. Proper preparation of the seed bed, fertilizing, mulching and watering is critical to its success.	•		•		•	•	
4	DUST CONTROL	Dust control can be accomplished by watering, and/or applying calcium chloride. The disturbed areas should be kept to a minimum. PERMANENT/TEMPORARY SEEDING (KEY 3) should be applied as soon as possible.	•				•	•	
5	RIPRAP	Used where vegetation cannot be established. Very effective in protecting against high velocity flows. Should be placed over a geotextile liner.	•	•	•	•			•
7	RIPRAP	Used where vegetation cannot be established. Very effective in protecting against high velocity flows. Should be placed over a geotextile liner.	•	•	•	•			•
13	GRAVEL FILTER BERM	Useful in filtering flow prior to its reentry into a lake, stream or wetland. Works well with SEDIMENT TRAP (KEY 20) and TEMPORARY BYPASS CHANNEL (KEY 35). Not to be used in lieu of a CHECK DAM (KEY 37) in a ditch.	•		•			•	

• APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
(COMPREHENSIVE DETAILS ARE LOCATED IN SECTION 6 OF THE SOIL EROSION & SEDIMENTATION CONTROL MANUAL)

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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
14	GRAVEL ACCESS APPROACH	Provides a stable access to roadways minimizing fugitive dust and tracking of materials onto public streets and highways.					•	•	
18	DEWATERING WITH FILTER BAG	It may be necessary to dewater from behind a cofferdam or construction dam to create a dry work site. Discharged water must be pumped to a filter bag. A GRAVEL FILTER BERM (KEY 13) may be placed downslope of the filter bag to provide additional filtration prior to entering any stream or wetland.		•					•
20	SEDIMENT TRAP	Used to intercept concentrated flows and prevent sediments from being transported off site or into a watercourse or wetland. The size of a Sediment Trap is 5 cubic yards or less. Works well when used with CHECK DAM (KEY 37).	•		•	•			
21	SEDIMENT BASIN	A Sediment Basin is used to trap sediments from an upstream construction site. Requires periodic inspections, repairs, and maintenance. Where practical, sediments should be contained on site. A Sediment Basin should be the last choice of sediment control. The size of a Sediment Basin is greater than 5 cubic yards.		•					•
25	SAND FENCE AND DUNE STABILIZATION	A Sand Fence traps blowing sand by reducing wind velocities. Can be used to prevent sand from blowing onto roads. Must be maintained until sand source is stabilized.	•				•	•	
26	SILT FENCE	A permeable barrier erected below disturbed areas to capture sediments from sheet flow. Can be used to divert small volumes of water to stable outlets. Ineffective as a filter and should never be placed across streams or ditches where flow is concentrated.	•				•	•	

• APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
(COMPREHENSIVE DETAILS ARE LOCATED IN SECTION 6 OF THE SOIL EROSION & SEDIMENTATION CONTROL MANUAL)

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G = MDEQ PERMIT MAY BE REQUIRED

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
33	MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS	Mulch blankets provide an immediate and effective cover over raw erodible slopes affording excellent protection against rain and wind erosion. High velocity mulch blankets work well for stabilizing the bottom of ditches in waterways.	•		•		•	•	
34	COFFERDAM	Used to create a dry construction area and protect the stream from raw erodible areas. Must be pumped dry or dewatered according to DEWATERING WITH FILTER BAG (KEY 18).		•					•

(P) - PERMANENT MEASURE

N

0 100' 200' 400'
SCALE: 1" = 200'

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

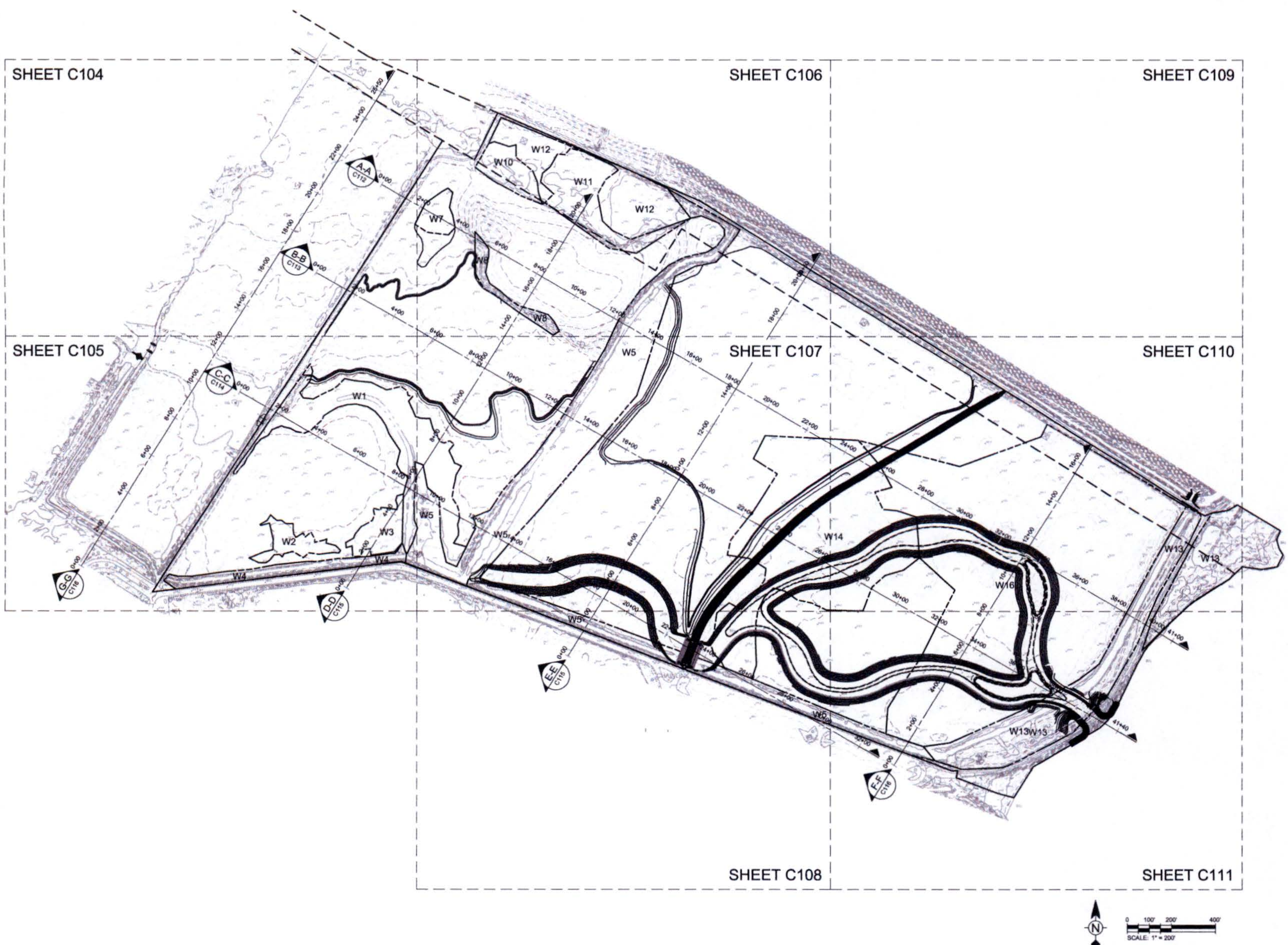
SESC PLAN AND LEGEND

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C102

Bar Measures 1 inch

7/19/2012 1:45:56 PM - O:\PROJECTS\ANN ARBOR\IER\01278\200-01278-11007\CADD\SHEETFILES\C102 SESC.DWG - SHANK, JASON



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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

OVERALL GRADING PLAN SHEET INDEX

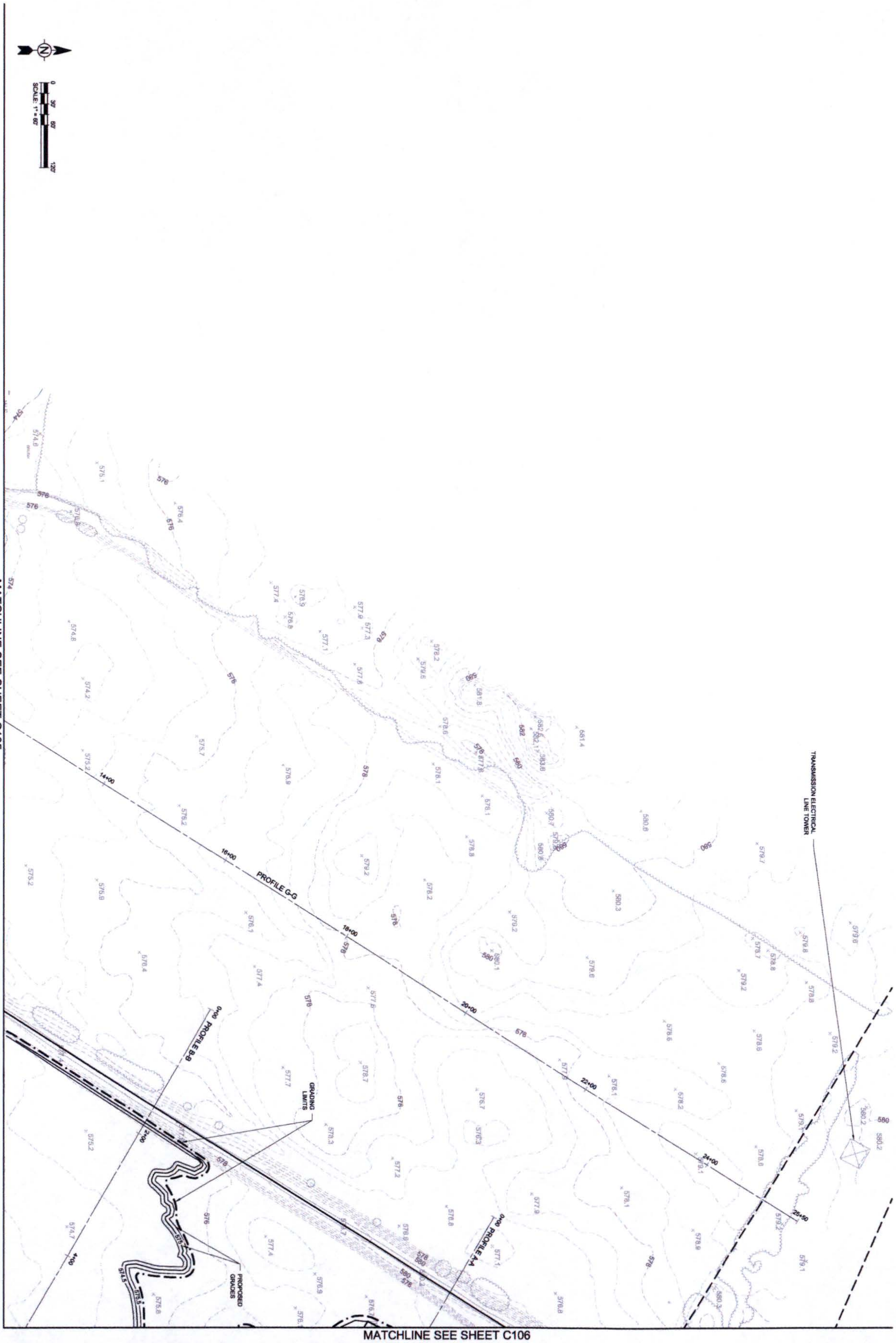
Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C103

Bar Measures 1 inch

7/19/2012 3:08:39 PM - O:\PROJECTS\ANN ARBOR\ERG\1278\200-01278-11007\CAD\SHEETFILES\C103 OVERALL PROPOSED.DWG - SHANK, JASON

7/19/2012 3:21:16 PM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CAD\SHEETFILES\C104 PLAN.DWG - SHANK, JASON



MATCHLINE SEE SHEET C106

MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN

FERMI 3 OFFSITE MITIGATION AREA

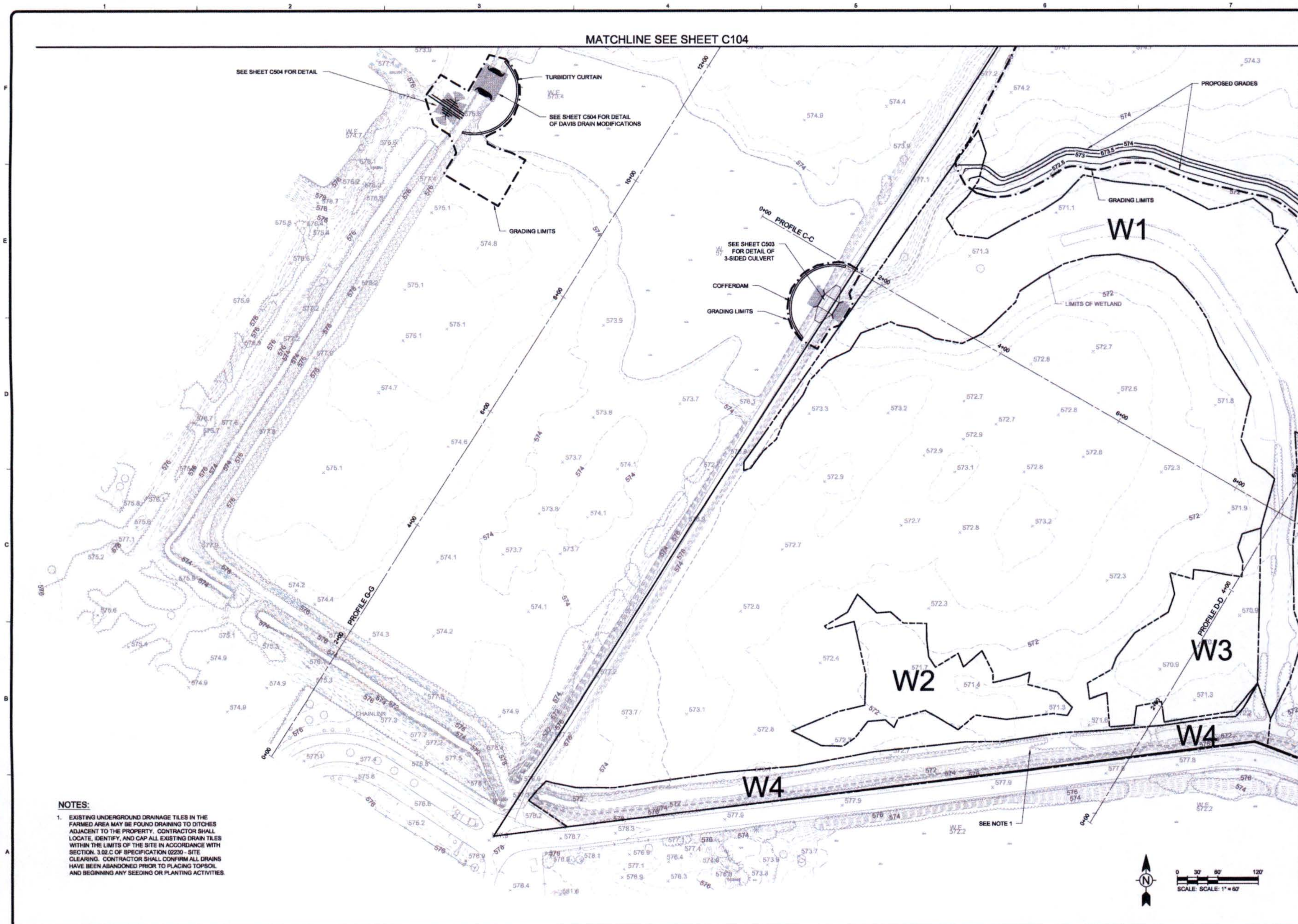
ENLARGED GRADING PLAN

Project No.: 200-01278-11007
Designed By: J. SIWEK
Drawn By: T. HOLLENBECK
Checked By: N. McPHERSON

C104

TETRA TECH
www.tetratech.com
710 AVIS DRIVE
ANN ARBOR, MI 48108
PHONE (734) 665-6000 FAX (734) 665-2570

Bar Measures 1 inch



NOTES:

1. EXISTING UNDERGROUND DRAINAGE TILES IN THE FARMED AREA MAY BE FOUND DRAINING TO DITCHES ADJACENT TO THE PROPERTY. CONTRACTOR SHALL LOCATE, IDENTIFY, AND CAP ALL EXISTING DRAIN TILES WITHIN THE LIMITS OF THE SITE IN ACCORDANCE WITH SECTION. 3.02.C OF SPECIFICATION 02230 - SITE CLEARING. CONTRACTOR SHALL CONFIRM ALL DRAINS HAVE BEEN ABANDONED PRIOR TO PLACING TOPSOIL AND BEGINNING ANY SEEDING OR PLANTING ACTIVITIES.

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

ENLARGED GRADING PLAN

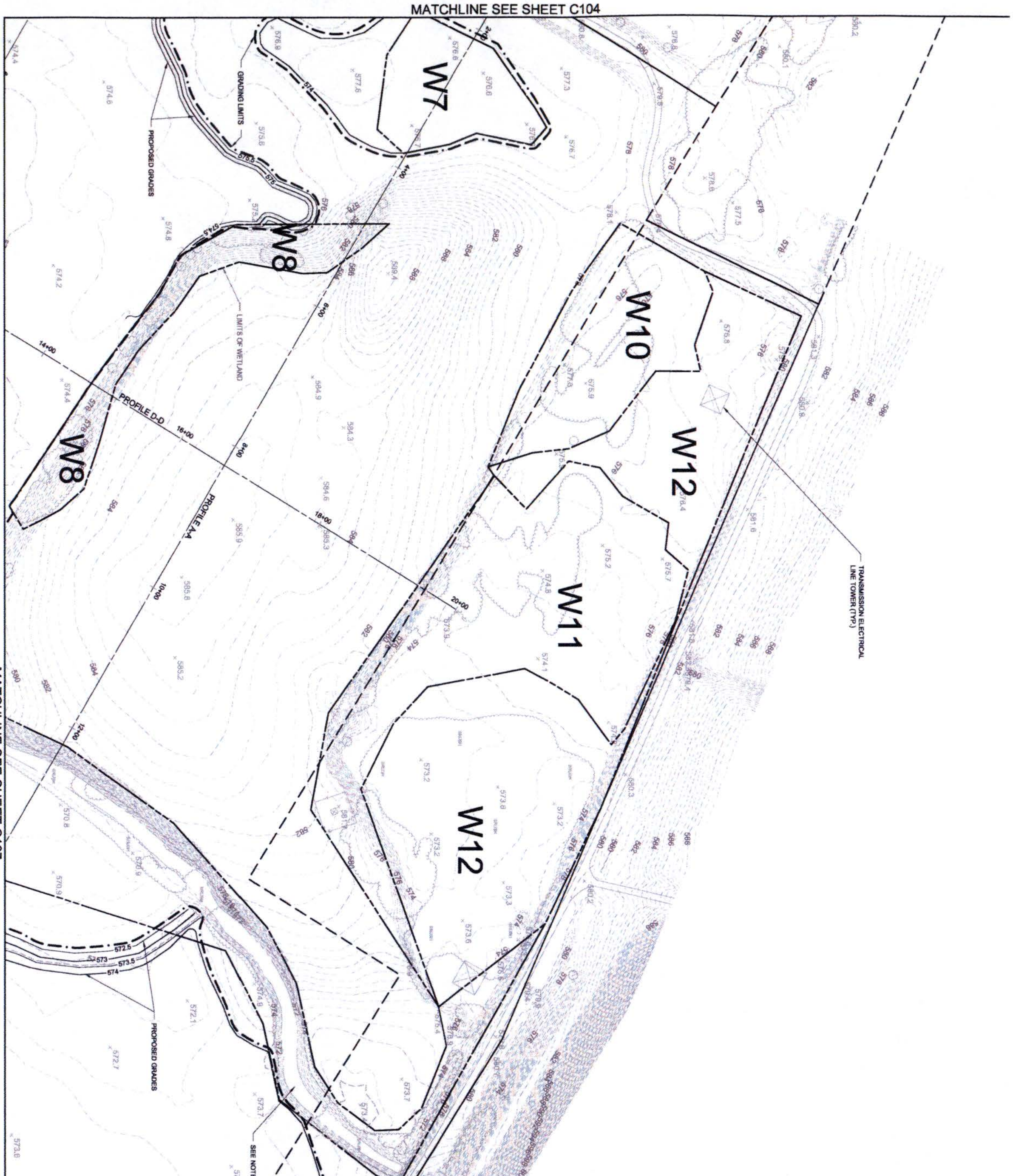
Project No.: 200-01278-11007
Designed By: J. SIWEK
Drawn By: T. HOLLENBECK
Checked By: N. McPHERSON

C105

Bar Measures 1 inch

7/18/2012 3:12:03 PM - O:\PROJECTS\ANN ARBOR\E\01278\200-01278-11007\CAD\SHEETFILES\C105 PLAN.DWG - SHANK, JASON

MATCHLINE SEE SHEET C104



MATCHLINE SEE SHEET C107

MATCHLINE SEE SHEET C109

NOTES:

1. EXISTING UNDERGROUND DRAINAGE TILES IN THE FARMED AREA MAY BE FOUND DRAINING TO DITCHES ADJACENT TO THE PROPERTY. CONTRACTOR SHALL LOCATE, IDENTIFY, AND CAP ALL EXISTING DRAIN TILES WITHIN THE LIMITS OF THE SITE IN ACCORDANCE WITH SECTION. 3.02.C OF SPECIFICATION 02230 - SITE CLEARING. CONTRACTOR SHALL CONFIRM ALL DRAINS HAVE BEEN ABANDONED PRIOR TO PLACING TOPSOIL AND BEGINNING ANY SEEDING OR PLANTING ACTIVITIES.

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C106

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

ENLARGED GRADING PLAN

MARK	DATE	DESCRIPTION	BY

TETRA TECH
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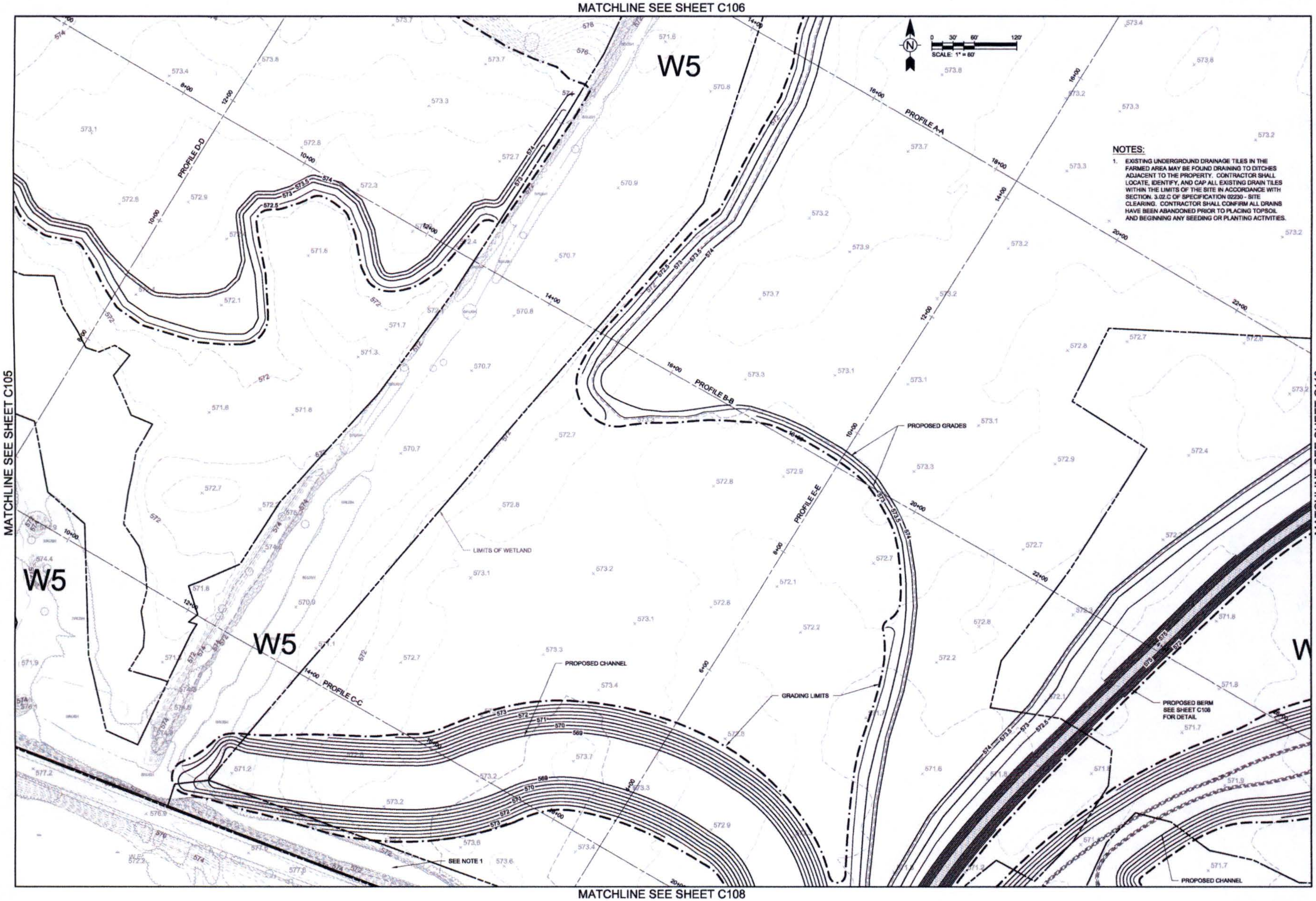
710 AVIS DRIVE
ANN ARBOR, MI 48108
PHONE (734) 665-6000 FAX (734) 665-2570

Bar Measures 1 inch



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ANN ARBOR, MI 48108
PHONE (734) 665-6000 FAX (734) 665-2570

MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

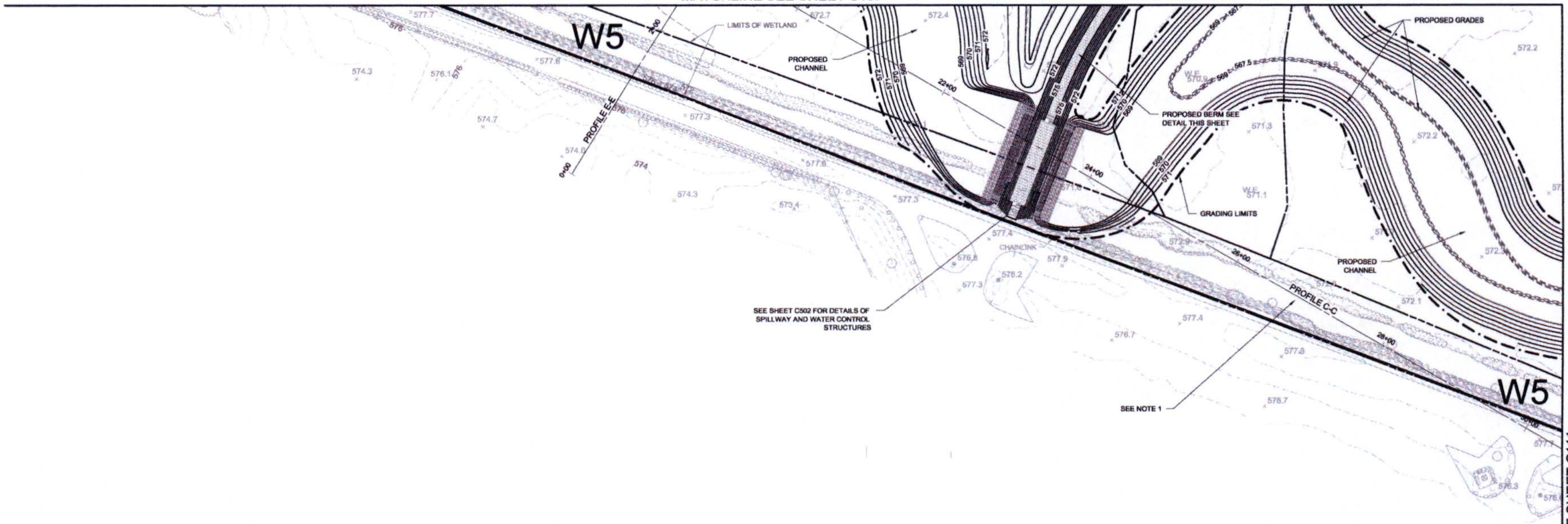
ENLARGED GRADING PLAN

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

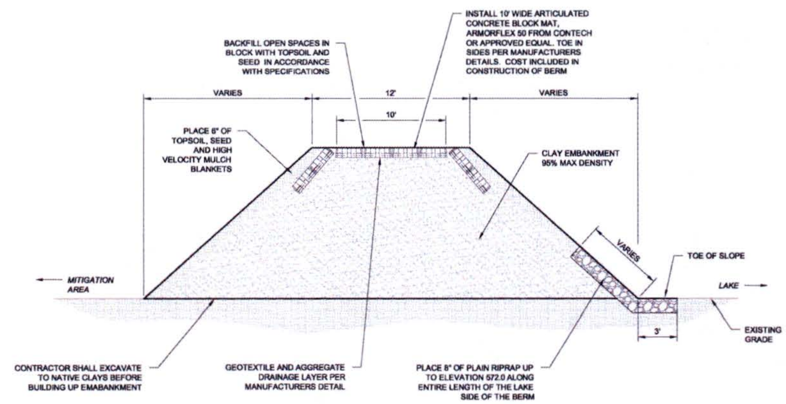
C107

Bar Measures 1 inch

MATCHLINE SEE SHEET C107



MATCHLINE SEE SHEET C111

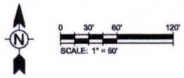


BERM DETAIL

NO SCALE

NOTES:

1. EXISTING UNDERGROUND DRAINAGE TILES IN THE FARMED AREA MAY BE FOUND DRAINING TO DITCHES ADJACENT TO THE PROPERTY. CONTRACTOR SHALL LOCATE, IDENTIFY, AND CAP ALL EXISTING DRAIN TILES WITHIN THE LIMITS OF THE SITE IN ACCORDANCE WITH SECTION. 3.02.C OF SPECIFICATION 02230 - SITE CLEARING. CONTRACTOR SHALL CONFIRM ALL DRAINS HAVE BEEN ABANDONED PRIOR TO PLACING TOPSOIL AND BEGINNING ANY SEEDING OR PLANTING ACTIVITIES.



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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

ENLARGED GRADING PLAN

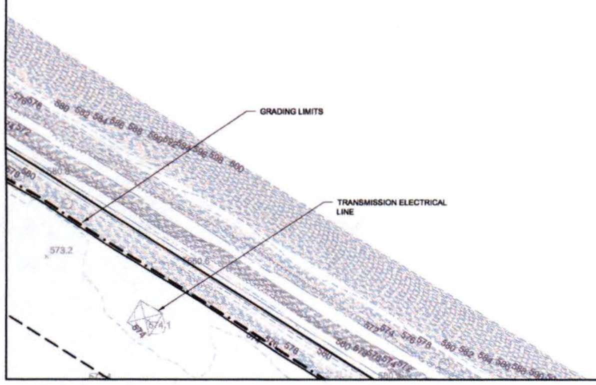
Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C108

Bar Measures 1 inch

7/19/2012 3:24:52 PM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CAD\SHEETFILES\C108 PLAN.DWG - SHANK, JASON

MATCHLINE SEE SHEET C106



SCALE: 1" = 60'

0 30' 60' 120'

MATCHLINE SEE SHEET C110

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ANN ARBOR, MI 48108
PHONE (734) 665-6000 FAX (734) 665-2570

MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

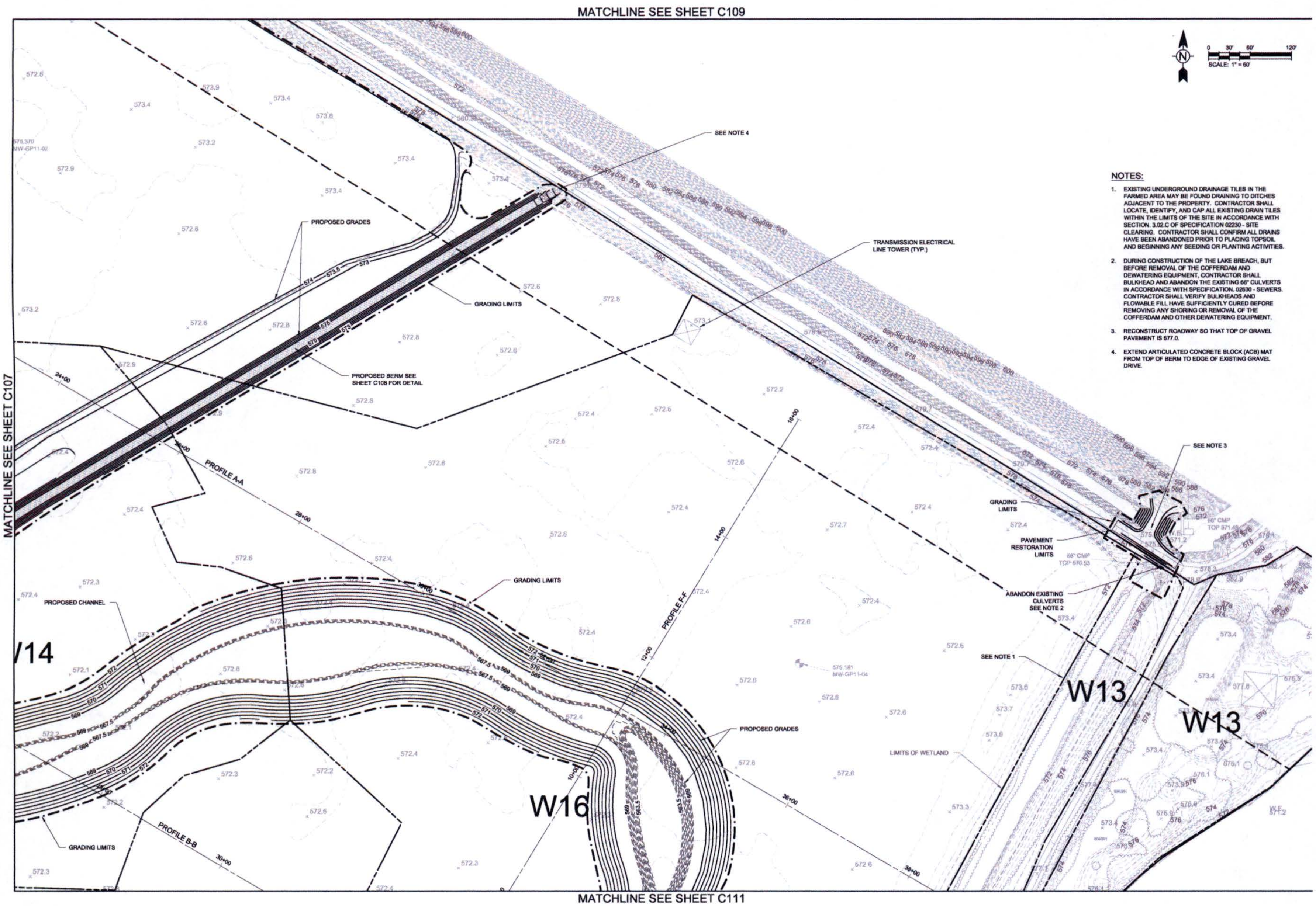
ENLARGED GRADING PLAN

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C109

Bar Measures 1 inch

7/19/2012 3:26:21 PM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CAD\SHEETFILES\C109 PLAN.DWG - SHANK, JASON



NOTES:

1. EXISTING UNDERGROUND DRAINAGE TILES IN THE FARMED AREA MAY BE FOUND DRAINING TO DITCHES ADJACENT TO THE PROPERTY. CONTRACTOR SHALL LOCATE, IDENTIFY, AND CAP ALL EXISTING DRAIN TILES WITHIN THE LIMITS OF THE SITE IN ACCORDANCE WITH SECTION. 3.02.C OF SPECIFICATION 02230 - SITE CLEARING. CONTRACTOR SHALL CONFIRM ALL DRAINS HAVE BEEN ABANDONED PRIOR TO PLACING TOPSOIL AND BEGINNING ANY SEEDING OR PLANTING ACTIVITIES.
2. DURING CONSTRUCTION OF THE LAKE BREACH, BUT BEFORE REMOVAL OF THE COFFERDAM AND DEWATERING EQUIPMENT, CONTRACTOR SHALL BULKHEAD AND ABANDON THE EXISTING 66" CULVERTS IN ACCORDANCE WITH SPECIFICATION. 02630 - SEWERS. CONTRACTOR SHALL VERIFY BULKHEADS AND FLOWABLE FILL HAVE SUFFICIENTLY CURED BEFORE REMOVING ANY SHORING OR REMOVAL OF THE COFFERDAM AND OTHER DEWATERING EQUIPMENT.
3. RECONSTRUCT ROADWAY SO THAT TOP OF GRAVEL PAVEMENT IS 577.0.
4. EXTEND ARTICULATED CONCRETE BLOCK (ACB) MAT FROM TOP OF BERM TO EDGE OF EXISTING GRAVEL DRIVE.

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

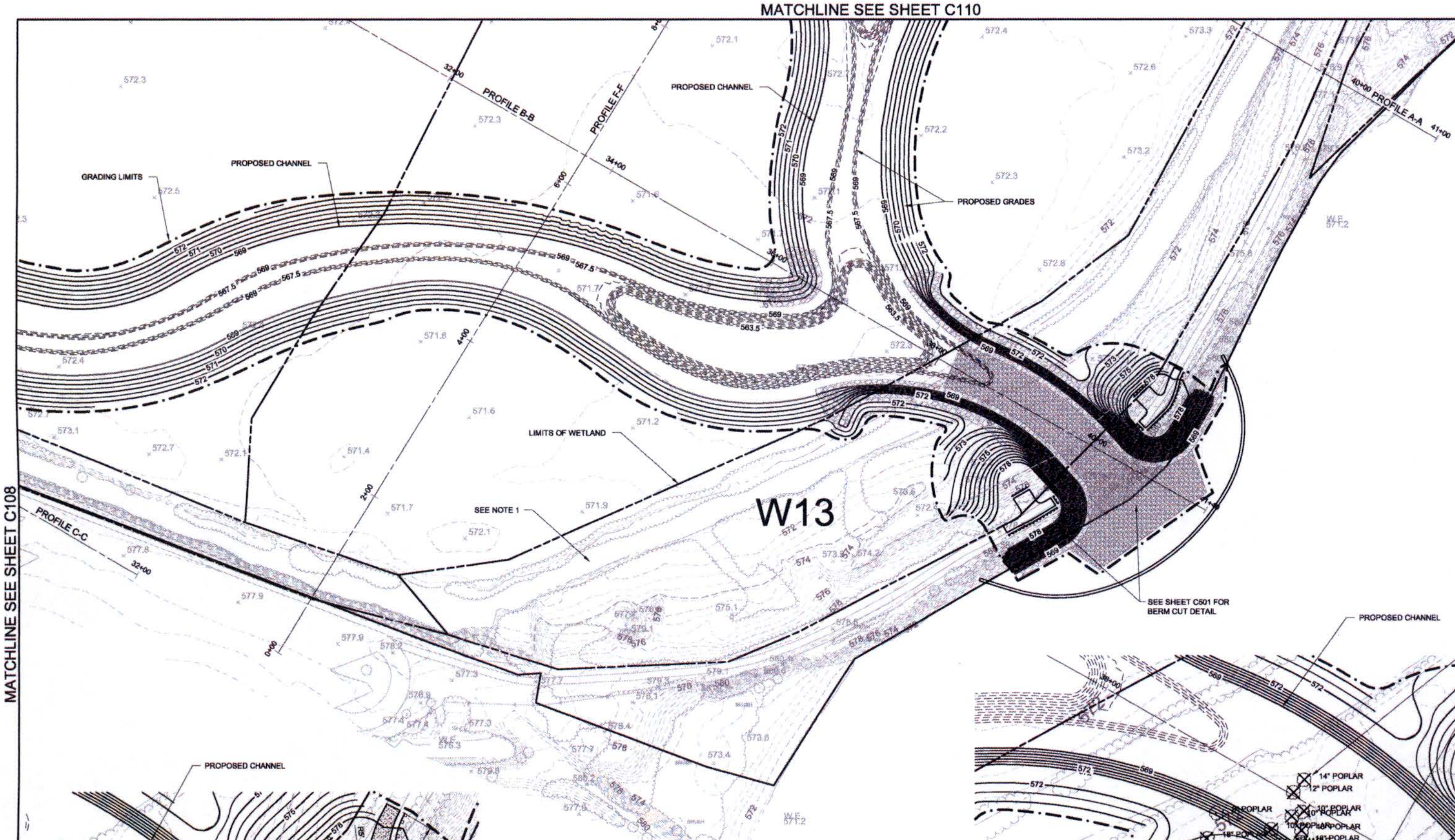
ENLARGED GRADING PLAN

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. McPHERSON

C110

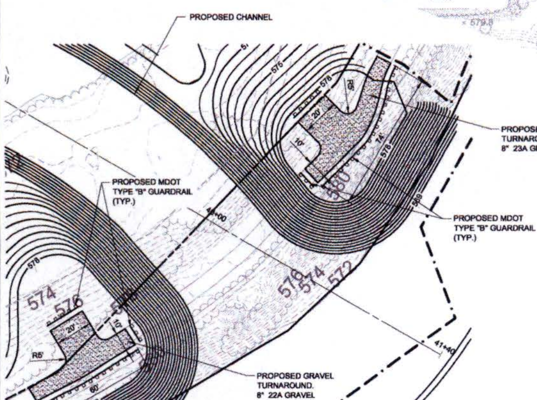
Bar Measures 1 inch

7/18/2012 3:27:43 PM - O:\PROJECTS\ANN ARBOR\RIVER\01278\200-01278-11007\CAD\SHEETFILES\C110 PLAN.DWG - SHANK, JASON



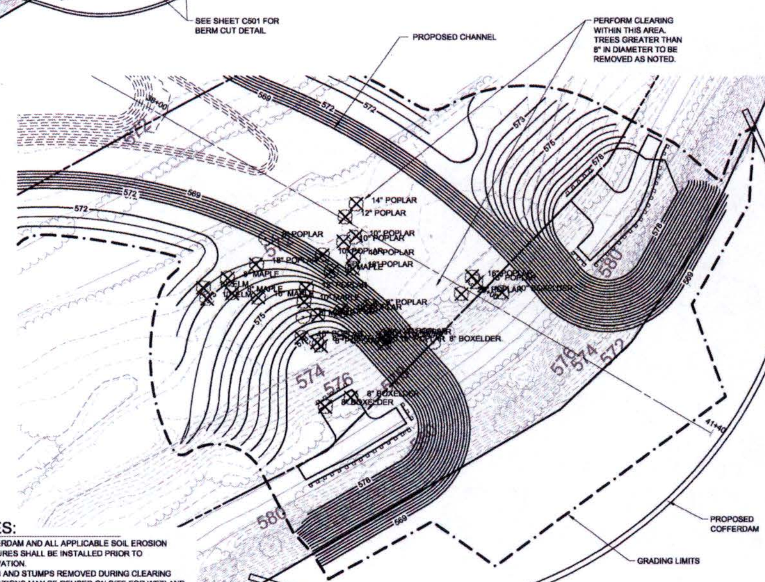
NOTES:

1. EXISTING UNDERGROUND DRAINAGE TILES IN THE FARMED AREA MAY BE FOUND DRAINING TO DITCHES ADJACENT TO THE PROPERTY. CONTRACTOR SHALL LOCATE, IDENTIFY, AND CAP ALL EXISTING DRAIN TILES WITHIN THE LIMITS OF THE SITE IN ACCORDANCE WITH SECTION. 3.02.C OF SPECIFICATION 02230 - SITE CLEARING. CONTRACTOR SHALL CONFIRM ALL DRAINS HAVE BEEN ABANDONED PRIOR TO PLACING TOPSOIL AND BEGINNING ANY SEEDING OR PLANTING ACTIVITIES.
2. CONTRACTOR TO SUBMIT LOCATION AND DESIGN OF SHEET PILING COFFERDAM PRIOR TO ERECTION. ALL DEWATERING MUST BE THROUGH AN APPROVED FILTER BAG.



TURNAROUND DETAILS

SCALE: 1"=30'



NOTES:

1. COFFERDAM AND ALL APPLICABLE SOIL EROSION MEASURES SHALL BE INSTALLED PRIOR TO EXCAVATION.
2. TREES AND STUMPS REMOVED DURING CLEARING OPERATIONS MAY BE REUSED ON SITE FOR WETLAND HABITAT CONSTRUCTION IF MATERIAL MEETS REQUIREMENTS LISTED IN SPECIFICATIONS.
3. A LIMITED TREE SURVEY WAS PERFORMED IN THE AREA. CONTRACTOR SHALL DOCUMENT SIZE AND LOCATION OF ALL TREE REMOVALS

LAKE ERIE CUT REMOVAL PLAN

SCALE: 1"=30'

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

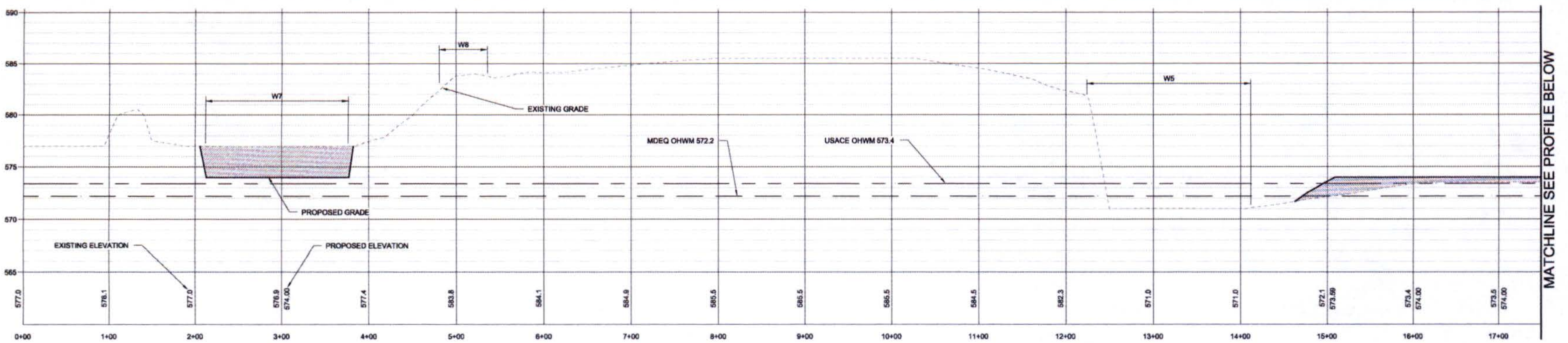
ENLARGED GRADING PLAN

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C111

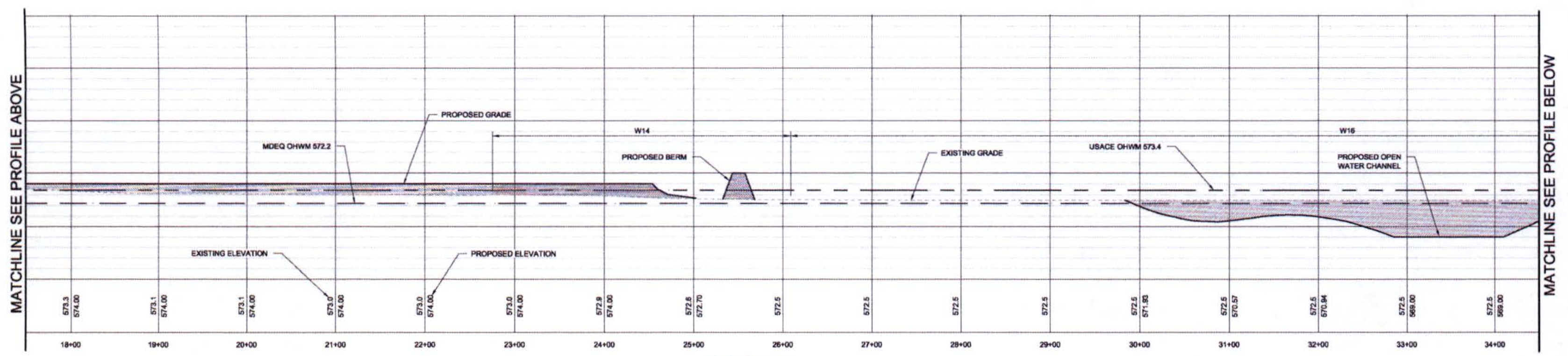
Bar Measures 1 inch

7/19/2012 3:29:07 PM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CAD\SHEETFILES\C111 PLAN.DWG - SHANK, JASON



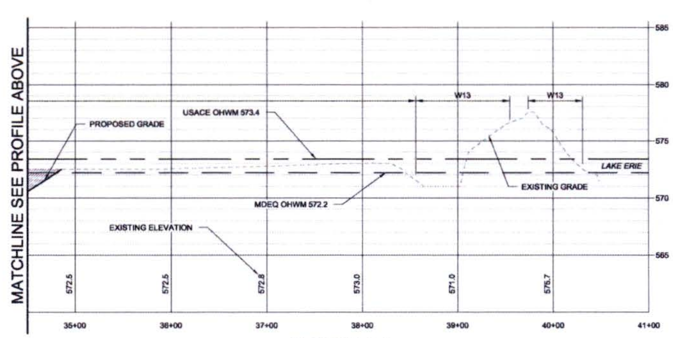
PROFILE A-A

SCALE: 1"=60' H 1"=6' V



PROFILE A-A

SCALE: 1"=60' H 1"=6' V

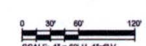


PROFILE A-A

SCALE: 1"=60' H 1"=6' V

LEGEND

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



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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

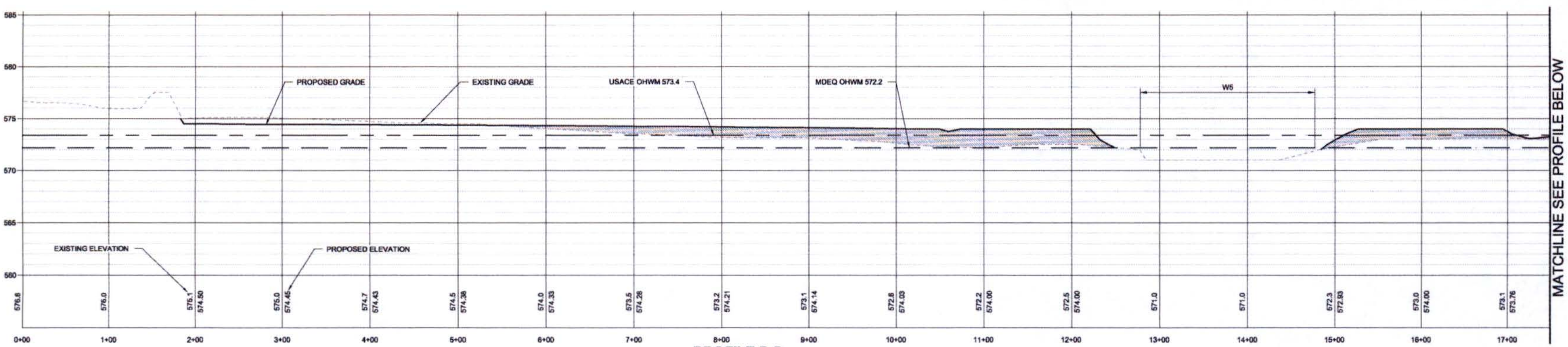
PROPOSED PROFILES - PROFILE A-A

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C112

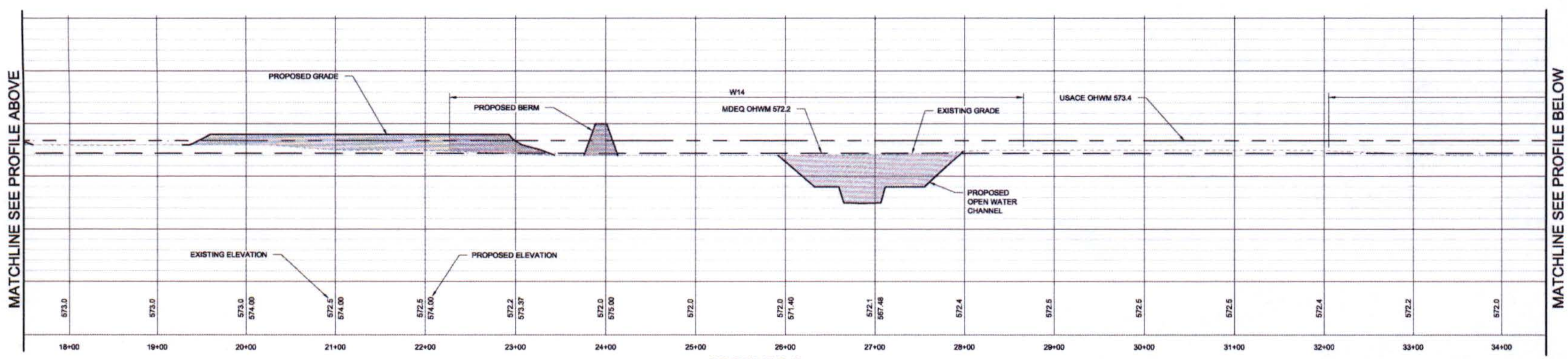
Bar Measures 1 inch

7/17/2012 10:44:29 AM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CAD\SHEETFILES\C112 PROFILES.DWG - HOLLENBECK, TODD



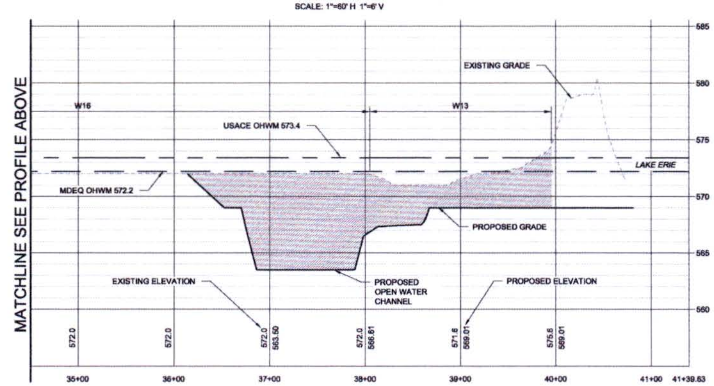
PROFILE B-B

SCALE: 1"=60' H 1"=6' V



PROFILE B-B

SCALE: 1"=60' H 1"=6' V



PROFILE B-B

SCALE: 1"=60' H 1"=6' V

LEGEND

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

0 30' 60' 120'
SCALE: 1" = 60' H 1"=6' V

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MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

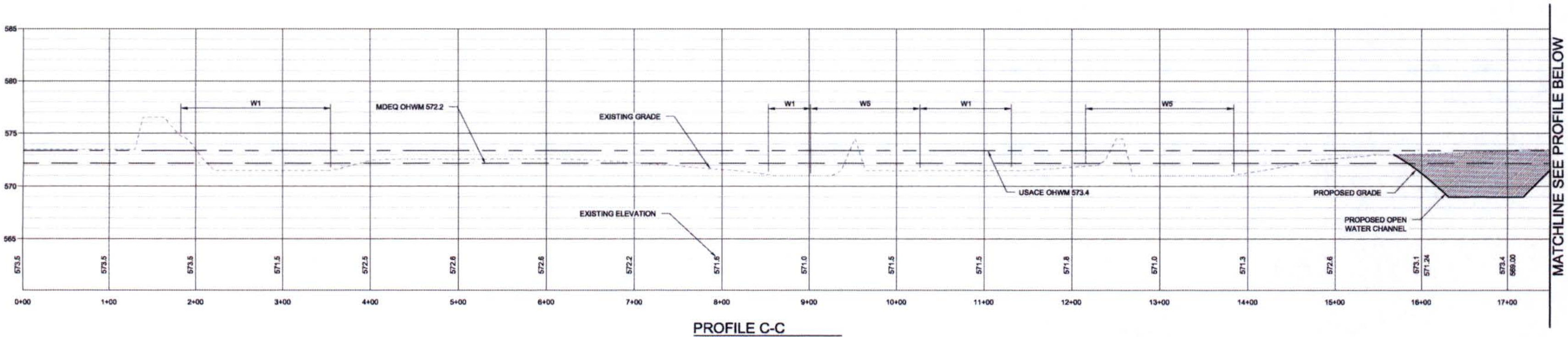
PROPOSED PROFILES - PROFILE B-B

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C113

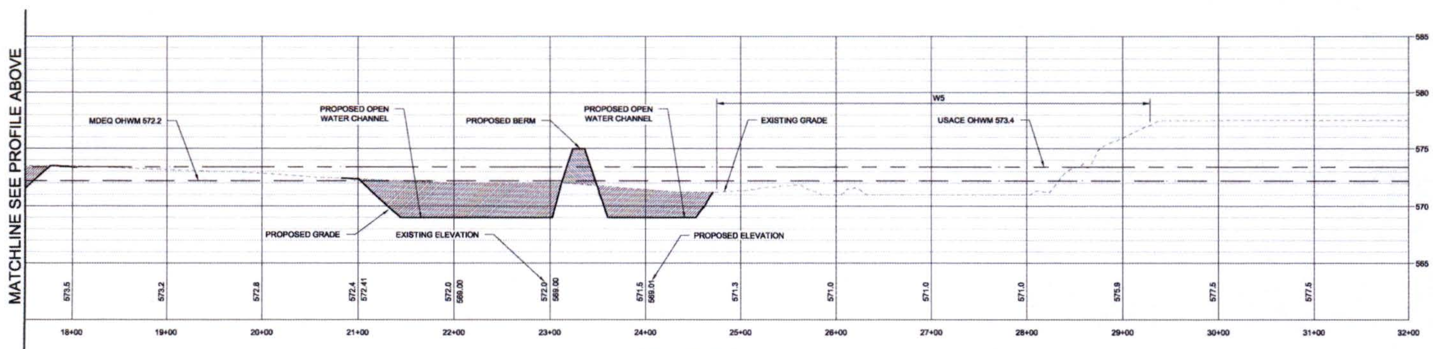
Bar Measures 1 inch

7/17/2012 10:53:14 AM - O:\PROJECTS\ANN ARBOR\ENERGY\01278\200-01278-11007\CAD\SHEETFILES\C113 PROFILES.DWG - HOLLENBECK, TODD



PROFILE C-C

SCALE: 1"=60' H 1"=6' V



PROFILE C-C

SCALE: 1"=60' H 1"=6' V

LEGEND

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

SCALE: 1" = 60' H 1"=6' V

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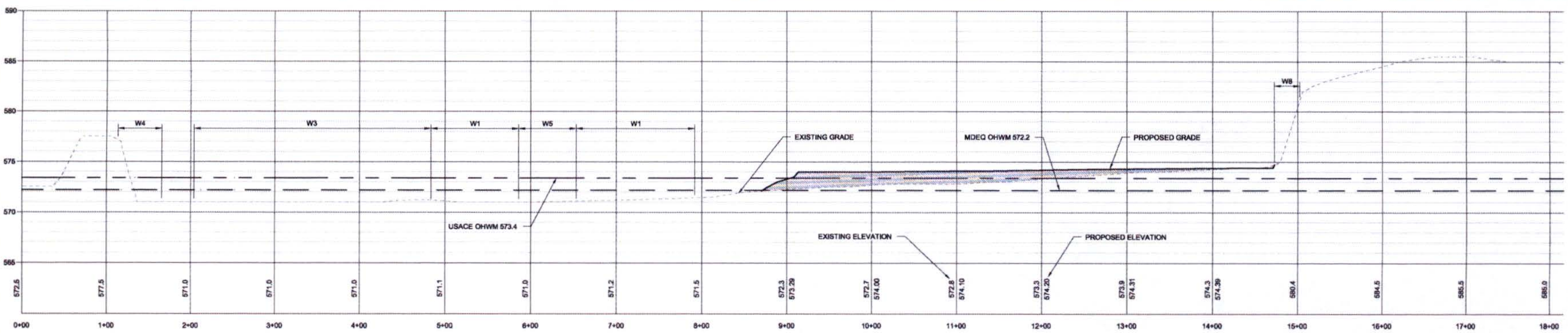
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

PROPOSED PROFILES - PROFILE C-C

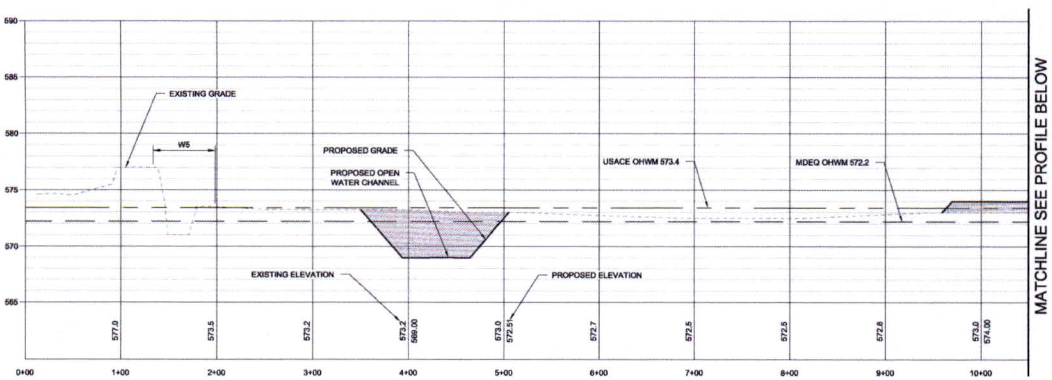
Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C114

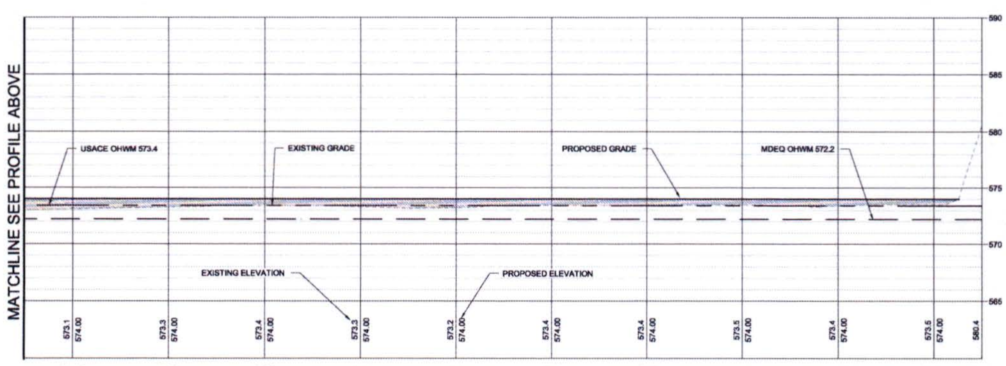
Bar Measures 1 inch



PROFILE D-D
SCALE: 1"=60' H 1"=6' V



PROFILE E-E
SCALE: 1"=60' H 1"=6' V



PROFILE E-E
SCALE: 1"=60' H 1"=6' V

LEGEND

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

0 30' 60' 120'
SCALE: 1" = 60' H 1"=6' V

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

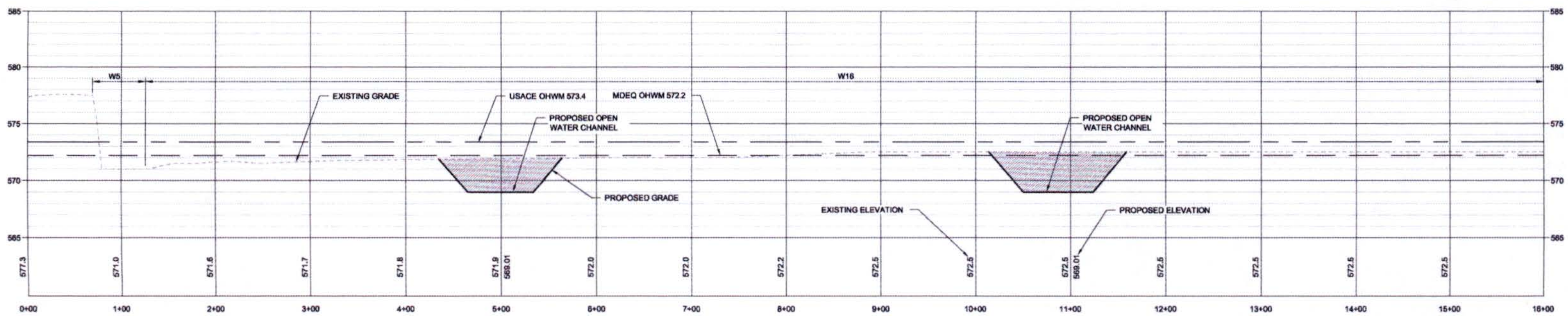
PROPOSED PROFILES - PROFILE D-D, E-E

Project No.:	200-01276-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

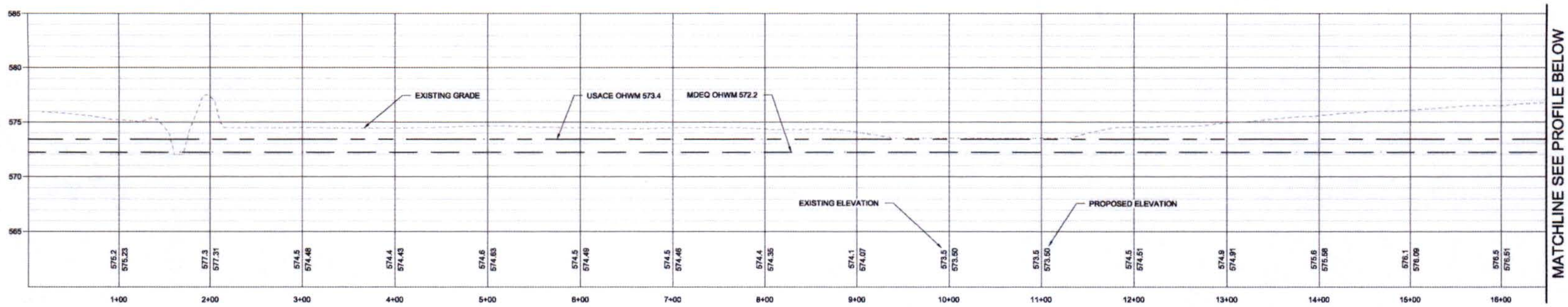
C115

Bar Measures 1 inch

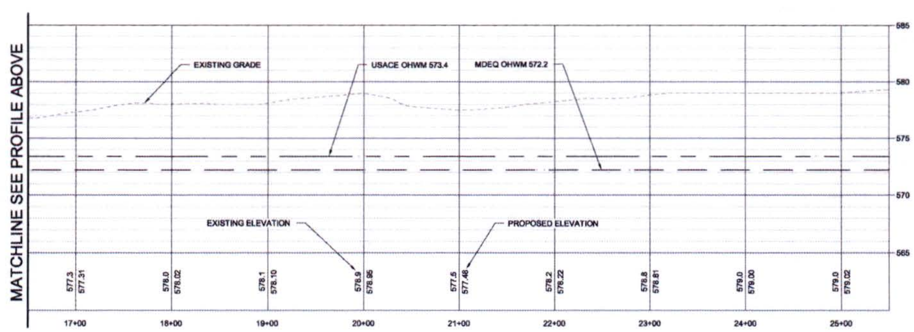
7/17/2012 11:07:33 AM - O:\PROJECTS\ANN ARBOR\ER\1276\200-01276-11007\CAD\SHEETFILES\C115 PROFILES.DWG - HOLLENBECK, TODD



PROFILE F-F
SCALE: 1"=60' H 1"=6' V



PROFILE G-G
SCALE: 1"=60' H 1"=6' V



PROFILE G-G
SCALE: 1"=60' H 1"=6' V

LEGEND

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

0 30' 60' 120'
SCALE: 1" = 60' H 1"=6' V

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FERMI 3 OFFSITE MITIGATION AREA

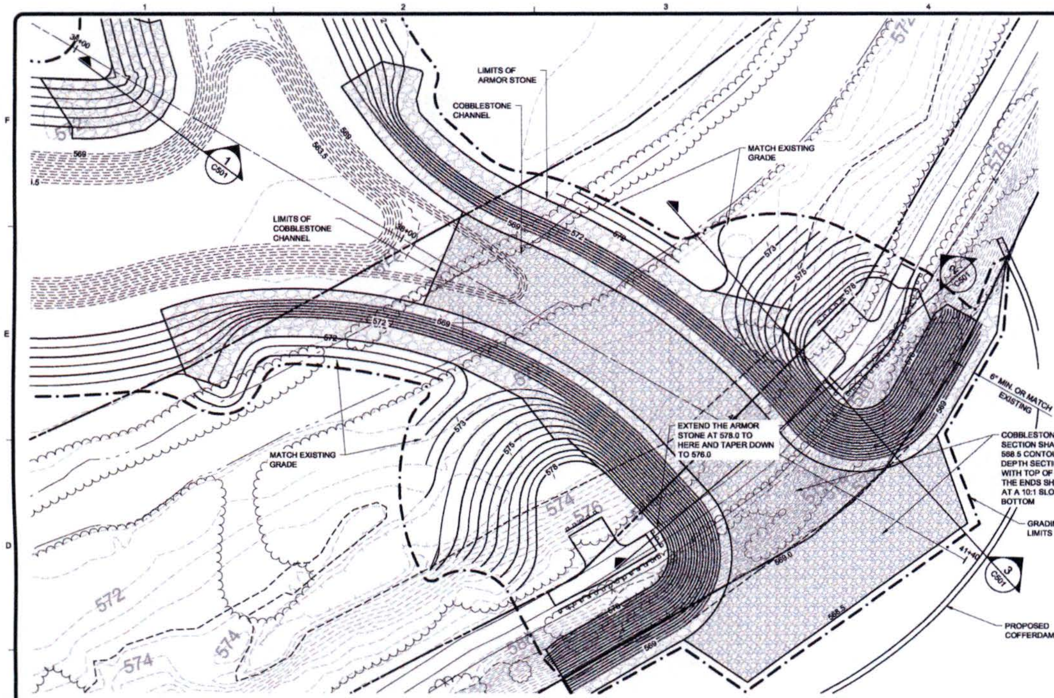
PROPOSED PROFILES -
PROFILE F-F, G-G

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

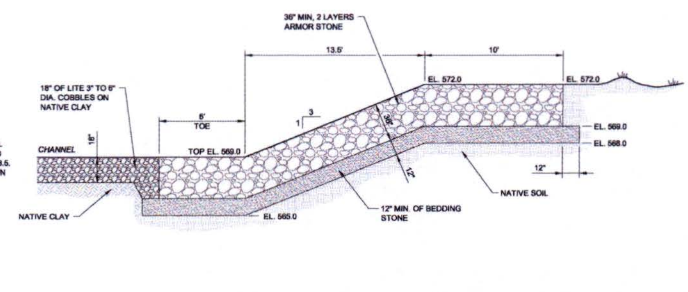
C116

Bar Measures 1 inch

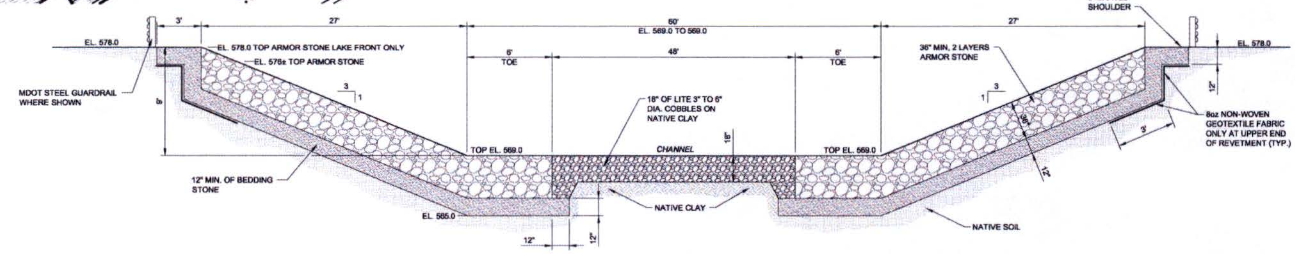
7/17/2012 11:15:06 AM - C:\PROJECTS\ANN ARBOR\ERG\1278\200-01278-11007\CAD\SHEETFILES\C116 PROFILES.DWG - HOLLENBECK, TODD



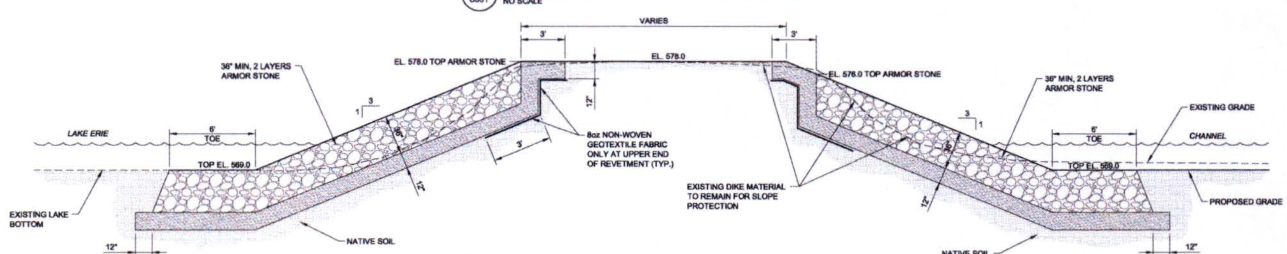
SITE PLAN - CHANNEL CUT
SCALE: 1"=20'



1 / C501 TYPICAL REVETMENT SECTION AT WETLAND ISLAND
NO SCALE



2 / C501 TYPICAL REVETMENT SECTION AT BERM CUT
NO SCALE



3 / C501 TYPICAL REVETMENT SECTION AT BERM CUT
NO SCALE

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FERMI 3 OFFSITE MITIGATION AREA

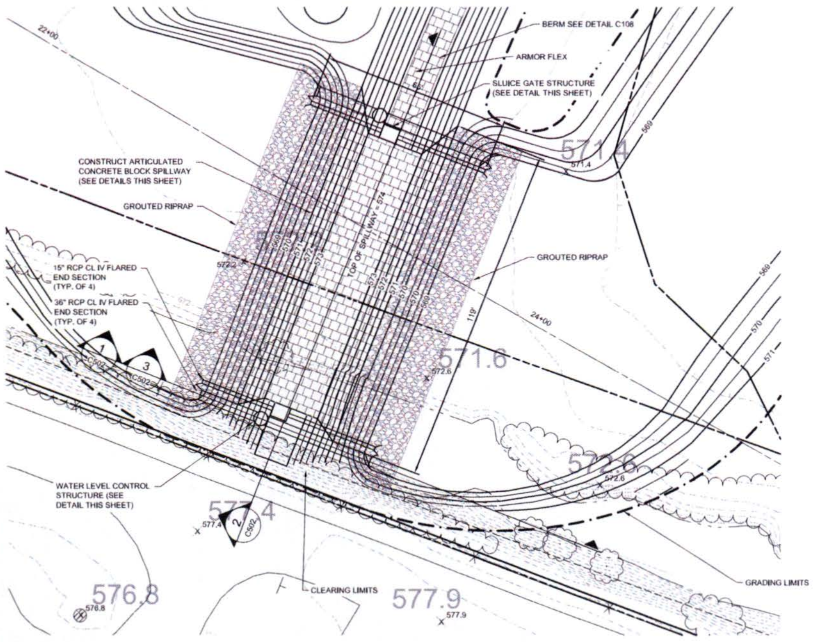
CHANNEL DETAILS

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C501

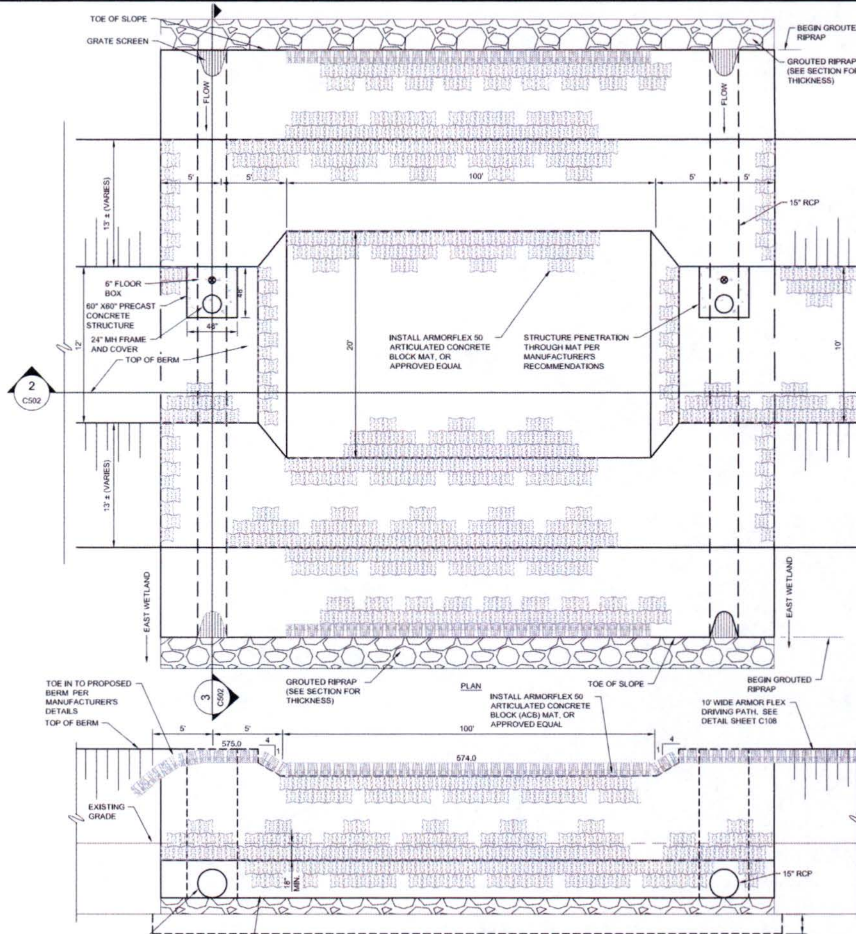
Bar Measures 1 inch

7/17/2012 2:06:01 PM - O:\PROJECTS\ANN ARBOR\ER\01278\200-01278-11007\CAD\SHEETFILES\C501 DETAILS.DWG - HOLLENBECK, TODD



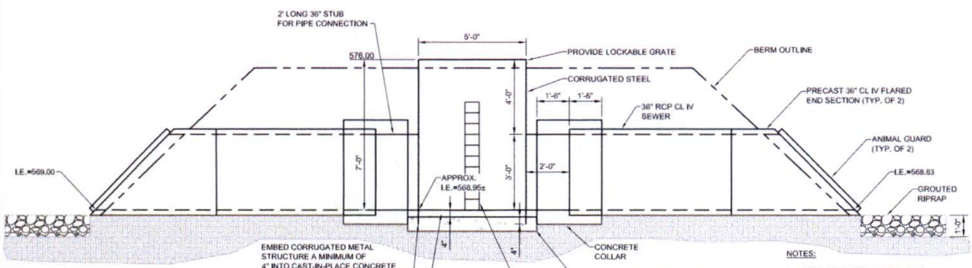
PROPOSED BERM AND WATER CONTROL STRUCTURE PLAN VIEW

NO SCALE



PROPOSED BERM DETAIL AND WATER CONTROL STRUCTURE

2 / C502 NO SCALE



STOP LOG NOTES:

IN ADDITION TO THE 6" PVC COATED STOP LOGS PROVIDED WITH THE UNIT BY THE MANUFACTURER. CONTRACTOR SHALL ALSO FURNISH FOUR (4) - 3" TALL STOP LOGS FOR USE BY OWNER IN ESTABLISHING THE WETLAND. ADDITIONAL STOP LOGS SHALL MATCH THE DIMENSIONS OF THE MANUFACTURER PROVIDED STOP LOGS EXCEPT THEY ARE 3" HIGH. THEY SHALL BE OUTFITTED SO THEY CAN BE INSTALLED AND REMOVED USING THE MANUFACTURERS REMOVING APPARATUS WITHOUT CAUSING ANY DAMAGE TO THE STRUCTURE, OTHER STOP LOGS OR LIFTING APPARATUS.

WATER LEVEL CONTROL STRUCTURE

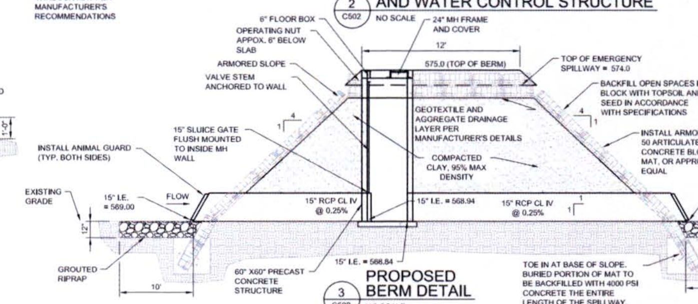
1 / C502 NO SCALE

NOTES:

1. PROVIDE IN-LINE WATER LEVEL CONTROL STRUCTURE FROM AGRIDRAIN, OR APPROVED EQUAL.

CONRETE COLLAR NOTES:

1. MATCH PIPE INVERTS, WRAP JOINT W/ GEOTEXTILE FABRIC.
2. 6x6 WWF REINFORCEMENT WRAPPED AROUND PIPES WITH 12" MIN. LAP AND MIN. 3" CLEAR COVER EITHER FACE OF COLLAR AND ENDS.



PROPOSED BERM DETAIL

3 / C502 NO SCALE

NOTES:

1. FLOOR BOX AND COVER FRAME ARE TO BE INTEGRALLY CAST INTO THE STRUCTURE LID.
2. SLUICE GATE TO BE MOUNTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SECTION 11285-HYDRAULIC GATES OF THE PROJECT MANUAL.

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FERMI 3 OFFSITE MITIGATION AREA

EMERGENCY SPILLWAY AND WATER CONTROL STRUCTURE DETAILS

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C502

Bar Measures 1 inch

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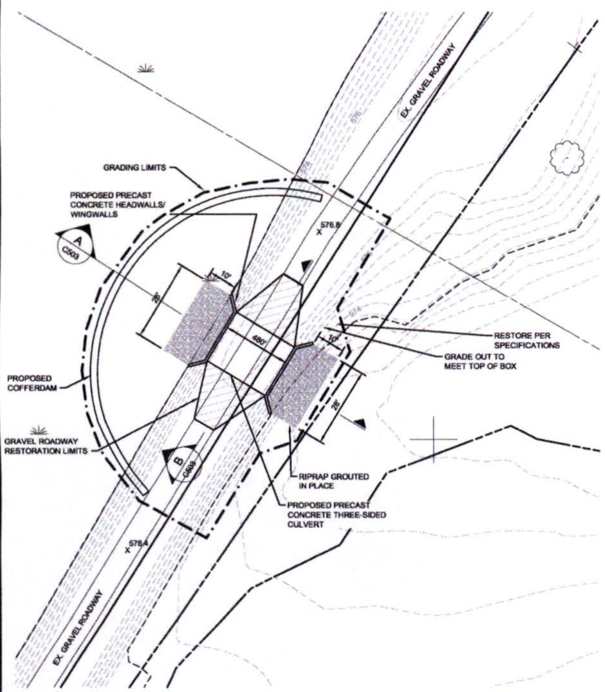
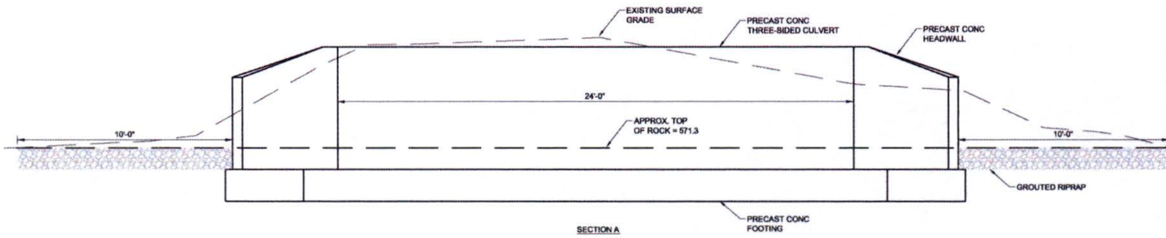
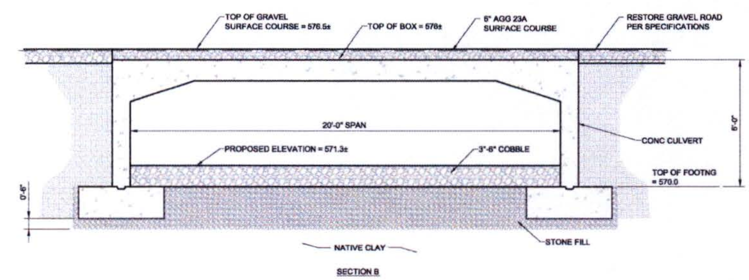


SITE PLAN - DAVIS DRAIN OVERFLOW 3-SIDED CULVERT

SCALE: 1"=20'





DAVIS DRAIN OVERFLOW 3-SIDED CULVERT

NO SCALE

NOTES:

THREE-SIDED CULVERT NOTES

1. SUPPLIER RESPONSIBLE FOR ENGINEERING DESIGN OF THREE-SIDED CULVERT AND SHALL SUBMIT PRODUCT SPECIFICATIONS AND DESIGN CALCULATIONS IN ACCORDANCE WITH SECTION 01330-SUBMITTALS OF THE PROJECT MANUAL.
2. CULVERT SHALL BE RATED FOR HS20 LOADING.
3. BOX TO BE SET UPON PRECAST CONCRETE FOOTINGS AND HAVE ATTACHED HEADWALL AND WINGWALLS AS SHOWN IN THE DRAWINGS. ALL SECTIONS ARE TO BE ATTACHED AND GROUTED IN PLACE.

SITE NOTES

4. WORK MAY REQUIRE INSTALLATION OF A COFFERDAM AND DEWATERING. CONTRACTOR TO SUBMIT ON DESIGN AND ALIGNMENT OF PROPOSED COFFERDAM. DEWATERING OPERATIONS SHALL BE MAINTAINED UNTIL ALL GROUTED RIPRAP HAS COMPLETELY CURED.
5. EXISTING GRAVEL ROADWAY SHALL BE REMOVED AND RECONSTRUCTED A MINIMUM 20' (FEET) IN EACH DIRECTION AND SHALL TAPER FROM THE FULL WIDTH OF THE CULVERT TO MATCH THE EXISTING ROADWAY.
6. A 6" (INCH) THICK LAYER OF AGGREGATE SURFACE COURSE SHALL BE INSTALLED ACROSS THE ENTIRE WIDTH OF THE THREE-SIDED CULVERT.

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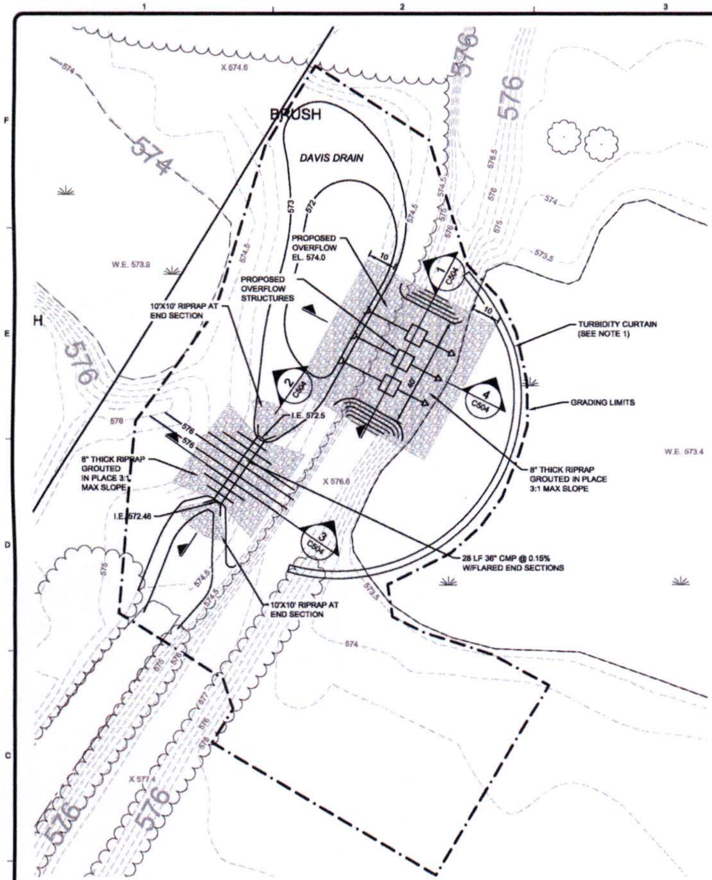
DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

DAVIS DRAIN OVERFLOW 3-SIDED CULVERT DETAILS

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	H. MCPHERSON

C503

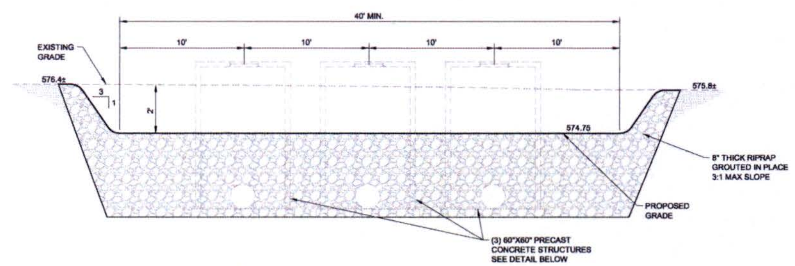
Bar Measures 1 inch



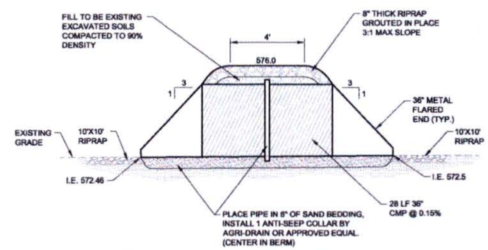
SITE PLAN -
DAVIS DRAIN MODIFICATIONS
SCALE: 1"=20'

DAVIS DRAIN MODIFICATION NOTES

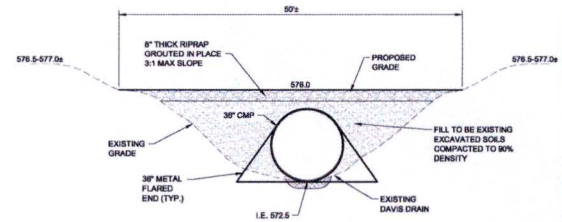
1. INSTALL TURBIDITY CURTAIN IN THE PRESENCE OF STANDING WATER. IF AREA IS DRY DURING CONSTRUCTION, SILT FENCE MAY BE USED.
2. SEE SHEET C102 FOR SOIL EROSION.



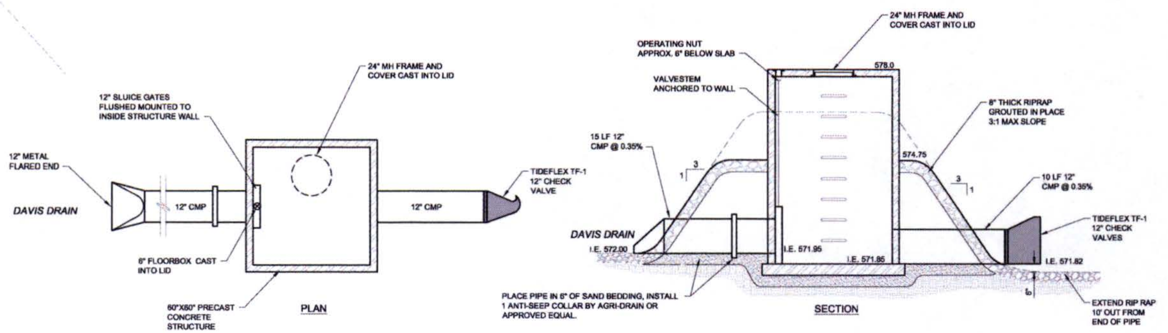
1 / C504 DAVIS DRAIN OVERFLOW TO SITE
NO SCALE



2 / C504 DAVIS DRAIN LOW-FLOW CULVERT
NO SCALE



3 / C504 DAVIS DRAIN LOW-FLOW CULVERT - NW SIDE
NO SCALE



4 / C504 DAVIS DRAIN OVERFLOW STRUCTURE TO SITE
NO SCALE

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MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

DAVIS DRAIN OVERFLOW & LOWFLOW CULVERT DETAILS

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

C504

Bar Measures 1 inch

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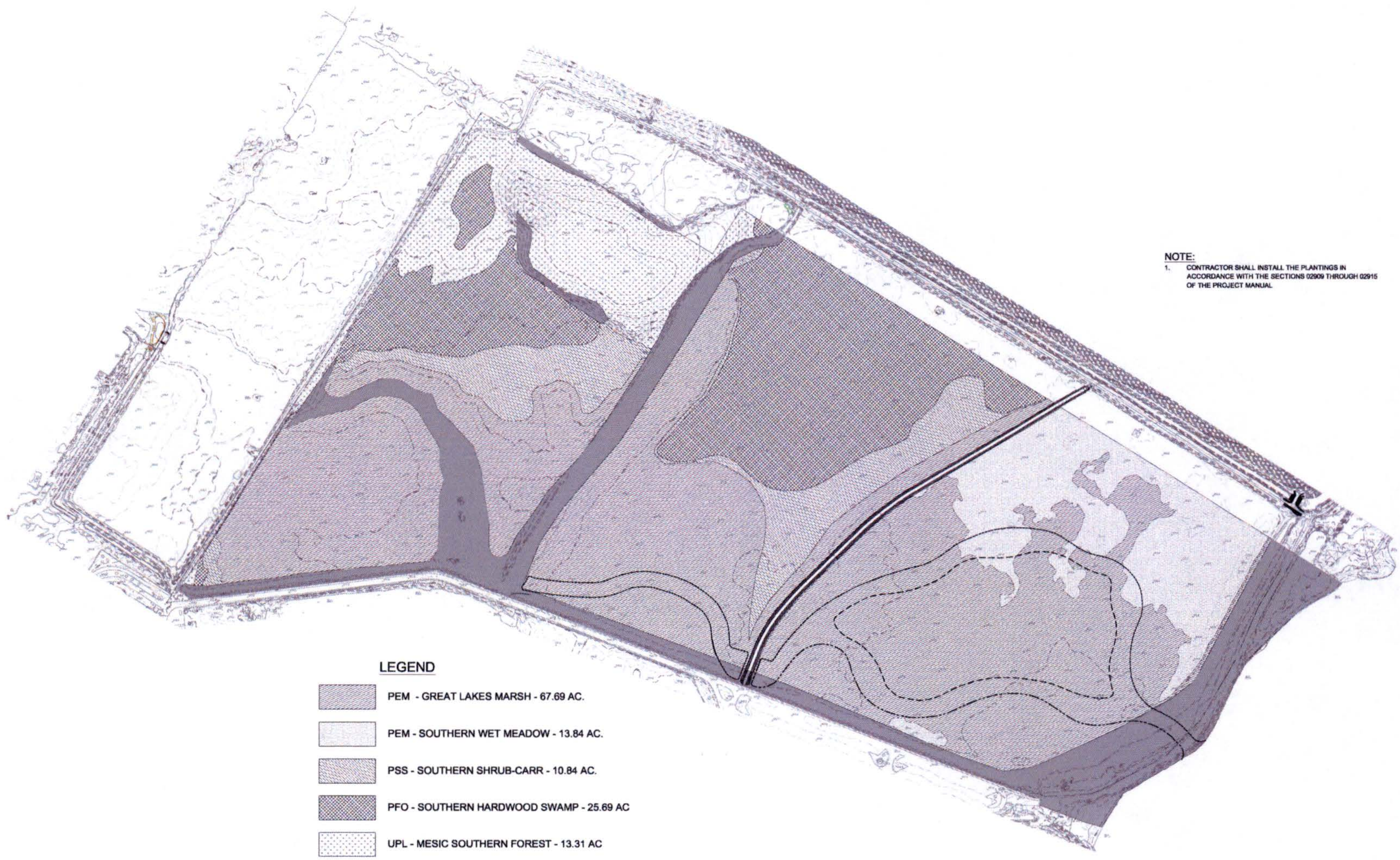

LEGEND

- PEM - GREAT LAKES MARSH - 67.69 AC.
- PEM - SOUTHERN WET MEADOW - 13.84 AC.
- PSS - SOUTHERN SHRUB-CARR - 10.84 AC.
- PFO - SOUTHERN HARDWOOD SWAMP - 25.69 AC
- UPL - MESIC SOUTHERN FOREST - 13.31 AC
- NOT PLANTED - 21.67 AC.

NOTE:

1. CONTRACTOR SHALL INSTALL THE PLANTINGS IN ACCORDANCE WITH THE SECTIONS 02909 THROUGH 02915 OF THE PROJECT MANUAL

N

0 100' 200' 400'
SCALE: 1" = 200'

TETRA TECH
www.tetratech.com
710 AVIS DRIVE
ANN ARBOR, MI 48108
PHONE (734) 665-6000 FAX (734) 665-2570

MARK	DATE	DESCRIPTION	BY

DTE ENERGY COMPANY
MONROE TOWNSHIP, MONROE COUNTY, MICHIGAN
FERMI 3 OFFSITE MITIGATION AREA

OVERALL PLANTING PLAN

Project No.:	200-01278-11007
Designed By:	J. SIWEK
Drawn By:	T. HOLLENBECK
Checked By:	N. MCPHERSON

L101

Bar Measures 1 inch

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