LARGE FILING SEPARATOR SHEET

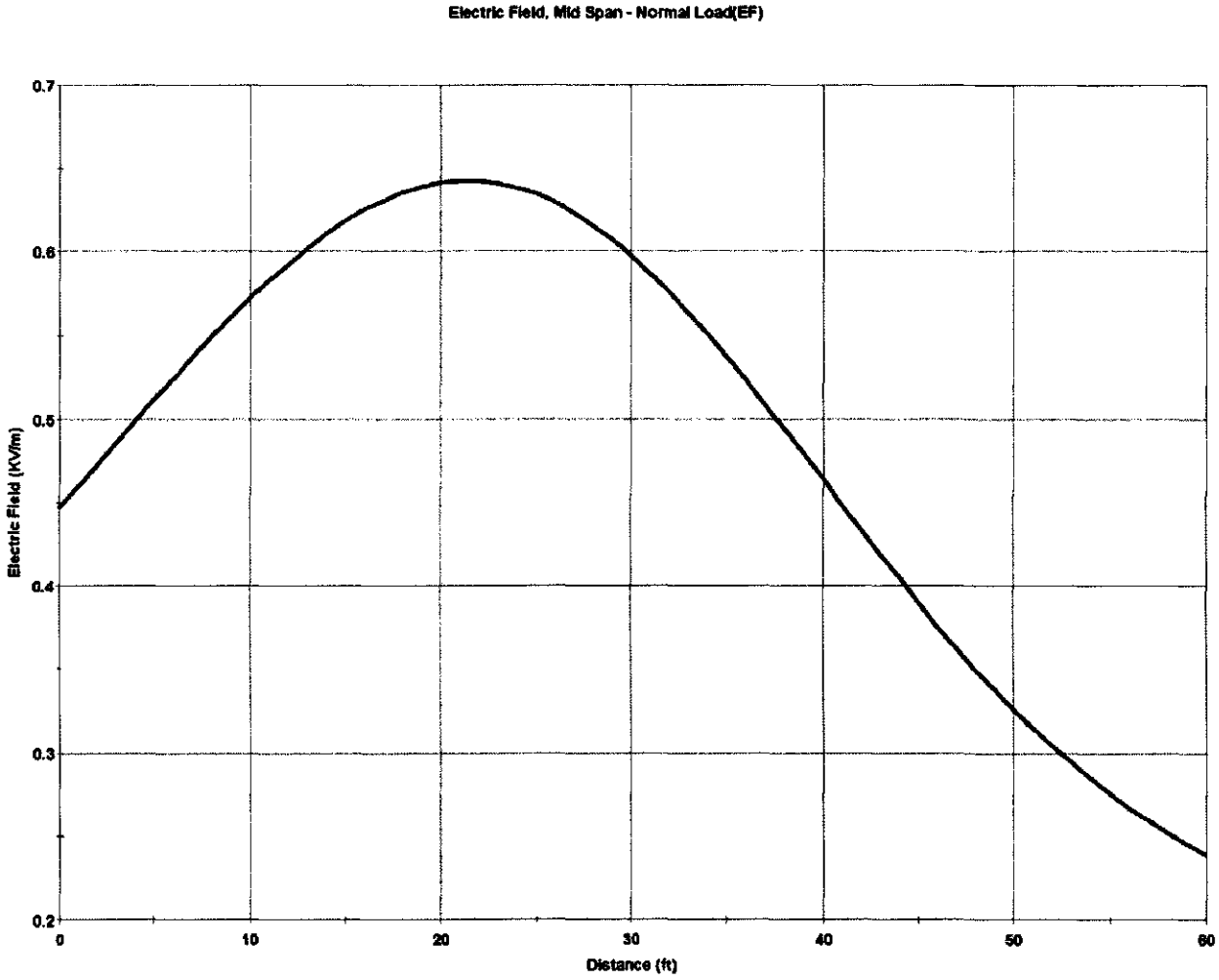
CASE NUMBER 12-1636-EL-BTX

FILE DATE 12-2-2013

SECTION 2 of 2

NUMBER OF PAGES 150

DESCRIPTION OF DOCUMENT Application



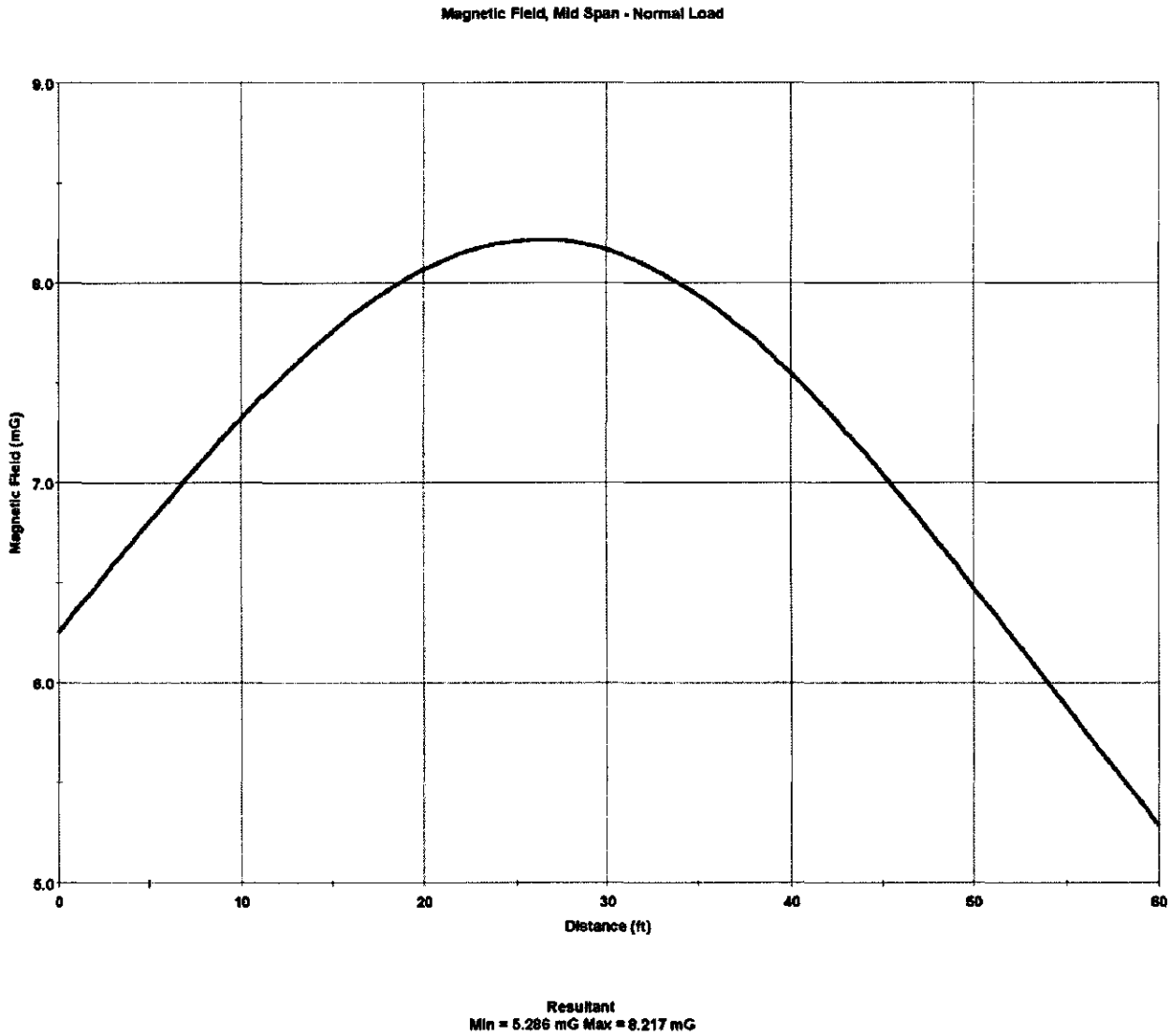
Resultant
Min = 0.239 kV/m Max = 0.643 kV/m

ATSI.
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Hayes–West Fremont 138 kV Transmission Line Project

ELECTRIC FIELD
Groton–West Fremont 138 kV Transmission Line

EXHIBIT 06–5



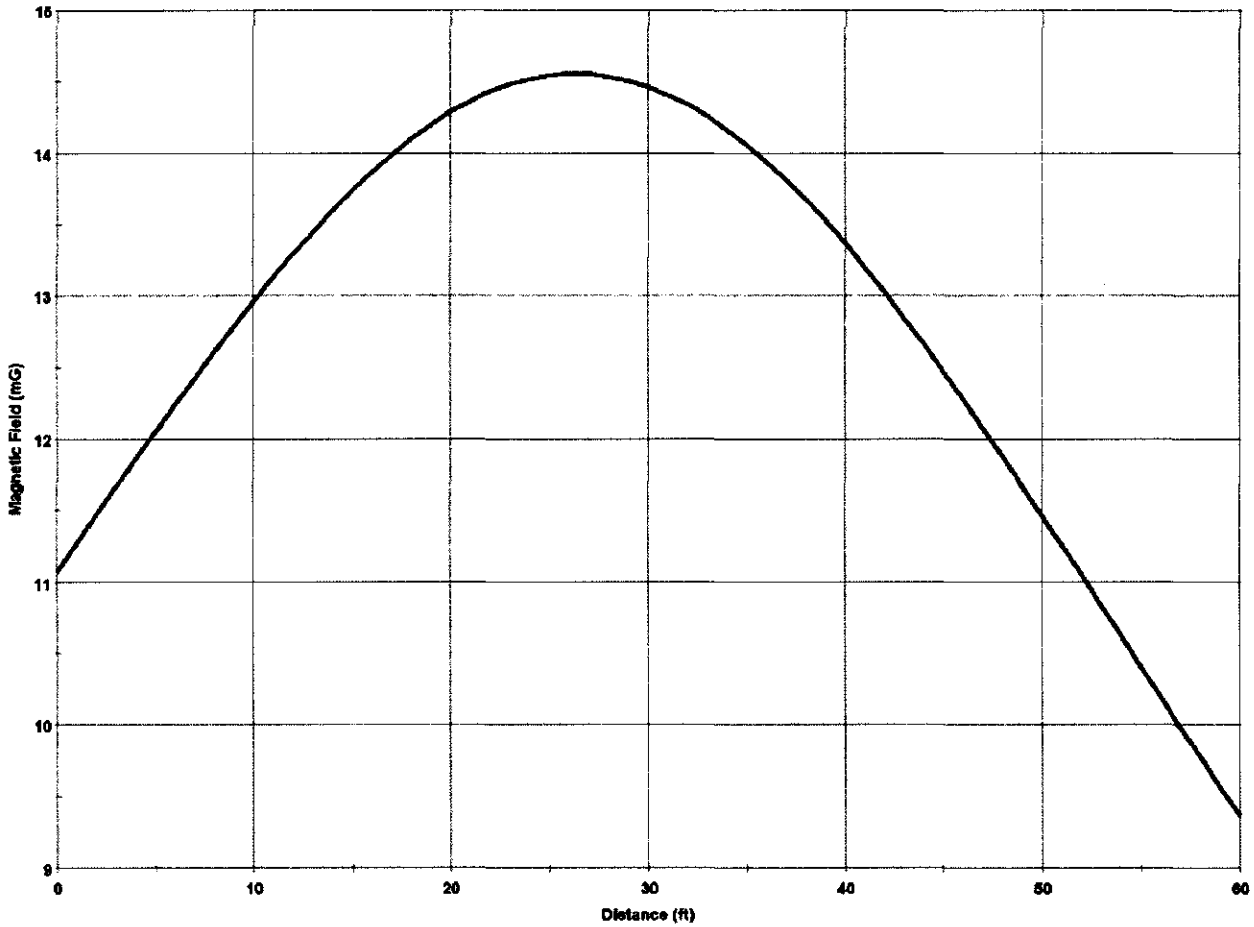
ATSI®
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Hayes–West Fremont 138 kV Transmission Line Project

MAGNETIC FIELD NORMAL LOAD
Groton–West Fremont 138 kV Transmission Line

EXHIBIT 06–6

Magnetic Field, Mid Span - Emergency Load



Resultant
Min = 9.362 mG Max = 14.552 mG

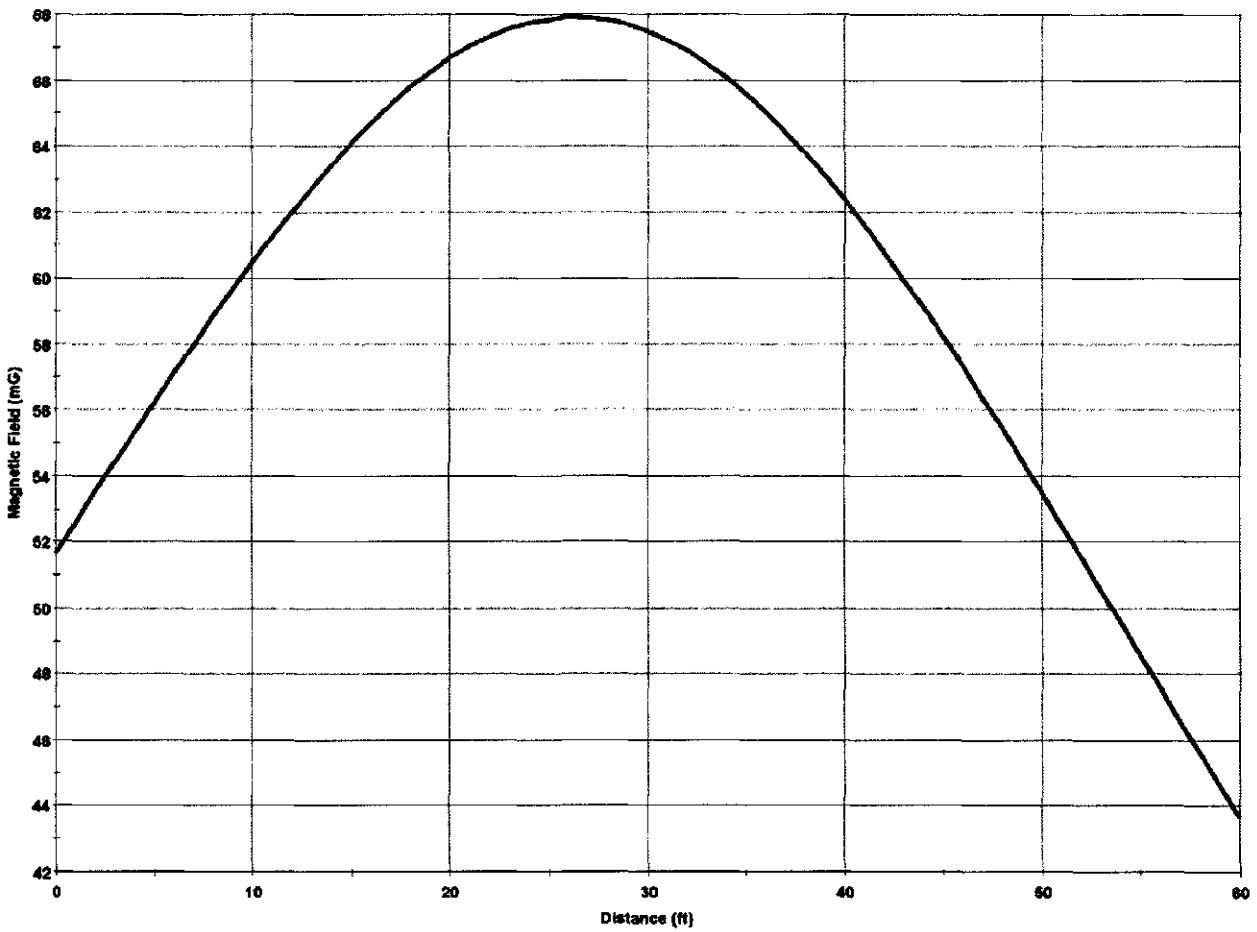
ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Hayes–West Fremont 138 kV Transmission Line Project

MAGNETIC FIELD EMERGENCY LOAD
Groton–West Fremont 138 kV Transmission Line

EXHIBIT 06–7

Magnetic Field, Mid Span - Winter Rating



Resultant
Min = 43.678 mG Max = 67.696 mG

ATSI®
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Hayes–West Fremont 138 kV Transmission Line Project

MAGNETIC FIELD WINTER RATING
Groton–West Fremont 138 kV Transmission Line

EXHIBIT 06–8

(3) Aesthetics

New transmission lines integrate with the surroundings when they parallel existing transmission lines. The Preferred and Alternate Routes parallel numerous existing transmission lines, causing minimal aesthetic impacts. In addition, wooded areas and differences in topography along the proposed ROW help limit the negative visual impacts that would be evident in an otherwise flat and open area. Siting the proposed routes in a rural location helps lessen the long-term and widespread visual impacts of the construction of such a project.

(a) Sensitive Views

The Preferred and Alternate Routes will parallel numerous existing transmission lines within FirstEnergy's ROW, thereby creating minimal visual impacts to the area. The degree of visual impact of a new manufactured structure will vary with viewer and setting. It can be evaluated by comparing the amount of contrast resulting from the construction of the new element and the existing landscape. Utilizing poles rather than steel lattice towers to support the transmission line, as well as utilizing a compact conductor arrangement, provides a more common structure as well as a streamlined structure that may blend better with the existing landscape.

(b) Structure Design Features, as Appropriate

Transmission line structures, conductors, associated hardware, and guy and anchor arrangements are primarily dictated by engineering requirements. The conductor arrangements and structure designs proposed for the project are shown in the figures of Section 4906-15-04 of the Application.

(c) Facility Effect on Site and Surrounding Area:

The evaluation and selection of the Preferred and Alternate Routes in the Project area took into consideration the potential aesthetic impacts of the proposed facilities. Routing decisions were made to avoided visually sensitive areas such as residences, recreational areas, and institutional land uses to the greatest extent possible.

(d) Minimization of Visual Impacts

The main form of visual impact minimization for the proposed Preferred and Alternate Routes is the placement of the majority of the proposed transmission line, where practical, on existing structures or adjacent to existing transmission infrastructure, utilizing existing utility ROW. This minimizes the contrast with the existing landscape and consequently aesthetic impacts.

(4) Radio and Television Interference Levels

No radio or television interference is expected to occur from the operation of the proposed transmission line along either the Preferred or Alternate Routes. The following information relates to the electromagnetic influence of the proposed transmission line upon both radio frequency interference (RFI) noise and television interference (TVI) noise. During the operation of the line, gas type discharges (corona) would result in either of these types of electromagnetic interference. However, large corona levels are typically not encountered at 138 kV, so these types of interference do not generally occur. Consequently, the potential for radio or television interference is minimal.

The radio frequency noise level of the line during heavy rain is greater than the fair weather noise level. However, the quality of radio reception under typical heavy rain conditions is affected more by atmospheric conditions than by operation of transmission lines.

Gas-type (corona) discharges can also produce RFI and TVI. These are localized effects (form ball and socket hardware in insulators, hardware-to-hardware, line to hardware, etc.) primarily from defective hardware and may be easily and quickly detected. Once detected, the hardware either may be repaired or replaced, thus eliminating the interference source.

(F) CULTURAL RESOURCES IMPACTS

Data for known cultural resource landmarks was obtained from cultural resource background research performed by Gray and Pape, Inc.

(1) Location Studies

Data for known cultural resource landmarks were obtained from OHPO Online Mapping System as well as a pedestrian survey conducted in November 2012 and May 2013.

Preferred Route: There were no historic structures or National Register of Historic Places (NRHP) sites identified within 1,000 feet of the Preferred Route. Fourteen previously recorded archaeology sites were identified within 1,000 feet of the Preferred Route; no previously archaeology sites were identified within 100 feet of the Preferred Route.

Preferred Route Option B: No historic structures or National Register of Historic Places (NRHP) sites identified within 1,000 feet of Preferred Route Option B or the corresponding 1.45-mile segment of the Preferred Route. Three previously recorded archaeology sites were identified within 1,000 feet of Preferred Route Option B; two archaeology sites were identified within 1,000 of the corresponding 1.45-mile segment of the Preferred Route. No previously recorded archaeology sites were identified within 100 feet of Preferred Route Option B or the corresponding 1.45-mile segment of the Preferred Route.

Alternate Route: There were no historic structures or National Register of Historic Places (NRHP) sites were identified within 1,000 feet of the Alternate Route. Twenty-four previously recorded archaeology sites were identified within 1,000 feet of the Alternate Route; two previously recorded archaeology sites were identified within 100 feet of the Alternate Route.

(2) Construction

Based on background research and pedestrian surveys conducted for the proposed Project, there do not appear to be any adverse impacts to previously identified cultural resources as a result of the construction of the proposed Project. FirstEnergy will coordinate with the Ohio Historic Preservation Office (OHPO) on the necessity for further Phase 1 studies.

(3) Operation and Maintenance

Transmission line maintenance operations will be generally limited to occasional inspections. Therefore, no significant impacts on cultural resources are anticipated during operation and maintenance of the line.

(4) Mitigation Procedures

A Phase I Cultural Resource Survey will be conducted for those areas that have not already been surveyed, if deemed necessary by the OHPO. If cultural resources are identified, they will be avoided to the greatest extent possible. In the unlikely event that impacts are unavoidable, FirstEnergy will coordinate with OHPO before proceeding and they will consider any necessary mitigation measures after any additional archaeological work was conducted.

(G) NOISE

(1) Construction

During the construction phase of the transmission line installation, a temporary increase in noise will result from the equipment used to excavate, install equipment, and where necessary, clear the area of any woody brush. Standard construction techniques will be used, and procedures will be in compliance with applicable OSHA standards. As a result, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Project is estimated at approximately 16 months. It is anticipated that noise-sensitive areas will not be significantly affected by the construction, maintenance, or operation of the transmission line for either the Preferred or Alternate Route.

(a) Dynamiting or blasting activities. None anticipated.

(b) Operation of earth moving and excavating equipment. Most of the excavating will be limited to drilling auger holes for the poles for the Project. A vehicle-mounted auger would be used to bore holes for the poles. Each wood pole will be direct embedded in an approximately 3-foot diameter hole, 8 to 12 feet deep. In the few select locations where steel poles are needed, an excavator will dig an a circular area 9 feet in diameter, 20-40 feet deep for the concrete foundation.

(c) Driving of piles. None anticipated.

(d) Erection of structures. Structures will be erected by vehicle-mounted cranes.

(e) Truck traffic. Beyond construction equipment access, pole, and hardware equipment delivery, no other additional truck traffic is anticipated for the Project.

(f) Installation of equipment. The equipment will be installed using linemen and bucket trucks.

(2) Operation and Maintenance

No noise impacts are anticipated from the operation of the proposed transmission line. Periodic maintenance noise will include vehicles and other noise related to ROW clearing and infrequent maintenance of the structures or conductors.

(3) Mitigation Procedures

Mitigation procedures will include properly maintained construction equipment with muffles, construction during daylight to the extent feasible, and noise related procedures done according to OSHA requirements. No additional noise mitigation is expected as noise impacts will be limited to construction equipment and will be temporary in nature.

(H) OTHER SIGNIFICANT ISSUES

As indicate elsewhere in this Application, a considerable number of comments have been received from the community that identify Peninsular Farms as an area of interest and historic

significance to the local community. Many of the comments have objected to installing a transmission line on Peninsular Farms. Peninsular Farms is a privately owned area of approximately 470 acres located on the west side of the Sandusky River north of Fremont, Ohio. The proposed Alternate Route crosses the western and southern portions of Peninsular Farms in areas that are currently being used primarily as agricultural fields in addition to the main driveway into the property located near the southeast corner of the property. Many of the public comments have described Peninsular Farms as being located on the Whittaker Reserve and as the largest remaining acreage of the original 1,289 acres that comprised the first European settlement in Ohio. This area is also described as the home to the final resting place of James and Elizabeth Whittaker, the original settlers of the property. In addition to a few farming structures, Peninsular Farms contains a couple of residences and associated structures, and unlike the substantial nearby development of the City of Fremont, has largely remained undeveloped. In addition to the farm land and structures, Peninsular Farms includes areas of diverse habitats of woods, meadows, wetlands, and riverside land. Although Peninsular Farms is privately owned, several of the letters appear to describe Peninsular Farms in terms of the setting of a public park. As the location of the Alternate Route is near the western and southern boundaries of Peninsular Farms, impacts of installing the Project on Peninsular Farms has been minimized to the extent practical. However, if the transmission line is constructed along the Alternate Route, limited impacts to the Peninsular Farms property are anticipated due to the construction, operation and maintenance of the Project along the proposed Alternate Route and would include temporary construction and maintenance activities, adding the transmission line as an additional visual element on the boundary of the site and along its driveway, and removal of incompatible vegetation along and adjacent to the right-of-way.

There are no other significant socioeconomic or land use impact issues anticipated beyond those addressed within this Application.

Appendix 6-1
Local Public Officials

APPENDIX 06-1

Hayes-West Fremont 138 kV Transmission Line Project
Public Officials Contacted and Officials to be Served
A Copy of Certified Application

Sandusky County:

Danny Polter
Commissioner
622 Croghan St.
Fremont, OH 43420

Matt Damschroder
Commissioner
622 Croghan St.
Fremont, OH 43420

Terry Thatcher
Commissioner
622 Croghan St.
Fremont, OH 43420

Kay Reiter
Executive Director, Economic Development
2511 Countryside Dr.
Fremont, OH 43420

James Moyer, P.E.
County Engineer
2500 W. State St.
Fremont, OH 43420

City of Fremont:

Jim Ellis
Mayor
323 S. Front St.
Fremont, OH 43420

Sandusky Township:

Gilbert Overmyer
Trustee
2207 Oak Harbor Rd.
Fremont, OH 43420

Joseph Luc
Trustee
2207 Oak Harbor Rd.
Fremont, OH 43420

Rice Township:

Tim King
Trustee
110 County Road 119
Fremont, OH 43420

Don Atkinson
Trustee
110 County Road 119
Fremont, OH 43420

Riley Township:

Gary Overmyer
Trustee
3093 State Route 412
Fremont, OH 43420

David Sachs
Trustee
3093 State Route 412
Fremont, OH 43420

Erie County:

The Honorable Pat Shenigo
Erie County Commissioner
2900 Columbus Ave.
Sandusky, OH 44870
Phone 419-627-7700

The Honorable Tom Ferrell
Erie County Commissioner
2900 Columbus Ave.
Sandusky, OH 44870
Phone 419-627-7700

The Honorable William Monaghan
Erie County Commissioner
2900 Columbus Ave.
Sandusky, OH 44870
Phone 419-627-7700

Mike Jay
Director, Economic Development
323 S. Front St.
Fremont, OH 43420

Mr. John Farschman P.E., P.S.
Erie County Engineer
2900 Columbus Ave.
P.O. Box 1180
Sandusky, OH 44870
Phone 419-627-7710

Steve Poggiali, Director
Erie County Regional Planning Commission
2900 Columbus Ave
Sandusky, OH 44870
Phone 419- 627-6671

John Antesberger
Trustee
3093 State Route 412
Fremont, OH 43420

Perkins Township

Mr. Jeff Ferrell
Trustee, Perkins Township
1210 E. Bogart Road
Sandusky, OH 44870
Phone 419-609-1431

Timothy Coleman
Trustee, Perkins Township
1210 E. Bogart Road
Sandusky, OH 44870
Phone 419-609-1431

Margaretta Township

Mr. Mike Printy
Trustee, Perkins Township
1210 E. Bogart Road
Sandusky, OH 44870
Phone 419-609-1431

Ms. Jane Gildenmeister
Fiscal Officer, Perkins Township
1210 E. Bogart Road
Sandusky, OH 44870
Phone 419-609-1431

Mr. Gary Pooch
Trustee, Margaretta Township
4518 Tiffin Ave
Castalia, OH 44824
Phone 419-625-0209

Mr. Tim Riesterer
Trustee, Margaretta Township
3320 Maple Ave.
Castalia, OH 44824
Phone 419-684-5960

Mr. Joe Bias Jr.
Trustee, Margaretta Township
9010 Rogers Road
Castalia, OH 44824
Phone 419-684-7575

Ms. Mary Ann Lindsley
Fiscal Officer, Margaretta Township
P.O. Box 215
Castalia, OH 44824
Phone 419-684-9279

Groton Township

Mr. Roger Rowland
Trustee, Groton Township
11212 Bemis Road
Bellevue, OH 44811
Phone 419-656-3038

Mr. Roger Russell
Trustee, Groton Township
9916 N. State Route 269
Bellevue, OH 44811
Phone 419-483-3895

Mr. Ronald Brown
Trustee, Groton Township
12009 Potter Road
Bellevue, OH 44811
Phone 419-483-7649

Ms. Linda Jett
Fiscal Officer, Groton Township
7215 Magill Road
Bellevue, OH 44811
Phone 419-483-784

Oxford Township

Mr. Mike Parker
Trustee, Oxford Township
5617 Taylor Road
Sandusky, OH 44870
Phone 567-205-0001

Mr. Scott Leber
Trustee, Oxford Township
2512 Higbee Road
Monroeville, OH 44847
Phone 419-499-2705

Mr. James Stewart
Trustee, Oxford Township
8719 Ransom Road
Monroeville, OH 44847
Phone 419-359-1576

Mr. Phillip M. David
Fiscal Officer, Oxford Township
4516 Wood Road
Monroeville, OH 44847
Phone 419-359-1535

Townsend Township

Mr. Jeffrey Miller
Trustee, Townsend Township
1071 County Road 302
Clyde, OH 43410
Phone 419-357-8967

Mr. Bruce Meggitt
Trustee, Townsend Township
5625 State Route 412
Vickery, OH 43464
Phone 419-547-9115

Ms. Jean Leber
Trustee, Townsend Township
1560 County Road 310
Clyde, OH 43410
Phone 419-547-7374

Ms. Cathy Bales
Fiscal Officer, Townsend Township
2739 County Road 306
Vickery, OH 43464
Phone 419-684-5384

Appendix 6-2
Public Information Meeting Materials

Ensuring Service Reliability
for FirstEnergy Customers

Proposed Transmission Line from Perkins Township, Erie County, Ohio, to Sandusky Township, Sandusky County, Ohio

Energizing the Future

FirstEnergy's "Energizing the Future" initiative involves installing transmission projects within FirstEnergy's footprint that PJM has determined are needed to ensure system reliability as power plants in the region are deactivated.

PJM Interconnection (PJM) is the regional transmission organization that coordinates the movement of electricity and oversees reliability in all or part of 13 states and the District of Columbia. PJM has identified numerous transmission projects that are needed throughout the region to ensure system reliability as power plants in the region are deactivated. These include nine FirstEnergy plants that ultimately will be deactivated in the region due to the high cost of complying with the U.S. EPA Mercury and Air Toxics Standards (MATS) and other environmental rules.

While the bulk of FirstEnergy's projects are needed to ensure system reliability as power plants are deactivated in northern Ohio, transmission projects will also be completed in Pennsylvania, West Virginia, New Jersey and Maryland as part of FirstEnergy's on-going commitment to enhance its transmission system reliability. The company estimates spending between $700-$900 million over the next five years on these projects.

FirstEnergy's projects are both small and large. The small projects include adding transformers and other facilities in existing substation sand replacing conductors on existing transmission lines. The larger projects involve three main types of transmission reinforcement: building new 138 and 345 kilovolt transmission lines; constructing new substations; and converting some of FirstEnergy's retired generating units to synchronous condensers to provide voltage support in the northern Ohio region.

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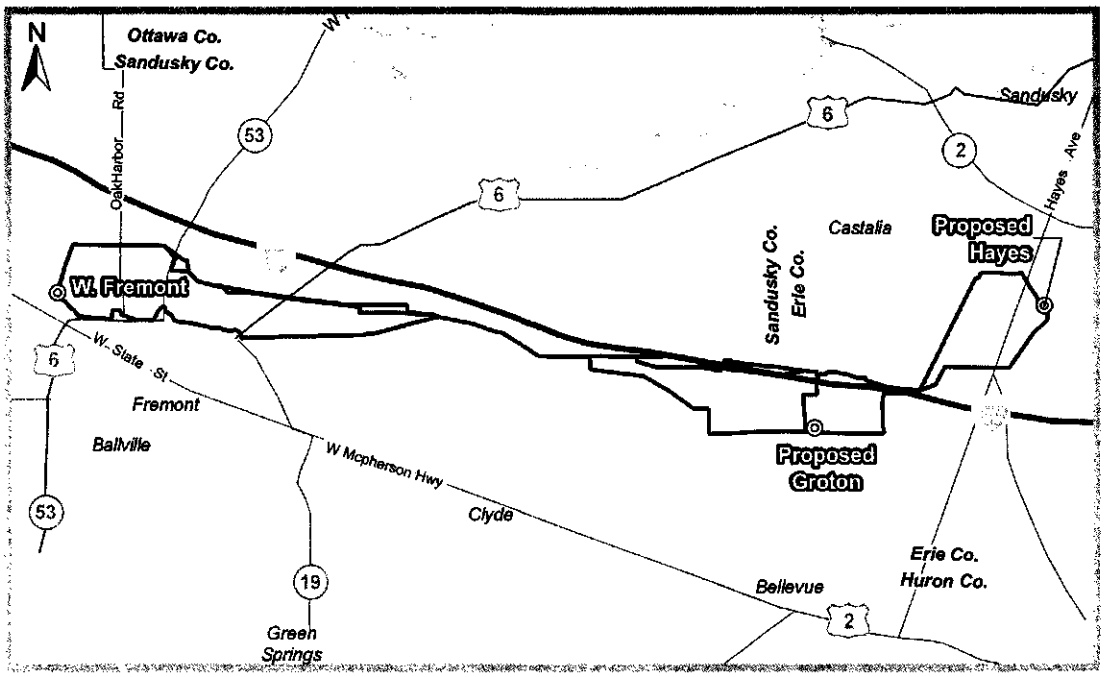

Various potential routes are being considered for the proposed Hayes-West Fremont Transmission Line Project. However, only one will be chosen.

FirstEnergy

Proposed Transmission Line from Perkins Township, Erie County, to Sandusky Township, Sandusky County, Ohio

One of the FirstEnergy projects involves building a new 138 kilovolt (kV) transmission line that will extend approximately 30 miles from the company's proposed new Hayes Substation in Erie County to the existing West Fremont Substation in Sandusky County, with a connection to a proposed distribution substation ("Groton" on map.)

Transmission: Approximately 30 miles of double circuit 138 kV transmission line is planned for the project. If approved, the line will run from the new Hayes Substation in Erie County to the existing West Fremont Substation in Sandusky County. The line is planned to be built primarily on single wood poles, with two guyed wood poles at significant angles in the line, and steel poles may be installed at some locations, all located within a 60 foot wide right-of-way. The preliminary estimate for this part of the project is $19 million.

Substation: Minor substation work at both the new Hayes Substation and existing West Fremont Substation will be needed. This work will include new line exits and addition of a breaker. The preliminary estimate for this part of the project is $2.4 million

Informational Meetings: Potential routes for the transmission line will be discussed at informational meetings held in the areas affected by the project. Members of the public and local officials will be invited to provide input for consideration. These comments will be used to help determine the proposed routes which are ultimately developed. These meetings are planned for October 2012.

Ohio Power Siting Board Filing: As part of the siting process in Ohio, "preferred" and "alternate" routes for the line are identified. FirstEnergy will then make a formal filing for the project with the Ohio Power Siting Board (OPSB) which will hold public hearings as part of their review process. The filing is expected to occur in March 2013. A final decision for the OPSB filing is anticipated within one year after being submitted.

Easement / Property Acquisition: Early study results indicate there will be a need for both easements and property acquisition. Acquiring any transmission rights-of-way will occur after the filing is made. However, construction will not begin until necessary approvals are received.

For more information about FirstEnergy's investment in reliability, visit www.firstenergycorp.com/transmission or call 1-800-589-2837.

PRELIMINARY PROJECT TIMELINE

July – Oct. 2012	Route Study
July – Sept. 2012	Proposed Routes Developed
Oct. 2012	Public Informational Meetings – Input Considered
March 2013	Filing with the Ohio Power Siting Board; Public Comment Period
To be determined by OPSB	Public Hearings
Mid 2017	Permits Received/Construction Begins
Aug. 31, 2018	PJM Requested In-Service Date

Produced by FirstEnergy Communications

FirstEnergy

Enhancing Service Reliability
for FirstEnergy Customers

Proposed Transmission Line from Perkins Township, Erie County, Ohio, to Sandusky Township, Sandusky County, Ohio

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While the bulk of FirstEnergy's projects are needed to ensure system reliability as power plants are deactivated in northern Ohio, transmission projects will also be completed in Pennsylvania, West Virginia, New Jersey and Maryland as part of FirstEnergy's on-going commitment to enhance its transmission system reliability. The company estimates spending between $500-$700 million over the next five years on these projects.

FirstEnergy's projects are both small and large. The small projects include adding transformers and other facilities in existing substations and replacing conductors on existing transmission lines. The larger projects involve three main types of transmission reinforcement: building new 138 and 345 kilovolt transmission lines; constructing new substations; and converting some of FirstEnergy's retired generating units to synchronous condensers to provide voltage support in the northern Ohio region.

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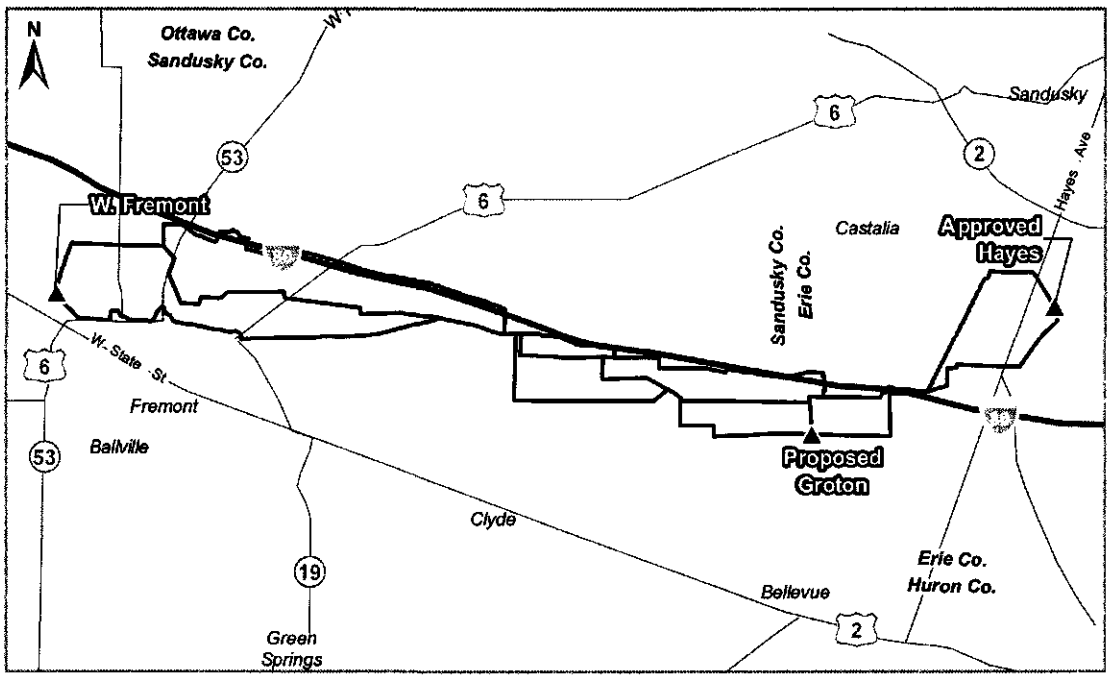

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Transmission: Approximately 30 miles of double circuit 138 kV transmission line is planned for the project. If approved, the line will run from the new Hayes Substation in Erie County to the existing West Fremont Substation in Sandusky County. The line – located within a 60 foot wide right-of-way – is planned to be built primarily on single wood poles; steel poles may be installed at some locations. The preliminary estimate for this part of the project is $20 million.

Substation: To accommodate the new line, minor work will be needed at the Hayes Substation and West Fremont Substation. This work will include new tranmission line exit points and the addition of a breaker. The preliminary estimate for this part of the project is $2.4 million

Informational Meetings: Potential routes for the transmission line will be discussed at an informational meeting held in the area affected by the project. Members of the public and local officials are invited to provide input for consideration. These comments will be used to help determine the proposed routes which are ultimately developed. Initial meetings were held in October 2012. An additional meeting is planned for May 2013.

Ohio Power Siting Board Filing: As part of the siting process in Ohio, "preferred" and "alternate" routes for the line are identified. FirstEnergy will submit these routes as part of a formal filing for the project with the Ohio Power Siting Board (OPSB). As part of the review process, the OPSB will hold public hearings regarding this project. The filing is expected to occur in mid to late 2013. Ultimately, the final decision for the OPSB filing is anticipated within one year after being submitted.

Easement / Property Acquisition: Early study results indicate there will be a need for both easements and property acquisition. Acquiring any transmission rights-of-way will occur after the filing is made. However, construction will not begin until necessary approvals are received.

PRELIMINARY PROJECT TIMELINE	
July 2012 – May 2013	Route Study
July 2012 – May 2013	Proposed Routes Developed
Oct. 2012; May 2013	Public Informational Meetings – Input Considered
Mid to late 2013	Filing with the Ohio Power Siting Board; Public Comment Period
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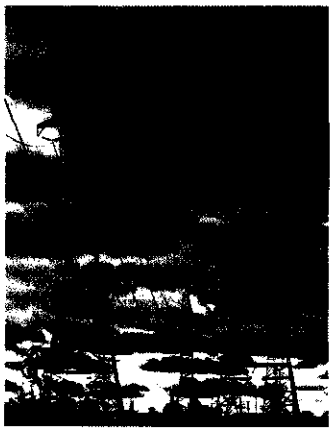
Mid 2017	Permits Received/Construction Begins
Aug. 31, 2018	PJM Requested In-Service Date

For more information about FirstEnergy's new transmission projects, visit **www.firstenergycorp.com/transmission**, call **1-800-589-2837** or email **transmissionprojects@firstenergycorp.com**.

April 2013
Produced by FirstEnergy's Communications Department

FirstEnergy

Appendix 6-3
EMF Materials



What Are Electric And Magnetic Fields?

Electric and magnetic fields are invisible lines of force that surround anything that generates (batteries, generators), transmits (power lines, wiring), or uses electricity (appliances). Electric fields are the result of voltage, which pushes electrons through a wire. Magnetic fields are produced by the flow of current through wires and electrical devices. Together, these fields from electric power sources are commonly referred to as **EMF**.

The highest levels of electric and magnetic fields, or EMF, can be measured directly near the source, and levels decrease rapidly with distance. Since electric fields are easily blocked or weakened by walls or other objects, more research has been conducted on magnetic fields.

represents a real relationship between the exposure and the disease. Experimental studies of animals and isolated cells and tissues are less likely to be inconsistent because these studies have greater control over exposures and potential confounding factors. For these reasons, it is important to consider the entire body of research, rather than focusing on the results of a single epidemiology study.

Why Has Research Continued?

As time goes on, researchers develop better ways to conduct studies and think of new questions to ask. They continue to conduct studies to be sure that these new methods and additional questions produce consistent results. For example, research continues to understand what factors might account for the statistical associations observed between childhood leukemia and magnetic fields in some studies.

What Do Scientific Health Agencies Recommend?

Since the research has not established that EMF is a cause of any long-term health effect, scientific health agencies have not recommended exposure limits at the field levels we encounter in our environment, nor have they recommended taking any official action. The WHO, for example, recommends that, if companies or individuals want to take precautionary measures regarding EMF, the measures should be low in cost and convenient to implement.

If you are looking for more information on this topic, please visit:

National Cancer Institute
http://www.cancer.gov/cancertopics/factsheet/Risk/magnetic-fields

World Health Organization
http://www.who.int/peh-emf/en/

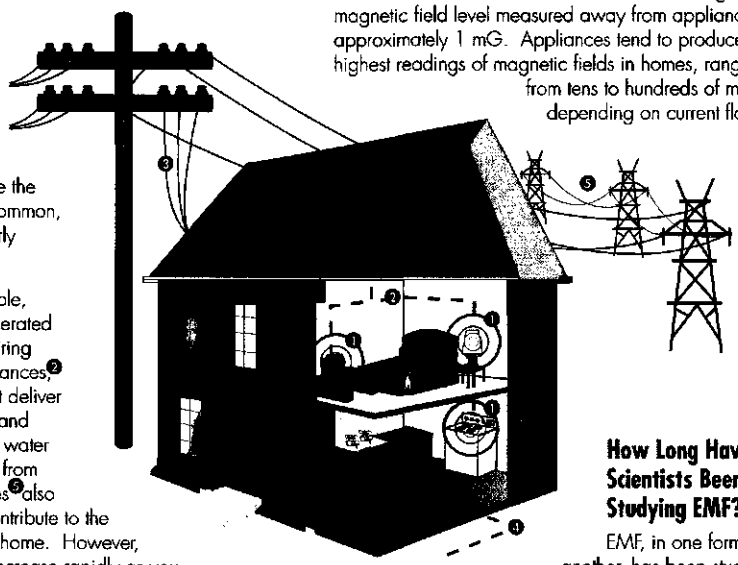
Exponent®

Electric and Magnetic Fields and Your Health

Electric and magnetic fields are properties of the space that surrounds anything that generates, transmits or uses electricity.

Where Can EMF Be Found?

We use electricity to light our homes, cook our food, and power the many appliances we use for work and leisure. Since the use of electricity is so common, EMF can be found nearly everywhere.



In our homes, for example, magnetic fields are generated from appliances,[1] the wiring that powers those appliances,[2] the distribution lines that deliver electricity to the home,[3] and any currents flowing on water pipes.[4] Magnetic fields from nearby transmission lines[5] also have the potential to contribute to the magnetic field inside a home. However, magnetic fields decrease rapidly as you move farther away from the source of the field, the contribution of transmission lines to a home's magnetic field level may be less than from other closer sources.

Equipment within substations also produces magnetic fields, but because of the way this equipment is configured, the fields drop off quickly with distance. For example, at the fence surrounding substations, the magnetic field from the substation equipment is typically within the range of levels found inside our homes. Thus, the dominant source of magnetic fields near substations is the power lines that serve that substation.

How Are Magnetic Fields Measured, And What Levels Are Typically Measured Inside Homes In The United States?

Magnetic fields are measured using a device called a gaussmeter and are reported in units called milligauss (mG).

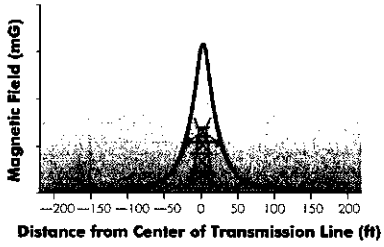
Most homes in the United States have an average magnetic field level measured away from appliances of approximately 1 mG. Appliances tend to produce the highest readings of magnetic fields in homes, ranging from tens to hundreds of mG, depending on current flow.

How Long Have Scientists Been Studying EMF?

EMF, in one form or another, has been studied for centuries. Beginning in the 1970s, scientists began to question whether these fields have the potential to cause health effects, such as cancer. This hypothesis has been tested with hundreds of studies, including:

- epidemiology studies to understand whether people with diseases were exposed to higher EMF levels;
- animal studies to test if animals exposed to very high levels of EMF have higher rates of disease; and
- studies on cells and tissues to see if EMF causes biological changes that could lead to disease.

The method scientists use to evaluate this large body of research involves examining all studies (epidemiology, animal, and cellular), giving more weight to studies of higher quality. In evaluating this large body of research, scientists look for patterns in the research that suggest a causal relationship, such as a similar result across many studies, and provide conclusions based on this process.



What Have Scientists Concluded?

Numerous scientific organizations have assembled groups of scientists with expertise in a variety of disciplines to review all of this research. These organizations include the International Agency for Research on Cancer (IARC), the International Commission of Non-Ionizing Radiation (ICNIRP), the National Institute of Environmental Health Sciences (NIEHS), the Health Protection Agency/National Radiological Protection Board (HPA/NRPB) of Great Britain, and the World Health Organization (WHO). Overall, the conclusions of these panels have been consistent:

- The research does not support the conclusion that magnetic fields cause any long-term, adverse health effects.
- Some epidemiology studies have reported an association between high, average magnetic field levels and childhood leukemia. However, due to the limitations of these studies and the lack of evidence from laboratory studies, no agency has concluded that magnetic fields cause childhood leukemia.
- The animal studies, overall, do not report an increase in cancer among animals exposed to high levels of magnetic fields after lifetime exposures.
- The laboratory studies provide no explanation as to how magnetic fields could cause disease.

These panels also concluded that, at very high field levels, EMF has the potential to cause nerve and muscle stimulation. However, the field levels found in our environment are far too low to cause these shock-like effects.

Why Do Scientific Studies Often Appear To Reach Different Conclusions On EMF Health Effects?

Epidemiology studies often report conflicting results because they are observational in nature, meaning they observe people in their ordinary environments without any control over their exposures. The results of epidemiology studies (reported as statistical associations) must be carefully evaluated to determine whether the association

4906-15-07 ECOLOGICAL IMPACT ANALYSIS

This section of the Application provides a summary of the studies that have been made to identify potential ecological impact of the proposed Hayes-West Fremont 138 kV Transmission Line Project ("Project"). Information in this section, is based on published data within 1,000 feet of either side of the proposed route centerlines and extensive field evaluation and studies conducted by Applicant and its consultants. Field studies along the entire lengths of the Preferred Route, Preferred Route Option B, and Alternate Route were conducted within a 200-foot wide corridor.

(A) SUMMARY OF ECOLOGICAL IMPACT STUDIES

As part of the preparation of this Application, Applicant conducted an ecological survey. The field survey supplemented review of published ecological information within 1,000 feet of the proposed transmission lines routes. The published information reviewed included: aerial photography; U.S. Geological Survey ("USGS") maps; U.S. Fish and Wildlife Service ("USFWS") National Wetlands Inventory ("NWI") maps; and, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service ("NRCS") soil survey maps. Additional information regarding species of concern was obtained from the Ohio Department of Natural Resources Division of Wildlife ("ODNR-DOW") Ohio Biodiversity Database, which was updated and is considered current as of November 2013. A list of species of concern and other special status species identified through correspondence and published information from ODNR and the USFWS, is provided below in section 4906-15-07(B)(3)(e).

Field reconnaissance to assess the presence and quality of wetlands and streams was conducted by ecologists employed by CH2M HILL Engineers, Inc. ("CH2M HILL"). The wetland and stream delineation was conducted along the 200-foot survey corridor of the Preferred Route (including Preferred Route Option B), and the 200-foot survey corridor of the Alternate Route, starting in November 2012 and continuing at various times through November 2013. Ecological features within the Preferred Route, Preferred Route Option B and Alternate Route are included in this Application. The delineated ecological features are described in greater detail below.

(B) ECOLOGICAL FEATURES

A map at a scale of 1:24,000 illustrating areas within 1,000 feet of the Preferred, Preferred Option B and Alternate Routes is presented as Figures 4-1A through 4-1F. Features within 1,000 feet of the proposed routes were derived from published data and, where possible, supplemented by field survey. More detailed maps at 1:4,800-scale depicting delineated ecological features, the survey corridor, and proposed ROW are provided in Figure 07-1 (overview), Figures 07-2A through 07-2FF (Preferred Route and Preferred Route Option B), and Figures 07-3A through 07-3HH (Alternate Route).

(1) Route Alignments

A map at 1:24,000-scale, including the area 1,000 feet on either side of the Project routes and the proposed turning points, is presented as Figures 4-1A through 4-1F.

(a) Preferred Route

The Preferred Route begins approximately three miles northwest of Fremont at the existing West Fremont Substation. The route extends approximately one mile northeast and continues east for approximately two miles before tracking north for approximately 0.5 mile, just south of the Ohio Turnpike (Route 90 and Route 80). The Preferred Route parallels the Ohio Turnpike for approximately eight miles before looping through the proposed Groton Distribution Substation and terminating at the Hayes Substation. The Preferred Route is 28.95 miles and traverses mostly agricultural land, as well as forested, commercial/industrial, residential, and recreational lands. The Preferred Route parallels and crosses two sets of railroad tracks and several utility ROWs. The Preferred Route is located in Sandusky, Riley, Townsend, and York Townships, Sandusky County and Groton, Oxford, and Perkins Townships, Erie County.

An alternative option for a segment of the Preferred Route has been included in this application to be used in the event that construction approval cannot be obtained for the ODNR property approximately 5 miles east of the western terminus of the Preferred Route. This segment, which will be referred to as "Preferred Route Option B," is 1.44 miles and primarily crosses agricultural fields.

Information is reported below for the Preferred Route, which includes the segment complimentary to Preferred Route Option B, and Preferred Route Option B individually.

(b) Alternate Route

The Alternate Route is identical to the Preferred Route for the first approximately four miles, until the proposed transmission line crosses the Norfolk and Western Railroad. From there, the Alternate Route generally runs east, looping through the proposed Groton Distribution Substation and terminating at the Hayes Substation. The Alternate Route is 30.47 miles and traverses agricultural, forested, commercial/industrial, residential, and recreation land; it parallels and crosses two sets of railroad tracks and several utility ROWs. The Alternate Route is located in Sandusky, Riley, Green Creek, Townsend, and York Townships, Sandusky County and Groton, Margaretta, and Perkins Townships, Erie County.

(2) Substations and Compressor Stations

The Applicant requires the Project to either loop into or pass through the proposed Groton Distribution Substation. The proposed location of the distribution substation is shown on Figure 4-1D in Groton Township, Erie County, Ohio, approximately four miles north of Bellevue, Ohio, for both the Preferred and Alternate Routes. The western terminus of both routes is the existing West Fremont Substation which is located in Sandusky Township, Sandusky County. The eastern terminus of both routes is the Hayes Substation which is currently under construction and is located in Perkins Township, Erie County, Ohio. The existing West Fremont Substation, shown on Figure 4-1A, is located at the west end of the proposed line, approximately three miles northwest of Fremont, Ohio. The Hayes Substation, shown on Figure 4-1F, is located at the end of the proposed transmission line, approximately four miles south of Sandusky, Ohio.

(3) All Areas Currently Not Developed For Agricultural, Residential, Commercial, Industrial, Institutional, or Cultural Purposes, Including:

(a) Streams and Drainage Channels: Stream evaluations were conducted within the survey corridor of the Preferred Route, Preferred Route Option B and Alternate Route. Streams identified along the Preferred Route and Preferred Route Option B are mapped at 1:4800 scale

on Figures 07-2A through 07-2FF. Streams identified along the Alternate Route are mapped at 1:4,800 scale on Figures 07-3A through 07-3HH.

Streams that drain areas greater than one square mile were assessed using the Ohio Environmental Protection Agency ("Ohio EPA") Qualitative Habitat Evaluation Index ("QHEI"). Within the QHEI scoring convention, streams are classified based on their drainage area. QHEI streams that drain an area greater than 20 square miles are classified as "large streams", and streams that drain an area less than 20 square miles are classified as "headwaters." QHEI-classified streams then receive a narrative rating based upon their score. The narrative rating gives a general indication of aquatic assemblages that may be found at a given stream. Five narrative ratings scale the 100 point scoring system. Very poor streams have a QHEI score less than 30 for both headwaters and large streams. Poor streams have a QHEI score from 30 to 42 for headwaters, 30 to 44 for large streams. Fair streams have a QHEI score from 43 to 54 for headwaters, 45 to 59 for large streams. Good streams have a QHEI score from 55 to 69 for headwaters, 60 to 74 for large streams. Streams that have a QHEI score greater than or equal to 70 for headwaters, or greater than or equal to 75 for large streams are classified as excellent.

Streams with a drainage basin less than one square mile were evaluated using the Ohio EPA Headwater Habitat Evaluation Index ("HHEI"). The HHEI is a rapid field assessment method for physical habitat that can be used to assess the biological potential of most Primary Headwater Habitat ("PHWH") streams. Headwater streams are considered by Ohio EPA guidance to be first- and second-order streams, meaning streams that have no upstream tributaries or those that have only first-order tributaries, respectively. Headwater streams are scored on the basis of channel substrate composition, bankfull width, and maximum pool depth. Assessed stream reaches result in a score (0 to 100) that is converted to a specific PHWH stream class. Streams that are score from 0 to 29.9 are typically grouped into Class 1 PHWH Streams, streams that score from 30 to 69.9 are generally Class 2 PHWH Streams, and streams that score from 70 to 100 are generally Class 3 PHWH Streams. There is flexibility and some gray areas in the scoring system; a stream can score relatively high based on physical habitat, but actually belong in a lower class, and vice-versa. Evidence of anthropogenic alterations to the natural channel will result in a "Modified" qualifier for the stream. It should be noted that the HHEI and the PHWH evaluation method and ranking system are found in guidance only and are not rule requirements.

The Preferred Route survey corridor contains 40 assessed streams yielding a total of approximately 20,598 linear feet within the 200-foot wide survey corridor. Table 07-1A summarizes attributes of each Preferred Route stream. Streams identified along the Preferred Route and Preferred Route Option B are mapped at 1:4,800 scale on Figures 07-2A through 07-2FF.

Preferred Route Option B survey corridor contains 3 assessed streams yielding a total of approximately 1,566 linear feet within the 200-foot wide survey corridor. Table 07-1A summarizes attributes of each Preferred Route Option B stream. Streams identified along the Preferred Route are mapped at 1:4,800 scale on Figures 07-2G and 07-2H.

The Alternate Route survey corridor contains 39 assessed streams yielding a total of approximately 16,235 linear feet within the 200-foot wide survey corridor. Table 07-1C summarizes attributes of each Alternate Route stream. Streams identified within the Alternate Route are mapped at 1:4,800 scale on Figures 07-3A through 07-3HH.

Impacts to these streams are described further at pages 07-51 *et seq*.

TABLE 07-1A

DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B SURVEY CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used*	Score*	Class or Narrative Description*	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
PREFERRED ROUTE SURVEY CORRIDOR									
SB_S004*	UNT to Little Muddy Creek	Intermittent	HHEI	57	Modified Class II PHWH	24.9	Yes	215	60
SB_S005*	UNT to Little Muddy Creek	Ephemeral	HHEI	32	Modified Class II PHWH	11.8	Yes	205	60
SB_S007*	UNT to Muskellunge Creek	Intermittent	HHEI	52	Modified Class II PHWH	9.8	Yes	1,876	60
RG_S206	UNT to Muskellunge Creek	Intermittent	QHEI	27	Very Poor Warmwater	9.8	Yes	225	67
ME_S100	UNT to Sandusky River	Intermittent	HHEI	50	Modified Class II PHWH	9.8	Yes	1,245	105
SB_S108	Sandusky River	Perennial	NA	NA	WWH	360.9	Yes	216	65
ME_S137	UNT to Bark Creek	Ephemeral	HHEI	15	Modified Class I PHWH	1.0	Yes	226	60
ME_S138	UNT to Bark Creek	Intermittent	HHEI	52	Modified Class II PHWH	8.0	Yes	233	69
RJ_S204	Bark Creek	Perennial	NA	NA	WWH	15.0	Yes	237	65
ME_S112	Buehler Ditch	Intermittent	HHEI	53	Modified Class II PHWH	25.0	Yes	942	165
ME_S113	UNT to Buehler Ditch	Intermittent	HHEI	53	Modified Class II PHWH	15.0	Yes	205	62
ME_S118	UNT to Green Creek	Intermittent	HHEI	52	Modified Class II PHWH	9.0	Yes	237	72

TABLE 07-1A

DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B SURVEY CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
ME_S117	UNT to Green Creek	Ephemeral	HHEI	22	Modified Class I PHWH	4.0	Yes	1,745	0
ME_S116	UNT to Green Creek	Intermittent	HHEI	27	Modified Class I PHWH	8.0	Yes	212	67
ME_S123	Green Creek	Perennial	NA	NA	WWH	29.9	Yes	204	61
ME_S124	UNT to Green Creek	Ephemeral	HHEI	35	Modified Class II PHWH	1.0	Yes	1,588	0
ME_S121	UNT to South Creek	Ephemeral	HHEI	32	Modified Class II PHWH	5.0	Yes	1,195	0
ME_S120	UNT to South Creek	Perennial	QHEI	43	Fair Warmwater	11.5	Yes	205	62
ME_S119	UNT to South Creek	Ephemeral	HHEI	22	Modified Class I PHWH	3.5	No	1,405	98
ME_S129	South Creek	Perennial	NA	NA	WWH	49.9	Yes	209	60
ME_S127	UNT to South Creek	Ephemeral	HHEI	12	Modified Class I PHWH	3.0	No	78	6
ME_S130	Raccoon Creek	Perennial	NA	NA	WWH	24.9	Yes	356	99
ME_S134	UNT to Little Raccoon Creek	Intermittent	HHEI	54	Modified Class II PHWH	4.0	Yes	218	65
ME_S133	UNT to Little Raccoon Creek	Ephemeral	HHEI	22	Modified Class I PHWH	3.3	Yes	149	64
ME_S132	Little Raccoon Creek	Perennial	NA	NA	WWH	20.0	Yes	720	69
SB_S002	Pickerel Creek	Perennial	NA	NA	WWH	14.8	Yes	234	66

TABLE 07-1A

DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B SURVEY CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
SB_S114	UNT to Fuller Creek	Intermittent	HHEI	47	Modified Class II PHWH	5.9	Yes	407	181
SB_S101	Fuller Creek	Perennial	NA	NA	WWH	12.0	Yes	583	131
ME_S002	UNT to Fuller Creek	Intermittent	QHEI	25.5	Very Poor Warmwater	15.1	Yes	1,480	150
ME_S001	UNT to Fuller Creek	Intermittent	HHEI	62	Modified Class II PHWH	10.0	No	484	350
ME_S003	Strong Creek	Perennial	NA	NA	WWH	16.0	Yes	233	71
RG_S107	UNT to Scherz Ditch	Intermittent	HHEI	56	Modified Class II PHWH	10.8	Yes	285	64
RG_S108	UNT to Scherz Ditch	Intermittent	HHEI	46	Modified Class II PHWH	3.9	No	82	6
ME_S007	Mills Creek	Perennial	NA	NA	WWH	20.0	Yes	211	63
ME_S009	UNT to Mills Creek	Ephemeral	HHEI	37	Modified Class II PHWH	3.0	Yes	222	60
ME_S015	UNT to Pipe Creek	Intermittent	HHEI	60	Modified Class II PHWH	8.5	Yes	205	62
ME_S014	UNT to Pipe Creek	Ephemeral	HHEI	40	Modified Class II PHWH	7.0	Yes	260	79
Project Preferred Routes Total:						**40 streams**		**20,598**	**2,972**

TABLE 07-1A

DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B SURVEY CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
OPTION B SURVEY CORRIDOR									
ME_S107	UNT to Bark Creek	Intermittent	HHEI	14	Modified Class I PHWH	3.3	No	24	0
ME_S108	UNT to Bark Creek	Ephemeral	HHEI	28	Modified Class I PHWH	6.6	Yes	208	62
ME_S109	UNT to Bark Creek	Ephemeral	HHEI	42	Modified Class II PHWH	6.6	No	1,334	0

Form Used[a] : QHEI = Qualitative Habitat Evaluation Index, HHEI = Headwater Habitat Evaluation Index, NA = Not Assessed (default to the State of Ohio's assessment)

Score[b] : NA = Not Assessed (default to the State of Ohio's assessment)

Narrative description[c]: based on Ohio Environmental Protection Agency's ranking. See Ohio Administrative Code 3745-1-09.

TABLE 07-1B

DELINEATED STREAMS WITHIN THE ALTERNATE ROUTE SURVEY CORRIDOR

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
SB_S004*	UNT to Little Muddy Creek	Intermittent	HHEI	57	Modified Class II PHWH	24.9	Yes	215	60
SB_S005*	UNT to Little Muddy Creek	Ephemeral	HHEI	32	Modified Class II PHWH	11.8	Yes	205	60
SB_S007*	UNT to Muskellunge Creek	Intermittent	HHEI	52	Modified Class II PHWH	9.8	Yes	1,876	60
SB_S003	Muskellunge Creek	Perennial	NA	NA	WWH	60.0	Yes	212	60
RG_S001	UNT to Muskellunge Creek	Intermittent	HHEI	38	Modified Class II PHWH	4.9	Yes	220	64
RJ_S200	UNT to Sandusky River	Intermittent	HHEI	48	Class II PHWH	6.5	Yes	144	62
RJ_S203	Sandusky River	Perennial	NA	NA	WWH	329.1	Yes	201	60
RJ_S202	UNT to Sandusky River	Intermittent	HHEI	48	Class II PHWH	10	Yes	278	79
RJ_S201	UNT to Sandusky River	Ephemeral	HHEI	29	Class I PHWH	5.5	Yes	119	49
VK_S002	Bark Creek	Perennial	NA	NA	WWH	27.9	Yes	200	60
SB_S014	Green Creek	Perennial	NA	NA	WWH	5.9	Yes	249	74
SB_S010	UNT to South Creek	Perennial	QHEI	23.5	Very Poor Warmwater	10.2	Yes	711	388
SB_S011	UNT to South Creek	Intermittent	HHEI	52	Modified Class II PHWH	3.9	Yes	215	92
SB_S012	South Creek	Perennial	NA	NA	WWH	22.0	Yes	297	68
SB_S008	Raccoon Creek	Perennial	NA	NA	WWH	26.9	Yes	204	61
SB_S009	UNT to Little Raccoon Creek	Intermittent	HHEI	47	Modified Class II PHWH	9.8	Yes	414	62

TABLE 07-1B

DELINEATED STREAMS WITHIN THE ALTERNATE ROUTE SURVEY CORRIDOR

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
SB_S100	Little Raccoon Creek	Perennial	NA	NA	WWH	10.2	Yes	276	87
RG_S200	Little Raccoon Creek	Perennial	NA	NA	WWH	16.4	Yes	3,084	1,231
RJ_S003	UNT to Pickerel Creek	Intermittent	HHEI	55	Modified Class II PHWH	9.8	Yes	205	60
RJ_S004	UNT to Pickerel Creek	Ephemeral	HHEI	50	Modified Class II PHWH	6.9	No	176	176
RJ_S005	Pickerel Creek	Perennial	NA	NA	WWH	0.0	Yes	292	85
RG_S100	UNT to Fuller Creek	Intermittent	HHEI	25	Modified Class I PHWH	4.9	Yes	213	68
RG_S101	UNT to Fuller Creek	Intermittent	HHEI	40	Modified Class II PHWH	7.9	Yes	244	61
RG_S102	UNT to Fuller Creek	Intermittent	QHEI	37	Poor	9.8	Yes	409	216
RG_S103	UNT to Fuller Creek	Ephemeral	HHEI	52	Modified Class II PHWH	9.8	Yes	222	69
RG_S104	UNT to Fuller Creek	Intermittent	QHEI	34	Poor Warmwater	7.9	Yes	214	68
RG_S105	UNT to Strong Creek	Perennial	QHEI	44	Fair Warmwater	15.1	Yes	977	833
RG_S106	UNT to Strong Creek	Ephemeral	HHEI	27	Modified Class I PHWH	3.6	Yes	150	60
RG_S109	UNT to Scherz Ditch	Ephemeral	HHEI	52	Modified Class II PHWH	8.9	Yes	203	60
ME_S005	UNT to Scherz Ditch	Intermittent	HHEI	67	Modified Class II PHWH	15.1	Yes	1,407	550

TABLE 07-1B

DELINEATED STREAMS WITHIN THE ALTERNATE ROUTE SURVEY CORRIDOR

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
RG_S203	Mills Creek	Perennial	NA	NA	WWH	22.0	Yes	249	70
RG_S205	UNT to Mills Creek	Intermittent	HHEI	54	Modified Class II PHWH	6.6	Yes	289	98
ME_S012	UNT to Mills Creek	Intermittent	HHEI	52	Modified Class II PHWH	10.5	No	113	0
LH_S002	UNT to Mills Creek	Intermittent	HHEI	74	Class III PHWH	6.6	Yes	349	114
LH_S003	UNT to Mills Creek	Ephemeral	HHEI	52	Modified Class II PHWH	4.9	Yes	224	67
LH_S004	UNT to Mills Creek	Perennial	QHEI	61.5	Good Warmwater	9.8	Yes	374	75
LH_S005	UNT to Mills Creek	Perennial	QHEI	55	Good Warmwater	16.4	Yes	243	62
LH_S006	Liles Ditch	Intermittent	QHEI	38	Poor Warmwater	6.6	Yes	316	102
LH_S007	UNT to Pipe Creek	Ephemeral	HHEI	28	Modified Class I PHWH	4.9	Yes	247	74
Project Alternate Route Total:						**39 streams**		**16,235**	**5,646**

Form Used[a] : QHEI = Qualitative Habitat Evaluation Index, HHEI = Headwater Habitat Evaluation Index, NA = Not Assessed (default to the State of Ohio's assessment)

Score[b] : NA = Not Assessed (default to the State of Ohio's assessment)

Narrative description[c]: based on Ohio Environmental Protection Agency's ranking. See Ohio Administrative Code 3745-1-09.

The Preferred and Alternate Routes cross one waterbody, the Sandusky River, a portion of the Sandusky River was designated as a State Scenic River in 1970. However, the proposed Preferred and Alternate Route crossing locations of the Sandusky River are downstream of the section designated as State Scenic River, which starts near Upper Sandusky and ends on the south side of Fremont, Ohio.

The proposed river crossing of the Sandusky River for the Preferred Route parallels existing linear infrastructure (the Ohio Turnpike) and an existing Ohio Edison distribution line and was selected in part to minimize vegetation clearing to the extent practical. If the Project is constructed on the Preferred Route, the existing distribution line will be relocated to the new construction. The Sandusky River, is also the only Section 10 Navigable Water crossed by the Preferred and Alternate Routes.

The Ohio EPA has established water quality use designations for streams throughout Ohio as outlined in the Ohio Administrative Code (OAC) 3745-1-07. Water quality use designations within the Sandusky River drainage basin are found in OAC-3745-1-12. State of Ohio aquatic life use designated streams that are crossed by the Preferred and/or Alternate Routes (11 in total) are listed in Table 07-2. No named streams cross Preferred Route Option B.

TABLE 07-2
STATE OF OHIO AQUATIC LIFE USE DESIGNATIONS FOR STREAMS WITHIN THE PREFERRED AND ALTERNATE ROUTE SURVEY CORRIDORS

Waterbody	Ohio EPA Aquatic Use Designation	Corresponding Field Assessed Feature(s)
Sandusky River Drainage Basin (OAC 3745-1-12)		
Muskellunge Creek	Warmwater Habitat	SB_S003
Sandusky River	Warmwater Habitat	SB_108, RJ_S203
Bark Creek	Warmwater Habitat	RJ_S204, VK_S002
Green Creek	Warmwater Habitat	ME_S123, SB_S014
South Creek	Warmwater Habitat	ME_S129, SB_S012
Raccoon Creek	Warmwater Habitat	ME_S130, SB_S008
Little Raccoon Creek	Warmwater Habitat	ME_S132, SB_S100, RG_S200
Pickerel Creek	Warmwater Habitat	SB_S002, RJ_S005
Fuller Creek	Warmwater Habitat	SB_S101, ME_S002
Strong Creek	Warmwater Habitat	ME_S003, RG_S105

TABLE 07-2
STATE OF OHIO AQUATIC LIFE USE DESIGNATIONS FOR STREAMS WITHIN THE PREFERRED AND ALTERNATE ROUTE SURVEY CORRIDORS

Waterbody	Ohio EPA Aquatic Use Designation	Corresponding Field Assessed Feature(s)
Mills Creek	Modified Warmwater Habitat	ME_S007, RG_S203

b) Lakes, Ponds, and Reservoirs: No major lakes or reservoirs were observed along the proposed Preferred or Alternate Routes.

Six ponds were identified during the field evaluation for the Preferred Route, totaling 1.34 acres. One pond along the Preferred Route was identified within an area in common with the Alternate Route, measuring 0.01 acre. One additional pond was identified along the Alternate Route, measuring 0.14 acre.

Delineated ponds within the survey corridors are mapped on Figures 07-2A through 07-2FF (Preferred Route), and are summarized in Table 07-3.

Impacts to ponds and lakes are not anticipated by the construction, operation or maintenance of the proposed Project. Best Management Practices (BMPs) including silt fencing will be used as appropriate during construction to minimize erosion and runoff siltation.

TABLE 07-3
DELINEATED PONDS WITHIN THE PREFERRED ROUTE, OPTION B, AND ALTERNATE ROUTE SURVEY CORRIDORS

Report Name	Acreage within Survey Corridor	Acreage within Construction Corridor[a]	Linear Feet Crossed by Centerline[b]
RG_P301*	0.01	0	NC
RJ_P200**	0.14	0	NC
ME_P100	0.16	0	NC
ME_P103***	<0.01	0	NC
ME_P102	0.64	0.09	NC
RG_P100	0.28	0.07	65
SB_P200	0.26	0.07	52
Total: 6	**1.34**	**0.24**	**117**

Acreage within Construction Corridor[a]: "0" indicates the pond is not within construction corridor.

TABLE 07-3

DELINEATED PONDS WITHIN THE PREFERRED ROUTE, OPTION B, AND ALTERNATE ROUTE SURVEY CORRIDORS

Report Name	Acreage within Survey Corridor	Acreage within Construction Corridor[a]	Linear Feet Crossed by Centerline[b]

Linear Feet Crossed by Centerline (feet)[b] : NC = Not Crossed by proposed centerline.

*Located in Preferred and Alternate Route area of overlap.

**Located in Alternate Route only.

***Located in Option B.

(c) Marshes, Swamps, and Other Wetlands: Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

To identify the potential for wetlands to be located within the survey corridor of the proposed routes, a desktop study of available resources was reviewed prior to the field wetland delineation. USFWS NWI maps, the NRCS soil survey, and NRCS hydric soil lists for Sandusky and Erie Counties, Ohio, were reviewed for areas within 1,000 feet of the proposed routes.

Summary of National Wetland Inventory Data

Forty-nine NWI features were mapped within 1,000 feet of the proposed centerline of the Preferred Route (Table 07-4A); three of these NWI features are crossed by the proposed centerline (two PFO1C, and one R2UBH). Fourteen NWI features are located within the survey corridor (two PFO1A, five PFO1C, one PUBGh, five PUBGx, and one R2UBH).

Two NWI features were mapped within 1,000 feet of the proposed centerline of Preferred Route Option B (Table 07-4A); neither of these NWI features is crossed by the proposed centerline. One of these features is located within the survey corridor of Preferred Route Option B (PUBGx).

TABLE 07-4A

NWI WETLANDS WITHIN 1,000 FEET OF THE PREFERRED ROUTE AND OPTION B

Wetland Type	NWI Code	NWI Habitat Type [1]	Total Number of Each Habitat Type
Preferred Route			
Lake	L1UBHx	Lacustrine Limenic Unconsolidated Bottom Permanently Flooded Excavated	1
Freshwater Emergent Wetland	PEM1C	Palustrine Emergent Persistent Seasonally Flooded	6
Freshwater Forested/ Shrub Wetland	PFO1A	Palustrine Forested Broad-Leaved Deciduous Temporary Flooded	8
Freshwater Forested/ Shrub Wetland	PFO1C	Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded	13
Freshwater Forested/ Shrub Wetland	PSS1/EM1C	Palustine Scrub-Shrub Broad-Leaved Deciduous/Palustrine Emergent Persistent Seasonally Flooded	1
Freshwater Forested/ Shrub Wetland	PSS1C	Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded	1
Freshwater Pond	PUBGh	Palustrine Unconsolidated Bottom Intermittently Exposed Diked/Impounded	2
Freshwater Pond	PUBGx	Palustrine Unconsolidated Bottom Intermittently Exposed Excavated	16
Riverine	R2UBH	Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded	1
Total Number of NWI Wetlands – Preferred Route:			**49**
Freshwater Pond	PUBGx	Palustrine Unconsolidated Bottom Intermittently Exposed Excavated	**1**
Riverine	R2UBH	Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded	**1**
Total Number of NWI Wetlands – Option B:			**2**

Total number of PEM = 6, PFO = 21, PSS = 2, PUB = 18, R = 1, L = 1; Note the two NWI features identified within 1,000 feet of Option B are also located within 1,000 feet of the Preferred Route.

[1] USFWS NWI Classification De-coder: http://137.227.242.85/Data/interpreters/wetlands.aspx

Thirty-three NWI features were mapped within 1,000 feet of the Alternate Route (Table 07-4B), one of the features (R2UBH) was crossed by the proposed centerline. One NWI feature is located within the survey corridor (R2UBH).

TABLE 07-4B

NWI WETLANDS WITHIN 1,000 FEET OF THE ALTERNATE ROUTE

Wetland Type	NWI Code	NWI Habitat Type [1]	Total Number of Each Habitat Type
Freshwater Emergent Wetland	PEM1A	Palustrine Emergent Persistent Temporary Flooded	11
Freshwater Emergent Wetland	PEM1C	Palustrine Emergent Persistent Seasonally Flooded	1
Freshwater Emergent Wetland	PEM1Ch	Palustrine Emergent Persistent Seasonally Flooded Diked/Impounded	2
Freshwater Forested/ Shrub Wetland	PFO1A	Palustrine Forested Broad-Leaved Deciduous Temporary Flooded	1
Freshwater Forested/ Shrub Wetland	PFO1C	Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded	4
Freshwater Forested/ Shrub Wetland	PSS1C	Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded	2
Freshwater Pond	PUBG	Palustrine Unconsolidated Bottom Intermittently Exposed	3
Freshwater Pond	PUBGx	Palustrine Unconsolidated Bottom Intermittently Exposed Excavated	8
Riverine	R2UBH	Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded	1
Total Number of Alternate Route NWI Wetlands:			**33**

Total number of PEM = 14, PFO = 5, PSS = 1, PUB = 11, R = 1, L = 1

[1] USFWS NWI Classification De-coder: http://137.227.242.85/Data/interpreters/wetlands.aspx

Delineated Wetland Data

The Ohio EPA Ohio Rapid Assessment Method for Wetlands v 5.0 ("ORAM") was developed to determine the relative ecological quality and level of disturbance of wetlands in Ohio. Wetlands are scored on the basis of several metrics, including hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these metrics is further divided into subcategories. The sum of the metrics provides a score ranging from 0 (low quality and high disturbance) to 100 (high quality and low disturbance) that is used to assign wetland category. Wetlands scored from 0 to 29.9 are grouped into Category 1, 30 to 59.9 are Category 2 and 60 to 100 are Category 3. Transitional zones exist between Categories 1 and 2 from 30 to 34.9 and between Categories 2 and 3 from 60 to 64.9. However, according to the Ohio EPA, if the wetland score falls into the transitional range, it must be given the higher Category unless data from a non-rapid biological or functional assessment indicates the wetland should be

assigned a lower category (Mack 2001). There is also a Modified Category 2 from 35 to 44.9.

The Preferred Route survey corridor contains 36 delineated wetlands totaling 8.86 acres, and the proposed centerline crosses 17 wetlands for a total of 943 linear feet as summarized in Table 07-5A. Delineated wetlands within the Preferred Route survey corridor are mapped on Figures 07-2A through 07-2FF.

The Preferred Route Option B survey corridor contains one delineated wetland totaling 0.29 acre and the proposed centerline of Preferred Route Option B does not cross this wetland as summarized in Table 07-5A. The delineated wetland within Preferred Route Option B is mapped on Figures 07-2G.

TABLE 07-5A
DELINEATED WETLANDS WITHIN THE PREFERRED ROUTE AND OPTION B SURVEY CORRIDORS

Report Name	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Survey Corridor	Acreage within Construction Corridor[b]	Linear Feet Crossed by Centerline (feet)[c]
Preferred Route						
ME_W102	PEM	47	2 or 3	<0.01	0.00	NC
ME_W101	PFO	58	2 or 3	0.22	0.05	50
ME_W100	PFO	48	2	0.12	0.06	15
ME_W103	PEM	16.5	1	0.18	0.01	NC
ME_W105	PEM	35	Modified 2	0.01	<0.01	NC
ME_W104	PFO	38	Modified 2	0.16	0.15	138
ME_W106	PEM	34.5	1 or 2 Gray Zone	0.03	0.02	31
RJ_W002	PFO	49	2 or 3	0.91	0.33	234
RJ_W001*	PEM	17	1	0.55	0.02	14
ME_W122	PEM	11	1	0.08	0.02	9
ME_W120	PEM	18	1	0.01	0.01	6
ME_W121	PEM	11	1	0.14	0.00	NC
SB_W200	PEM	11	1	0.46	0.00	NC
RJ_W201	PEM	8	1	0.04	0.00	NC
ME_W107	PEM	23	1	0.14	0.00	NC
ME_W108	PEM	28	1	0.10	0.00	NC
ME_W109	PEM	14	1	0.44	0.01	NC

TABLE 07-5A

DELINEATED WETLANDS WITHIN THE PREFERRED ROUTE AND OPTION B SURVEY CORRIDORS

Report Name	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Survey Corridor	Acreage within Construction Corridor[b]	Linear Feet Crossed by Centerline (feet)[c]
ME_W112	PSS	28	1	0.06	0.05	54
ME_W112	PEM	28	1	0.05	0.03	21
ME_W111	PEM	12	1	0.07	0.03	NC
ME_W110	PSS	56	2 or 3	0.21	0.00	NC
ME_W110	PFO	56	2 or 3	0.82	<0.01	NC
ME_W113	PEM	12	1	0.68	0.23	NC
ME_W119	PEM	11.5	1	1.03	0.07	NC
ME_W118	PEM	31	1 or 2 Gray Zone	0.22	0.07	53
ME_W117	PSS	34	1 or 2 Gray Zone	0.10	0.06	42
ME_W116	PEM	15.5	1	0.28	0.08	1
VK_W004	PEM	13	1	0.01	<0.01	NC
VK_W005	PFO	52.5	2 or 3	0.15	0.06	58
VK_W006	PFO	52.5	2 or 3	0.05	0.00	NC
RG_W100	PFO	43.5	Modified 2	0.06	0.00	NC
ME_W002	PSS	29	1	0.02	0.02	NC
RG_W304	PEM	10	1	0.05	0.02	11
RG_W300	PEM	16	1	0.50	0.18	141
RG_W303	PSS	18	1	0.64	0.02	NC
RG_W302	PEM	23	1	0.04	0.03	28
RG_W301	PEM	19	1	0.18	0.05	NC
RG_W207	PEM	10	1	0.05	0.01	10
Project Preferred Route Total:			**36 wetlands**	**8.86**	**1.70**	**943**
Option B						
RJ_W001*	PEM	17	1	**0.29**	0.02	NC
Project Option B Total:			**1 wetland**		**0.02**	**0**

Cowardin Wetland Type[a]: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested

Acreage within Construction Corridor[b]: "0" indicates the wetland is not within construction corridor

Linear Feet Crossed by Centerline (feet)[c]: NC = Not Crossed by proposed centerline

*RJ_W001 is in both the Preferred Route and Option B

The Alternate Route survey corridors contain 12 delineated wetlands totaling 3.01 acres, and the proposed centerlines cross 9 wetlands for a total of 465 linear feet as summarized in

Table 07-5B. Delineated wetlands within the Alternate Route survey corridors are mapped on Figures 07-3A through 07-3HH and are summarized in Table 07-5B below.

TABLE 07-5B
DELINEATED WETLANDS WITHIN THE ALTERNATE ROUTE SURVEY CORRIDOR

Report Name	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Survey Corridor	Acreage within Construction Corridor[b]	Linear Feet Crossed by Centerline[c]
RG_W001	PFO	51	2	0.45	0.15	113
RG_W002	PSS	14	1	0.06	0.06	75
RG_W003	PSS	22	1	0.38	0.13	103
RJ_W200	PFO	47	2	0.06	0.02	14
SB_W001	PFO	26.5	1	0.05	0.01	14
RG_W200	PEM	18	1	0.57	0.00	NC
RG_W101	PEM	36.5	Modified 2	0.22	<0.01	NC
RG_W103	PEM	32	1 or 2 Gray Zone	0.02	0.00	NC
RG_W201	PEM	42	Modified 2	0.64	0.05	24
RG_W204	PEM	11	1	0.29	0.04	32
RG_W205	PEM	11	1	0.13	0.04	25
LH_W003	PEM	10	1	0.15	0.08	63
Project Alternate Route Total:			**12 wetlands**	**3.01**	**0.59**	**465**

Cowardin Wetland Type[a]: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested
Acreage within Construction Corridor[b]: "0" indicates the wetland is not within construction corridor
Linear Feet Crossed by Centerline (feet)[c]: NC = Not Crossed by proposed centerline

(d) Woody and Herbaceous Vegetation Land: A variety of woody and herbaceous lands are present within the survey corridors of the proposed routes. Habitat descriptions applicable to both proposed routes, including Preferred Route Option B, are provided in section 4906-15-07(E).

(e) Locations of Threatened and Endangered Species: Consultation letters will be sent to USFWS and ODNR-DOW after submittal of this Application. Coordination with ODNR-DOW was initiated during the planning stages of the Project to obtain Ohio Biodiversity Database records in November 2013 to obtain records for a one-mile buffer area of the Preferred and Alternate Routes, including Preferred Route Option B. If future data received from ODNR-DOW differs from the data provided in this Application,

updates will be provided. Table 07-6 identifies records of state and federally listed species within 1,000 feet of the Project that were provided in November 2013.

TABLE 07-6
OHIO BIODIVERSITY DATABASE SPECIES OF CONCERN RECORDS WITHIN 1,000 FEET OF THE PREFERRED ROUTE, OPTION B, AND ALTERNATE ROUTE

Common Name	Scientific Name	Category	State Status	Federal Status	Route Alignment
Blanding's turtle	*Emydoidea blandingii*	Vertebrate Animal	Threatened	Species of Concern	Preferred Route, Option B, and Alternate Route

In addition, several species were identified by the ODNR as having records located within one mile of the Preferred Route, Preferred Route Option B, and Alternate Route. Two of these species, the bald eagle (*Haliaeetus leucocephalus*, no state status, Federal Species of Concern) and eastern foxsnake (*Pantherophis gloydi*, State Species of Concern, no federal status), were observed during field surveys for the Project.

(4) Soil Associations in the Corridor:

Various soil associations are crossed along the Preferred Route, Preferred Route Option B, and Alternate Route survey corridors. Based on soil series data, areas with slopes greater than 12 percent or highly erodible soils are limited in the study area. These areas are described in section 4906-15-07(G). No soil conditions were found that would potentially limit construction of the proposed Project.

Table 07-7 lists the soils associations crossed by the Preferred Route, Preferred Route Option B, and Alternate Route.

TABLE 07-7
SOIL ASSOCIATIONS CROSSED BY THE PREFERRED ROUTE, PREFERRED ROUTE OPTION B, AND ALTERNATE ROUTE SURVEY CORRIDORS

Soil Association	Percent of Soil Association within Survey Corridor
Preferred Route	
Kibbie-Colwood	2.2
Lenawee-Del Rey	44.5
Milton-Millsdale-Castalia	18.0
Nappanee-Hoytville	12.4
Pewamo-Bennington	4.0

TABLE 07-7

SOIL ASSOCIATIONS CROSSED BY THE PREFERRED ROUTE, PREFERRED ROUTE OPTION B, AND ALTERNATE ROUTE SURVEY CORRIDORS

Soil Association	Percent of Soil Association within Survey Corridor
Spinks-Kibbie-Belmore	5.9
Toledo	6.5
Tuscola-Kibbie	6.5
Option B	
Lenawee-Del Rey	100.0
Alternate Route	
Kibbie-Colwood	16.0
Lenawee-Del Rey	28.2
Milton-Millsdale-Castalia	18.1
Nappanee-Hoytville	15.1
Pewamo-Bennington	1.2
Spinks-Kibbie-Belmore	9.0
Tuscola-Kibbie	12.4

(C) IMPACTS OF ALTERNATIVE ROUTES ON WATERBODIES

Construction Impact

The construction impact section is organized by the Preferred Route, Preferred Route Option B, and the Alternate Route. Although the field assessment looked at a 200-foot wide corridor, this will be reduced to a 60 foot wide corridor for construction. The following discussion of construction related impacts focuses on the use of a 60-foot construction corridor (the construction corridor).

Preferred Route: The Preferred Route contains 34 streams, totaling 2,483 linear feet within the proposed 60-foot wide construction corridor. The location and approximate extents of these streams are shown on Figures 07-2A through 07-2FF. Table 07-8A provides detailed information on stream impacts within the Preferred Route construction corridor.

Modified Class I streams: Five Modified Class I streams totaling 295 linear feet were identified within the Preferred Route construction corridor. Three of the streams will be

crossed by the Preferred Route centerline. HHEI scores for these streams ranged from 12 to 27.

Modified Class II streams: Sixteen Modified Class II streams totaling 1,520 linear feet were assessed within the Preferred Route construction corridor. Fourteen of the streams will be crossed by the Preferred Route centerline. HHEI scores for these streams range from 32 to 62.

Very Poor Warmwater streams: Two Very Poor Warmwater streams were assessed within the Preferred Route construction corridors totaling 217 linear feet. These streams will be crossed by the proposed Preferred Route centerline. QHEI scores for these streams range from 25.5 to 27.

Poor Warmwater streams: No Poor Warmwater streams were assessed within the Preferred Route construction corridor.

Fair Warmwater streams: One Fair Warmwater stream totaling 62 linear feet was assessed within the Preferred Route construction corridor. This stream will be crossed by the proposed Preferred Route centerline. The QHEI score for this stream is 43.

Good Warmwater streams: No Good Warmwater streams were assessed within the Preferred Route construction corridor.

Excellent Warmwater streams: No Excellent Warmwater streams were assessed within the Preferred Route construction corridor.

Not Assessed streams: Not Assessed streams are streams or rivers that have aquatic life use designations from Ohio EPA that are used instead of an assessment by a CH2M HILL biologist. Ten streams have been identified as Not Assessed within the Preferred Route construction corridor.

Preferred Route Option B: Preferred Route Option B contains one stream, totaling 62 linear feet within the proposed construction corridor. The location and approximate extents of this stream is shown on Figure 07-2G and 07-2H. Table 07-8A provides detailed information on stream impacts within the Option B construction corridor.

Modified Class I streams: One Modified Class I stream totaling 62 linear feet was assessed within the Preferred Route Option B construction corridor. This stream will be crossed by the Preferred Route Option B centerline. The HHEI score for this stream is 28.

TABLE 07-8A
DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B CONSTRUCTION CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
PREFERRED ROUTE									
SB_S004*	UNT to Little Muddy Creek	Intermittent	HHEI	57	Modified Class II PHWH	24.9	Yes	215	60
SB_S005*	UNT to Little Muddy Creek	Ephemeral	HHEI	32	Modified Class II PHWH	11.8	Yes	205	60
SB_S007*	UNT to Muskellunge Creek	Intermittent	HHEI	52	Modified Class II PHWH	9.8	Yes	1,876	60
RG_S206	UNT to Muskellunge Creek	Intermittent	QHEI	27	Very Poor Warmwater	9.8	Yes	225	67
ME_S100	UNT to Sandusky River	Intermittent	HHEI	50	Modified Class II PHWH	9.8	Yes	1,245	105
SB_S108	Sandusky River	Perennial	NA	NA	Warmwater Habitat	360.9	Yes	216	65
ME_S137	UNT to Bark Creek	Ephemeral	HHEI	15	Modified Class I PHWH	1.0	Yes	226	60
ME_S138	UNT to Bark Creek	Intermittent	HHEI	52	Modified Class II PHWH	8.0	Yes	233	69
RJ_S204	Bark Creek	Perennial	NA	NA	Warmwater Habitat	15.0	Yes	237	65
ME_S112	Buehler Ditch	Intermittent	HHEI	53	Modified Class II PHWH	25	Yes	942	165
ME_S113	UNT to Buehler Ditch	Intermittent	HHEI	53	Modified Class II PHWH	15	Yes	205	62

TABLE 07-8A
DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B CONSTRUCTION CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
ME_S118	UNT to Green Creek	Intermittent	HHEI	52	Modified Class II PHWH	9	Yes	237	72
ME_S116	UNT to Green Creek	Intermittent	HHEI	27	Modified Class I PHWH	8	Yes	212	67
ME_S123	Green Creek	Perennial	NA	NA	Warmwater Habitat	29.9	Yes	204	61
ME_S120	UNT to South Creek	Perennial	QHEI	43	Fair Warmwater	11.5	Yes	205	62
ME_S119	UNT to South Creek	Ephemeral	HHEI	22	Modified Class I PHWH	3.5	No	1,405	98
ME_S129	South Creek	Perennial	NA	NA	Warmwater Habitat	49.9	Yes	209	60
ME_S127	UNT to South Creek	Ephemeral	HHEI	12	Modified Class I PHWH	3	No	78	6
ME_S130	Raccoon Creek	Perennial	NA	NA	Warmwater Habitat	24.9	Yes	356	99
ME_S134	UNT to Little Raccoon Creek	Intermittent	HHEI	54	Modified Class II PHWH	4	Yes	218	65
ME_S133	UNT to Little Raccoon Creek	Ephemeral	HHEI	22	Modified Class I PHWH	3.3	Yes	149	64
ME_S132	Little Raccoon Creek	Perennial	NA	NA	Warmwater Habitat	20	Yes	720	69
SB_S002	Pickerel Creek	Perennial	NA	NA	Warmwater Habitat	14.8	Yes	234	66
SB_114	UNT to Fuller Creek	Intermittent	HHEI	47	Modified Class II PHWH	5.9	Yes	407	181

TABLE 07-8A
DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B CONSTRUCTION CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
SB_101	Fuller Creek	Perennial	NA	NA	Warmwater Habitat	12	Yes	583	131
ME_S002	UNT to Fuller Creek	Intermittent	QHEI	25.5	Very Poor Warmwater	15.1	Yes	1,480	150
ME_S001	UNT to Fuller Creek	Intermittent	HHEI	62	Modified Class II PHWH	10	No	484	350
ME_S003	Strong Creek	Perennial	NA	NA	Warmwater Habitat	16	Yes	233	71
RG_S107	UNT to Scherz Ditch	Intermittent	HHEI	56	Modified Class II PHWH	10.8	Yes	285	64
RG_S108	UNT to Scherz Ditch	Intermittent	HHEI	46	Modified Class II PHWH	3.9	No	82	6
ME_S007	Mills Creek	Perennial	NA	NA	Modified Warmwater Habitat	20	Yes	211	63
ME_S009	UNT to Mills Creek	Ephemeral	HHEI	37	Modified Class II PHWH	24.9	Yes	222	60
ME_S015	UNT to Pipe Creek	Intermittent	HHEI	60	Modified Class II PHWH	11.8	Yes	205	62
ME_S014	UNT to Pipe Creek	Ephemeral	HHEI	40	Modified Class II PHWH	9.8	Yes	260	79
Project Preferred Route Total:					**36 streams**			**14,504**	**2,972**
PREFERRED ROUTE OPTION B									
ME_S108	UNT to Bark Creek	Ephemeral	HHEI	28	Modified Class I PHWH	6.6	Yes	208	62

TABLE 07-8A
DELINEATED STREAMS WITHIN THE PREFERRED ROUTE AND PREFERRED ROUTE OPTION B CONSTRUCTION CORRIDORS

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
Project Option B Total:					**1 stream**			**208**	**62**

Form Used[a] : QHEI = Qualitative Habitat Evaluation Index, HHEI = Headwater Habitat Evaluation Index, NA = Not Assessed (default to the State of Ohio's assessment)

Score[b] : NA = Not Assessed (default to the State of Ohio's assessment)

Narrative description[c]: based on Ohio Environmental Protection Agency's ranking. See Ohio Administrative Code 3745-1-09.

*Indicates that the feature is found along the Preferred and Alternate Routes.

Alternate Route: The Alternate Route contains 39 streams with a total of 5,646 linear feet within the proposed construction corridor. The location and approximate extents of these streams are shown on Figures 07-3A through 07-3HH. Table 07-8B provides detailed information on stream impacts within the Alternate Route construction corridors.

Class I streams: One Class I stream totaling 49 linear feet was assessed within the Alternate Route construction corridor. This stream will be crossed by the proposed Alternate Route centerline. The HHEI score for this stream is 27.

Class II streams: Two Class II streams totaling 141 linear feet were assessed within the Alternate Route construction corridor. These streams will be crossed by the proposed Alternate Route centerline. HHEI scores for these streams range from 42 to 47.

Modified Class I streams: Three Class I streams totaling 202 linear feet were assessed within the Alternate Route construction corridor. All three streams will be crossed by the proposed Alternate Route centerline. HHEI scores for these two streams range from 25 to 28.

Modified Class II streams: Fourteen Modified Class II streams totaling 1,539 linear feet were assessed within the Alternate Route construction corridor. Thirteen streams will be crossed by the proposed Alternate Route centerline. HHEI scores for these streams range from 32 to 67.

Modified Class 3 streams: One Modified Class 3 stream, LH_S002, totaling 114 linear feet was assessed within the Alternate Route construction corridor. LH_S002 will be crossed by the proposed Alternate Route centerline. The HHEI score for this stream was 74.

Very Poor Warmwater streams: One Very Poor Warmwater stream totaling 388 linear feet was assessed within the Alternate Route construction corridor. This stream will be crossed by the proposed Alternate Route centerline. QHEI scores for this stream is 23.5.

Poor Warmwater streams: Three Poor Warmwater streams totaling 386 linear feet were assessed within the Alternate Route construction corridor. These streams will be crossed by the proposed Alternate Route centerline. QHEI scores for these streams range from 34 to 38.

Fair Warmwater streams: One Fair Warmwater stream totaling 833 linear feet was assessed within the Alternate Route construction corridor. This stream will be crossed by the proposed Alternate Route centerline. The QHEI scores for this stream is 44.

Good Warmwater streams: Two Good Warmwater streams totaling 137 linear feet were assessed within the Alternate Route construction corridor. Both streams will be crossed by the Alternate Route centerline. QHEI scores for these streams range from 55 to 61.5.

Excellent Warmwater streams: No Excellent Warmwater streams were assessed within the Alternate Route construction corridor.

Not Assessed streams: Not Assessed streams are streams or rivers that have aquatic life use designations from Ohio EPA that are used instead of an assessment by a CH2M HILL biologist. Ten streams have been identified as Not Assessed within the Alternate Route construction corridor.

TABLE 07-8B
DELINEATED STREAMS WITHIN THE ALTERNATE ROUTE CONSTRUCTION CORRIDOR

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
SB_S004*	UNT to Little Muddy Creek	Intermittent	HHEI	57	Modified Class II PHWH	24.9	Yes	215	60
SB_S005*	UNT to Little Muddy Creek	Ephemeral	HHEI	32	Modified Class II PHWH	11.8	Yes	205	60
SB_S007*	UNT to Muskellunge Creek	Intermittent	HHEI	52	Modified Class II PHWH	9.8	Yes	1,876	60
SB_S003	Muskellunge Creek	Perennial	NA	NA	Warmwater Habitat	60.0	Yes	212	60
RG_S001	UNT to Muskellunge Creek	Intermittent	HHEI	38	Modified Class II PHWH	4.9	Yes	220	64
RJ_200	UNT to the Sandusky River	Intermittent	HHEI	42	Class II PHWH	6.5	Yes	144	62
RJ_203	Sandusky River	Perennial	NA	NA	Warmwater Habitat	329.1	Yes	201	60
RJ_202	UNT to the Sandusky River	Intermittent	HHEI	47	Class II PHWH	10	Yes	278	79
RJ_201	UNT to the Sandusky River	Ephemeral	HHEI	27	Class I PHWH	5.5	Yes	119	49
VK_S002	Bark Creek	Perennial	NA	NA	Warmwater Habitat	27.9	Yes	200	60
SB_S014	Green Creek	Perennial	NA	NA	Warmwater Habitat	5.9	Yes	249	74
SB_S010	UNT to South Creek	Perennial	QHEI	23.5	Very Poor Warmwater	10.2	Yes	711	388
SB_S011	UNT to South Creek	Intermittent	HHEI	52	Modified Class II PHWH	3.9	Yes	215	92
SB_S012	South Creek	Perennial	NA	NA	Warmwater Habitat	22.0	Yes	297	68

TABLE 07-8B
DELINEATED STREAMS WITHIN THE ALTERNATE ROUTE CONSTRUCTION CORRIDOR

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
SB_S008	Raccoon Creek	Perennial	NA	NA	Warmwater Habitat	26.9	Yes	204	61
SB_S009	UNT to Little Raccoon Creek	Intermittent	HHEI	47	Modified Class II PHWH	9.8	Yes	414	62
SB_S100	Little Raccoon Creek	Perennial	NA	NA	Warmwater Habitat	10.2	Yes	276	87
RG_S200	Little Raccoon Creek	Perennial	NA	NA	Warmwater Habitat	16.4	Yes	3,084	1,231
RJ_S003	UNT to Pickerel Creek	Intermittent	HHEI	55	Modified Class II PHWH	9.8	Yes	205	60
RJ_S004	UNT to Pickerel Creek	Ephemeral	HHEI	50	Modified Class II PHWH	6.9	No	176	176
RJ_S005	Pickerel Creek	Perennial	NA	NA	Warmwater Habitat	24.0	Yes	292	85
RG_S100	UNT to Fuller Creek	Intermittent	HHEI	25	Modified Class I PHWH	4.9	Yes	213	68
RG_S101	UNT to Fuller Creek	Intermittent	HHEI	40	Modified Class II PHWH	7.9	Yes	244	61
RG_S102	UNT to Fuller Creek	Intermittent	QHEI	37	Poor Warmwater	9.8	Yes	409	216
RG_S103	UNT to Fuller Creek	Ephemeral	HHEI	52	Modified Class II PHWH	9.8	Yes	222	69
RG_S104	UNT to Fuller Creek	Intermittent	QHEI	34	Poor Warmwater	7.9	Yes	214	68
RG_S105	UNT to Strong Creek	Perennial	QHEI	44	Fair Warmwater	15.1	Yes	977	833
RG_S106	UNT to Strong Creek	Ephemeral	HHEI	27	Modified Class I PHWH	3.6	Yes	150	60

TABLE 07-8B
DELINEATED STREAMS WITHIN THE ALTERNATE ROUTE CONSTRUCTION CORRIDOR

Report Name	Waterbody	Flow Regime	Form Used[a]	Score[b]	Class or Narrative Description[c]	Bankfull Width (feet)	Crossed by Centerline	Length within Survey Corridor (feet)	Length within Construction Corridor (feet)
RG_S109	UNT to Scherz Ditch	Ephemeral	HHEI	52	Modified Class II PHWH	8.9	Yes	203	60
ME_S005	UNT to Scherz Ditch	Intermittent	HHEI	67	Modified Class II PHWH	15.1	Yes	1,407	550
RG_S203	Mills Creek	Perennial	NA	NA	Modified Warmwater Habitat	22.0	Yes	249	70
RG_S205	UNT to Mills Creek	Intermittent	HHEI	54	Modified Class II PHWH	6.6	Yes	289	98
LH_S002	UNT to Mills Creek	Intermittent	HHEI	74	Modified Class III PHWH	6.6	Yes	349	114
LH_S003	UNT to Mills Creek	Ephemeral	HHEI	52	Modified Class II PHWH	4.9	Yes	224	67
LH_S004	UNT to Mills Creek	Perennial	QHEI	61.5	Good Warmwater	9.8	Yes	374	75
LH_S005	UNT to Mills Creek	Perennial	QHEI	55	Good Warmwater	16.4	Yes	243	62
LH_S006	Liles Ditch	Intermittent	QHEI	38	Poor Warmwater	6.6	Yes	316	102
LH_S007	UNT to Pipe Creek	Ephemeral	HHEI	28	Modified Class I PHWH	4.9	Yes	247	74
Project Alternate Routes Total:					**38 streams**			**16,123**	**5,646**

Form Used[a] : QHEI = Qualitative Habitat Evaluation Index, HHEI = Headwater Habitat Evaluation Index, NA = Not Assessed (default to the State of Ohio's assessment)

Score[b] : NA = Not Assessed (default to the State of Ohio's assessment)

Narrative description[c]: based on Ohio Environmental Protection Agency's ranking. See Ohio Administrative Code 3745-1-09.

*Indicates that the feature is found along the Preferred and Alternate Routes.

Applicant will not conduct mechanized clearing within 25 feet of any stream, and will only clear via hand cutting techniques to the extent practical with equipment use limited to removal of cut vegetation those trees and other woody vegetation in these areas that are tall enough to or have the potential to interfere with safe construction and operation of the line. It is anticipated that no streams will be filled or permanently impacted. Some streams may have to be crossed by construction vehicles. If a new stream crossing is necessary, it will employ one of the following three proposed methods to cross streams:

- Temporary Stream Ford
- Culvert Stream Crossings
- Temporary Access Bridge

Temporary stream fords are proposed for crossing low quality ephemeral and intermittent streams with a drainage basin less than one square mile. This will involve minimum clearing necessary to gain access to the stream and for passage of construction vehicles. Stone, rock or aggregate of Ohio Department of Transportation (ODOT) No.1 as a minimum size will be placed in the channel to provide a solid base for vehicle passage.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting.
- Sediment laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fences and/or filter socks will be used as needed according to local topographic conditions.
- Aggregate stone and rock used for this type of stream crossing will not be removed. It will be formed so that it does not create an impoundment, impede fish passage, or cause erosion of the stream banks.

- Following completion of the work, the areas cleared for the temporary access crossing will be stabilized through plantings of woody species compatible with the Project where appropriate. Areas of exposed soil will be stabilized in accordance with the Stormwater Pollution Prevention Plan (SWPPP) for the Project.

Culvert stream crossings are proposed for crossing marginal quality perennial, ephemeral, and intermittent streams with a drainage basin of less than one mile. These crossings may be removed or remain in place in order to provide maintenance access to the line, in locations where critical to maintaining reliable service.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting techniques rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.

- Sediment laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence and/or filter socks will be used as needed according to local topographic conditions.

- Culvert pipes will be placed on the existing streambed to avoid a drop or waterfall at the downstream end of the pipe, which would be a barrier to fish migration. Crossings will be placed in shallow areas rather than pools.

- Culverts will be sized to be at least three times the depth of the normal stream flow at the crossing location. The minimum diameter culvert that will be used is 18 inches.

- There will be a sufficient number of culvert pipes to completely cross the stream with no more than a 12-inch space between each one.

- Stone, rock or aggregate of ODOT No.1 as a minimum size will be placed in the channel, and between culverts. To prevent washouts larger stone may be used with gabion mattresses. No soil will be placed in the stream channel.

- After completion of construction, aggregate and structures such as culvert pipes used for the crossing will be left in place. Care will be taken so that aggregate does not create an impoundment or impede fish passage. Structures such as gabion mattresses will be removed.

- Stream banks will be stabilized and woody species planted as appropriate.

Temporary Access Bridges or culvert stream crossings will be used for high quality perennial, ephemeral, and intermittent streams and streams with a drainage basin greater than one square mile.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.

- Sediment laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence and/or filter socks will be used as needed according to local topographic conditions.

- Bridges will be constructed to span the entire channel. If the channel width exceeds 8 feet then a floating pier or bridge support may be placed in the channel. No more than one pier, footing or support will be allowed for every 8 feet of span width. No footings, piers or supports will be allowed for spans of less than 8 feet.

- No fill other than clean stone, free from soil, will be placed within the stream channel.

These crossings will be addressed in the SWPPP for the Project. Some of the access routes will be left in place for maintenance activity, if necessary and appropriate.

(2) Operation and Maintenance Impact

Once the transmission line is in operation, no significant impact to streams or drainage channels is anticipated. Only periodic selective removal of vegetation that interferes with the operation of the transmission line will be required. No major lakes, ponds, or reservoirs should be affected by the operation or maintenance of the proposed routes.

(3) Mitigation Procedures

A SWPPP and BMPs will be implemented during construction to control erosion. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation.

(D) WETLANDS IMPACT

The construction impact section is organized as the Preferred Route, including Preferred Route Option B, and the Alternate Route.

(1) Construction Impact

Preferred Route: The wetland delineation conducted for the Preferred Route identified 29 wetlands, totaling 1.70 acres, within the proposed 60-foot construction corridor outlined in Table 07-9A. The centerline of the Preferred Route will cross 17 wetlands totaling 943 linear feet (a comparison to the linear feet crossed and the acreage within the 200 foot verses 60 foot corridors is presented in Table 07-9A below). The locations and boundaries of these wetlands are shown on Figures 07-2A through 07-2FF. Table 07-9A provides detailed information on wetland impacts within the Preferred Route construction corridors. No wetlands are located within the Preferred Route Option B construction corridor.

TABLE 07-9A
DELINEATED WETLANDS WITHIN THE
PREFERRED ROUTE CONSTRUCTION CORRIDOR

Report Name	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Survey Corridor	Acreage within Construction Corridor	Linear Feet Crossed by Centerline[b]
ME_W101	PFO	58	2	0.22	0.05	50
ME_W100	PFO	48	2	0.12	0.06	15
ME_W103	PEM	16.5	1	0.18	0.01	NC
ME_W105	PEM	35	Modified 2	0.01	<0.01	NC
ME_W104	PFO	38	Modified 2	0.16	0.15	138
ME_W106	PEM	34.5	Modified 2	0.03	0.02	31
RJ_W002	PFO	49	2	0.91	0.33	234
RJ_W001	PEM	17	1	0.81	0.02	14
ME_W122	PEM	11	1	0.08	0.02	9
ME_W120	PEM	18	1	0.01	0.01	6
ME_W109	PEM	14	1	0.44	0.01	NC
ME_W112	PSS	28	1	0.06	0.05	54
ME_W112	PEM	28	1	0.05	0.03	21
ME_W111	PEM	12	1	0.07	0.03	NC
ME_W110	PFO	56	2	0.82	<0.01	NC
ME_W113	PEM	12	1	0.68	0.23	NC
ME_W119	PEM	11.5	1	1.03	0.07	NC
ME_W118	PM	31	1 or 2 Gray Zone	0.22	0.07	53
ME_W117	PEM	34	1 or 2 Gray Zone	0.10	0.06	42
ME_W116	PEM	15.5	1	0.28	0.08	1
VK_W004	PEM	13	1	0.01	<0.01	NC
VK_W005	PFO	52.5	2	0.15	0.06	58
ME_W002	PSS	29	2	0.02	0.02	NC
RG_W304	PEM	10	1	0.05	0.02	11
RG_W300	PEM	16	1	0.50	0.18	141
RG_W303	PSS	18	1	0.64	0.02	NC
RG_W302	PEM	23	1	0.04	0.03	28
RG_W301	PEM	19	1	0.18	0.05	NC
RG_W207	PEM	10	1	0.05	0.01	10
Project Preferred Route Total:			**29 wetlands**	**7.92**	**1.70**	**943**

Cowardin Wetland Type[a]: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested

Linear Feet Crossed by Centerline (feet)[b]: NC = Not Crossed by proposed centerline

Category 1 wetlands: Eighteen Category 1 wetlands totaling 0.86 acre were delineated within the Preferred Route construction corridor. Approximately 295 linear feet of nine Category 1 wetlands will be crossed by the Preferred Route centerline. ORAM scores for these Category 1 wetlands range from 10 to 28.

Category 1 or 2 Gray Zone wetlands: Two Category 1 or 2 wetlands totaling 0.13 acre were delineated within the Preferred Route construction corridor. Approximately 95 linear feet of the two Category 1 or 2 Gray Zone wetlands will be crossed by the Preferred Route centerline. The ORAM scores for these Category 1 or 2 wetlands were 31 and 34.

Category 2 wetlands: Six Category 2 wetlands totaling 0.53 acre were delineated within the Preferred Route construction corridor. Approximately 357 linear feet of four Category 2 wetlands will be crossed by the Preferred Route centerline. ORAM scores for these Category 2 wetlands range from 48 to 58.

Modified Category 2 wetlands: Three Modified Category 2 wetlands totaling 0.18 acre were delineated within the Preferred Route construction corridor. Approximately 169 linear feet of two Modified Category 2 wetlands will be crossed by the Preferred Route centerline. ORAM scores for Modified Category 2 wetlands ranged from 34.5 to 38.

Category 3 wetlands: No Category 3 wetlands were delineated within the Preferred Route construction corridor.

Alternate Route: The wetland delineation conducted for the Alternate Route identified ten wetlands, totaling 0.60 acres, within the proposed 60-foot construction corridors. The centerline of the Alternate Route will cross nine wetlands totaling 465 linear feet. The locations and boundaries of these wetlands are shown on Figures 07-3A through 07-3HH. Table 07-9B provides detailed information on wetland impacts within the Alternate Route construction corridor.

TABLE 07-9B
DELINEATED WETLANDS WITHIN THE ALTERNATE ROUTE CONSTRUCTION CORRIDOR

Report Name	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Survey Corridor	Acreage within Construction Corridor	Linear Feet Crossed by Centerline[b]
RG_W001	PFO	51	2	0.45	0.15	113
RG_W002	PSS	15	1	0.06	0.06	75
RG_W003	PSS	23	1	0.38	0.13	103
RJ_W200	PFO	47	2	0.06	0.02	14
SB_W001	PFO	27.5	1	0.05	0.01	14
RG_W101	PEM	37.5	Modified 2	0.22	<0.01	NC
RG_W201	PEM	42	Modified 2	0.64	0.05	24
RG_W204	PEM	11	1	0.27	0.04	32
RG_W205	PEM	11	1	0.13	0.04	25
LH_W003	PEM	10	1	0.15	0.09	67
Project Alternate Routes Total:			**10 wetlands**	**2.41**	**0.60**	**465**

Cowardin Wetland Type[a]: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested

Linear Feet Crossed by Centerline (feet)[b]: NC = Not Crossed by proposed centerline

Category 1 wetlands: Six Category 1 wetlands totaling 0.37 acre were delineated within the Alternate Route construction corridor. Approximately 316 linear feet of Category 1 wetlands will be crossed by the Alternate Route centerline. ORAM scores for these Category 1 wetlands range from 10 to 27.5.

Category 2 wetlands: Two Category 2 wetlands totaling 0.17 acre were delineated within the Alternate Route construction corridors. Approximately 127 linear feet of two Category 2 wetlands will be crossed by the Alternate Route centerline. ORAM scores for these Category 2 wetlands range from 47 to 51.

Modified Category 2 wetlands: Two Modified Category 2 wetlands totaling 0.06 acre were delineated within the Preferred Route construction corridor. Approximately 24 linear feet of one Modified Category 2 wetland (RG_W201) will be crossed by the Preferred Route centerline. ORAM scores for Modified Category 2 wetlands ranged from 37.5 to 42.

Category 3 wetlands: No Category 3 wetlands were delineated within the Alternate Route construction corridor.

Care will be taken at wetlands to avoid or minimize filling and sedimentation, which could occur as a result of construction activities. BMPs such as utilization of silt fence

and/or filter socks and construction matting will be implemented as required during construction to control sedimentation. Sedimentation potential at wetlands will be minimal due to the flat topography along the routes; structure placement; and that construction equipment will only cross wetlands if necessary, and will utilize construction matting.

Disturbance of soils in wetland areas during construction will be minimized. No fill material is planned to be placed in wetlands. It is anticipated that no structures will be placed in wetlands along the Preferred Route. Wetland areas will be clearly staked prior to the commencement of clearing in order to minimize incidental vehicle impacts. Operation of heavy mechanized equipment is not planned within identified wetland areas, although some construction equipment may need to cross wetlands. As noted, if construction equipment must cross wetlands, construction matting will be utilized. Woody vegetation in wetlands will be hand-cut by chain saws, hydro-axes, or other non-mechanized techniques. When necessary, rubber-wheeled vehicles or vehicles equipped with go tracks will be used to remove vegetation debris.

(2) Operation and Maintenance Impact

Wetlands should not be significantly affected by the operation or maintenance of the proposed transmission line. Vegetation that occurs within wetlands may require periodic cutting. It is not anticipated that such activities would result in erosion or water quality degradation. Maintenance cutting of woody vegetation in wetlands would be hand-cut by chain saws, hydro-axes, or other non-mechanized techniques.

(3) Mitigation Procedures

Construction activities within PSS and PEM wetlands may result in temporary, short-term impacts. Construction activities within PFO wetlands will result in some permanent conversion impacts. PFO wetlands that will be cleared for line construction will not be allowed to re-vegetate back to PFO, but could re-vegetate to PEM and/or PSS wetlands. Natural re-vegetation in disturbed wetlands will begin after construction crews have

completed the installation activities. Wetland mitigation, to the extent necessary, will be addressed as part of the process of obtaining any necessary wetland permits.

(E) VEGETATION IMPACT

(1) Construction Impact

The following discussion describes the potential impacts on woody and herbaceous vegetation along the proposed routes during construction. The Project is bordered by agricultural land, industrial/commercial land, old fields, paved roads, wetlands, residential land, utility ROW, railroad corridor, scrub-shrub vegetation, water, and wooded uplands. Habitat descriptions and details on the anticipated impacts due to construction of the proposed Project are provided below and in Table 07-10, respectively.

Agricultural Fields: A majority of the routes pass through fields cultivated for agricultural purposes. Corn, soybeans, and winter wheat were observed growing in fields throughout the Project area.

Commercial/Industrial: Several commercial/industrial properties were observed within the construction corridors for the Preferred and Alternate Routes. Commercial/industrial areas include infrastructure and all developed areas that are not residential. Vegetation identified within the commercial/industrial areas of the routes contained frequently mowed areas of grasses and forbs.

Old Fields: Herbaceous cover exists in successional old field communities. Old field plant communities are at the earliest stages of re-colonization following disturbance. This community type is typically short-lived (less than 10 years), giving way progressively to shrub and forest communities unless periodically re-disturbed, in which case they remain as old fields. The old field areas within the routes and adjacent areas include grasses, forbs, and occasional shrubs.

Paved Road: The proposed Preferred Route, Preferred Route Option B, and Alternate Route traverse and parallel several local, state, and interstate roads. Roadside vegetation

identified within the routes included but is not limited to grasses, forbs, and occasional shrubs and trees.

Wetlands: Wetlands were observed both within and beyond the survey corridor for both the Preferred Route, Preferred Route Option B, and Alternate Route. Detailed wetland descriptions and anticipated impacts are provided in Tables 07-9A (Preferred Route) and 07-9B (Alternate Route).

Residential: Numerous residential areas are located within 1,000 feet of the Preferred Route, Preferred Route Option B, and Alternate Route. Specifically, 182 residential areas, 20 residential areas, and 319 residential areas are located within 1,000 feet of the Preferred Route, Preferred Route Option B, and Alternate Route, respectively. One residential area is located within 100 feet of the centerline for the Alternate Route. Vegetation identified on residential property includes maintained areas of grasses and other herbaceous species.

Utility ROW: Several electric transmission ROWs were identified within or adjacent to the proposed Preferred Route, Preferred Route Option B, and Alternate Route. Vegetation along the existing transmission ROW is currently maintained by mowing and consists of grasses and forbs. Unwanted vegetation is typically removed from ROW's that pose a risk to the operation and maintenance of the transmission lines.

Railroad: Railroad ROWs exist within and adjacent to the proposed construction corridors for the Preferred and Alternate Routes. Railroad companies typically routinely clear-cut and/or spray with herbicide vegetation that grows encroaches upon the railroad tracks.

Scrub-Shrub: Scrub/shrub habitats represent the successional stage between old field and second growth forest. Dominant species consist of herbaceous communities similar to that of old field habitat with some woody species similar to those associated with upland forest habitat.

Water: Several waterbodies are located along the Preferred Route, Preferred Route Option B, and Alternate Route and include rivers, streams, and ponds. Detailed

waterbody descriptions and anticipated impacts are provided in Tables 07-1A (Preferred Route and Option B) and 07-1B (Alternate Route).

Upland Forest: Upland forests were identified along and within the Preferred Route, Preferred Route Option B, and Alternate Route. Dominant canopy species included red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), sassafras (*Sassafras albidum*), osage orange (*Maclura pomifera*), elm (*Ulmus* spp.) maple (*Acer* spp.), dogwood (*Cornus* spp.), sycamore (*Platanus occidentalis*), hackberry (*Celtis occidentalis*), quaking aspen (*Populus tremuloides*), Ohio buckeye (*Aesculus glabra*), black locust (*Robinia pseudoacacia*), honey locust (*Gleditsia triacanthos*), black cherry (*Prunus serotina*), mulberry (*Morus* sp.), and black walnut (*Juglans nigra*).

The potential impacts on woody and herbaceous vegetation along the Preferred Route will be limited to clearing within the proposed new transmission line ROW and along access roads as needed. However, trees adjacent to the proposed transmission line ROW, that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be wind-rowed or chipped and disposed of appropriately depending on landowner requests.

TABLE 07-10
APPROXIMATE VEGETATION IMPACTS ALONG THE CONSTRUCTION CORRIDORS

Land Use Type	Length of Route (in Feet)	Length of Route (in miles)	Acreage within ROW
Alternate Route			
Agricultural	127,436	24.1	172.3
Industrial/Commercial	162	<0.1	0.2
Old Field	2,224	0.4	3.4
Paved Road	1,938	0.4	7.0
Wetland	304	0.1	0.4
Residential	596	0.1	1.3
Utility Right-of-Way	18,506	3.5	23.7
Railroad	79	<0.1	0.1
Scrub Shrub	2,446	0.5	3.5
Water	1,840	0.3	2.1

TABLE 07-10
APPROXIMATE VEGETATION IMPACTS ALONG THE CONSTRUCTION CORRIDORS

Land Use Type	Length of Route (in Feet)	Length of Route (in miles)	Acreage within ROW
Forest	6,273	1.2	8.6
Preferred Route			
Agricultural	111,613	21.1	150.8
Industrial/Commercial	460	0.1	0.6
Old Field	3,761	0.7	5.6
Paved Road	1,574	0.3	3.2
Wetland	873	0.2	1.5
Quarry	7,532	1.4	10.2
Residential	2506	0.5	3.7
Utility Right-of-Way	6,134	1.2	11.4
Railroad	120	<0.1	0.2
Scrub Shrub	6,429	1.2	8.3
Water	1,028	0.2	1.5
Forest	12,321	2.3	14.9
Preferred Route Option B			
Agricultural	2,736	0.5	7.2
Industrial/Commercial	35	<0.1	0.2
Old Field	1,799	0.3	2.4
Paved Road	224	<0.1	0.3
Scrub Shrub	53	<0.1	0.1
Forest	174	<0.1	0.2

(2) Operation and Maintenance Impact

During operation of the transmission line the impacts on vegetation are anticipated to be minor. Undeveloped land not disturbed by construction should retain its current vegetation composition and continue successional development at a normal rate. Periodic mowing or cutting along the Preferred Route is not expected to result in a significant environmental impact to the vegetation.

(3) Mitigation Procedures

Experience shows that seeding in non-wetland and non-agricultural areas is advantageous to control erosion on areas disturbed by construction activities. In lightly disturbed wetlands,

existing seed banks are often capable of quickly reestablishing vegetation that is compatible with the surrounding wetland.

In wetlands, disturbances will be minor. If unanticipated and/or significant disturbance occurs in wetlands, topsoil will be segregated and replaced so that the existing seed banks will be allowed to initially re-vegetate the wetland. Additional seeding will take place only if the existing seed bank does not repopulate a wetland. These measures should preserve the aesthetic qualities of wetlands along the Preferred Route, prevent erosion, and promote habitat diversity.

(F) COMMERCIAL, RECREATIONAL, AND THREATENED/ENDANGERED SPECIES IMPACTS

The Project is located in a suburban and rural setting. The suburban areas are dominated by residences and occasional commercial businesses. The rural areas are dominated by agricultural fields, some residences, existing ROW, woodlots and wetlands. Both the Preferred and Alternate Routes, including Preferred Route Option B, , have potential habitat for wildlife species. Lists of commercial and recreational species were obtained from the ODNR-DOW annual hunting and trapping regulations.[1]

Lists of protected species are typically based on their range within Sandusky and Erie Counties, Ohio, as reported in correspondence from the ODNR-DOW and the review of USFWS county species distribution lists. Consultation letters to the ODNR-DOW and USFWS will be sent to both agencies after submittal of this Application.

Details on the expected impacts of construction, operation and maintenance, and mitigation procedures can be found following the commercial, recreational, and threatened and endangered species descriptions.

[1] ODNR–DOW Ohio Hunting and Trapping Regulations 2013-2014

(1) Construction

Commercial Species: The commercially important wildlife species along the proposed Project consist of those hunted or trapped for fur or other byproducts, and include the following. This information was obtained from ODNR-DOW A to Z Species Guide.

Beaver (*Castor canadensis*): Beavers occur in forested ponds, lakes, and rivers. In rivers, beavers make burrows with an underwater entrance in the riverbank. However, in streams, lakes and ponds, beavers usually build dams that incorporate a lodge. Based on the habitat present along the routes, there are only a few locations that beavers could potentially inhabit. No beavers or evidence of beavers were observed during the field investigations.

Coyote (*Canis latrans*): Historically coyotes prefer open territory, but in Ohio they have adapted to various habitat types. Coyotes are a very adaptable species that has prospered despite the expanding presence of human impact. This species is likely found near or within the Project but was not observed during field investigations.

Gray Fox (*Urocyon cinereogentus*): Gray foxes prefer wooded areas and partially open brush land with little human presence. Based on habitat present along the routes, this species is likely found near or within the Project but was not observed during field investigations; however, they are nocturnal animals.

Long-tailed weasel (*Mustela frenata*): The long-tailed weasel is an adaptable animal that can be found in terrestrial habitats near water. Based on habitat present along the routes, this species is likely found near or within the Project but was not observed during field investigations; however, they are generally nocturnal animals.

Mink (*Mustela vison*): Mink are usually found near water, both running and standing. Minks prefer wooded or brushy areas. This species was not observed during the field investigations, but it could inhabit select locations along the routes.

Muskrat (*Ondatra zibethicus*): The muskrat is a large freshwater rodent. This species was not observed during the field investigations, but it could inhabit select locations along the routes.

Raccoon (*Procyon lotor*): The raccoon is widespread in Ohio, even in many suburban and urban areas. Raccoons prefer wooded areas with water nearby. This nocturnal species was not observed during the field investigations, but it is likely present throughout the routes.

Red fox (*Vulpes vulpes*): The red fox inhabits a wide range of habitats. This generally nocturnal species was not observed during the field investigations, but it could inhabit select locations along the routes.

River otter (*Lontra canadensis*): River otters live in aquatic habitats such as rivers, lakes, and marshes. They prefer tributaries of large, clean drainages where there is minimal human disturbance. It should be noted that this species cannot be commercially harvested in Erie or Sandusky County. This species was not observed during the field investigations, but it could inhabit select locations along the proposed routes, including along the Sandusky River.

Striped skunk (*Mephitis mephitis*): The skunk is an adaptable animal that occupies both rural and suburban areas. Their dens may be located under buildings, in open fields, on hillsides, or under logs in the woods, which may have been self-created or formerly used by other animals. This primarily nocturnal species was not observed during the field investigations, but it likely exists along the routes.

Virginia opossum (*Didelphis virginiana*): This marsupial's preferred habitat is an area interspersed with woods, wetlands, and farmland; however they are an adaptable animal that can also be found in urban and suburban areas. This species was not observed during the field investigations, but it likely exists along the routes.

Recreational Species: Recreational terrestrial species consist of those hunted as game. Recreational species that could inhabit areas along the proposed routes include the following. This information was obtained from ODNR-DOW A to Z Species Guide.

Fowl

American crow (*Corvus brachyrhynchos*): The American crow is found in all Ohio counties. They prefer habitats with open fields and trees. American crows were observed during the field investigations along the majority of the routes.

American woodcock (*Scolopax minor*): Woodcock prefer open interspersed early successional habitats with moist loam soils, which provide earthworms. The largest populations occur in northeast, north-central, and central regions of Ohio. This species could inhabit select locations along the routes. No American woodcocks were observed during the field investigations.

American coot (*Fulica Americana*): Coots inhabit the shallows of freshwater lakes, ponds, or marshes. It is unlikely that this species would exist along the proposed routes because they are found mostly in Lake Erie marshes. This species was not observed during surveys.

Geese: Several geese species can be found in Ohio, although typically during migration: snow geese (*Chen caerulescens*), greater white-fronted geese (*Anser albifrons*), cackling geese (*Branta hutchinsii*), and brant (*Branta bernicla*). The Canada goose (*Branta canadensis*) is commonly found throughout Ohio, both as residents and migrants. Habitat for Canada geese was observed along the routes and Canada geese were the only goose species observed during field surveys.

Mourning dove (*Zenaida macroura*): Mourning doves are found near rural and suburban residences, nesting in shrubs and trees. They are also frequent in rural farmlands nesting in fencerows and edge habitats. Habitat for this species is present throughout the routes. This species was observed frequently during field surveys.

Mergansers: Several merganser species can be found in Ohio. The common merganser (*Mergus merganser*), red-breasted merganser (*Mergus serrator*), and hooded merganser (*Lophodytes cucullatus*) are waterfowl. Habitat for these species is present along the routes. This species was not observed during field surveys.

Northern bobwhite quail (*Colinus virginianus*): The northern bobwhite quail is a forest edge species. This species could exist in select locations along the routes, however it was not observed during field surveys.

Ring-necked pheasant (*Phasianus colchicus*): This species can be found primarily along agricultural edges. Pheasants succeed where farming is intensive if there is adequate undisturbed cover for nesting, and sufficient food and cover during winter. This species likely inhabits various locations along the routes, however no pheasants were observed during field surveys.

Ruffed Grouse (*Bonasa umbellus*): Grouse habitat includes mixed hardwood shrub and forest stands. Although the ruffed grouse was not observed during field surveys, there are select locations along the proposed route that contain appropriate habitat.

Teal: Several teal species could be found in Ohio. The cinnamon teal (*Anas cyanoptera*), green-winged teal (*Anas crecca*), and blue-winged teal (*Anas discors*) are waterfowl. They are usually birds of fresh, shallow marshes and rivers instead of large lakes and bays. Habitat for these species is present along the routes. This species was not observed during field surveys.

Various duck species: Various duck species can be found in Ohio, most of which only during migration. The American black duck (*Anas rubripes*), redhead (*Aythya americana*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), canvasback (*Aythya valisineria*), and northern pintail (*Anas acuta*) are usually only found in Ohio during migration and could be found near the proposed routes at that time. The mallard and wood duck are two duck species that regularly reside and migrate through Ohio.

Mallard (*Anas platyrhynchos*): Most mallards occupy extensive wetlands; however they are very adaptable. Mallards can be found inhabiting small farm ponds, ditches with flowing water, streams, lakes, and ponds in urban areas. Habitat for this species does exist throughout the routes. This species was observed during the field surveys.

Wood Duck (*Aix sponsa*): The wood duck prefers mature riparian corridors, quiet backwaters of lakes and ponds bordered by large trees, and secluded wooded swamps. Habitat for this species is present in select locations along the routes. This species was not observed during field surveys.

Wild turkey (*Meleagris gallopavo*): Wild turkeys are adaptable animals. Although they prefer mature forests, they can thrive in areas with as little as 15 percent forest cover. The wild turkey was not observed along the routes during the field surveys; however it likely inhabits locations along the routes.

Mammals

Eastern cottontail rabbit (*Sylvilagus floridanus*): This species is found in both rural and urban areas. They prefer open areas bordered by thickets or brush areas. This species preferred habitat is found throughout the routes, and was observed during the field surveys.

Gray, red, and fox squirrels (*Sciurus carolinensis, Tamiasurius hudsonicus* and *Sciurus niger*): The fox squirrel (*Sciurus niger*) is primarily an inhabitant of isolated woodlots 10 to 20 acres in size with a sparse understory. The eastern gray squirrel (*Sciurus carolinensis*) prefers more extensive woodland areas. The red squirrel (*Tamiasurius hudsonicus*) prefers coniferous and mixed forests. Squirrels were observed during the field surveys along the routes.

White-tailed deer (*Odocoileus virginianus*): White-tailed deer are found in rural and suburban areas. Indirect evidence and several sightings of this species were observed during the field surveys along the routes.

Woodchuck (*Marmota monax*): Woodchucks live in open grasslands, pastures, and woodlands. This species was observed during field surveys and is likely present throughout the routes.

Game Fish: Based upon the hydrologic connectivity and the nature of the surface water habitats within the Project, diverse game fish species are anticipated to inhabit some of the

streams that are crossed by the routes. A list of potential game fish was obtained from ODNR-DOW's Sport Fish of Ohio identification. This list was narrowed to fish likely to be in the Project area based on professional judgment and experience, and as such the list of species presented in this section is not an exhaustive list of all species known to be present in the Project area. The listed species are known to be common and likely to occur on a case by case basis, within the surface water features proposed to be crossed or encroached upon. Neither aquatic species nor habitat surveys were completed as part of the field surveys.

Bluegill (*Lepomis macrochirus*): Bluegill are found throughout the state, preferring clear ponds and lakes with rooted vegetation. This species is likely to occur in streams and ponds along the routes.

Common Carp (*Cyprinus carpio*): Carp can be found throughout the state, preferring turbid waters rich in organic matter. It is likely that common carp are present in streams along the routes.

Channel Catfish (*Ictalurus punctatus*): Channel catfish are found throughout the state in large streams and lakes. Channel catfish prefer areas with deep water, clean gravel and boulder substrates and low to moderate current. This species is likely to occur in larger streams and rivers along the routes.

Flathead Catfish (*Pylodictis olivaris*): Flathead catfish are found in large rivers, a few inland lakes, and some reservoirs that are outside the Project area in Ohio. They prefer deep pools with slow current and cover. This species is likely to occur in the larger streams along the routes.

Freshwater Drum (*Aplodinotus grunniens*): This species can be found in large lakes and big rivers, and is abundant in Lake Erie. Freshwater drum prefer deeper pools in rivers. It is likely that this species is present along the routes, specifically within the Sandusky River.

Green Sunfish (*Lepomis cyanellus*): Green sunfish are present in most lakes and streams throughout the state and are tolerant of turbid water. They are regularly

associated with some type of structure such as brush, vegetation, or rocks. This species is likely to occur in streams and ponds along the routes.

Largemouth Bass (*Micropterus salmoides salmoides*): Largemouth bass are found in ponds, lakes, and slow sluggish streams throughout the state. This species is likely to occur in streams and rivers along the routes.

Longear Sunfish (*Lepomis megalotis*): Longear sunfish are found in streams and lakes throughout the state. They prefer sluggish, clear streams of moderate size with beds of aquatic vegetation. This species may occur in streams and ponds along the routes.

Longnose Gar (*Lepisosteus osseus*): Longnose gar are a common Ohio fish. This species is likely to occur in streams and rivers along the routes.

Northern Pike (*Esox lucius*): The northern pike was once abundant in Lake Erie but are now primarily limited to the marshes and bays of the Western Basin. Although unlikely due to is limited distribution, this species may be found along the routes.

Rock bass (*Ambloplites rupestris*): Rock bass are widespread throughout the state. They prefer clear streams with coarse gravel and boulders. This species may occur in streams and rivers along the routes.

Smallmouth Bass (*Micropterus dolomieu*): Smallmouth bass are abundant in Lake Erie and often so in reservoirs and quarries. Smallmouth bass thrives in streams with gravel or rock bottoms with a visible current. This species is likely to occur in larger streams and ponds along the routes.

White Crappie (*Pomoxis annularis*): White crappie can be found in larger ponds, lakes, rivers, and inshore waters of western Lake Erie. White crappie can tolerate a wide variety of habitats and conditions. This species is regularly found near structures such as fallen trees, stumps, docks, rocks, and aquatic vegetation. This species is likely to occur in rivers along the routes, such as the Sandusky River.

White Perch (*Morone americana*): White perch are found in Lake Erie and its tributaries. This species prefers clear water with little preference for bottom type. This species is likely to occur along portions of the routes.

White Bass (*Morone chrsysops)*: White bass are found in larger lakes and rivers throughout the state. They prefer water depths of less than 30 feet in open clear water. This species is likely to occur in rivers along the routes, such as the Sandusky River.

Walleye (*Sander vitreus)*: Walleye are found in Lake Erie, the Ohio River, and are a stocked species. They prefer clear to slightly turbid waters with firm bottoms. This species is likely to occur along portions of the routes.

Yellow Perch (*Perca flavescens):* Yellow perch are found in Lake Erie, impoundments, ponds, and rivers throughout the state. They prefer clear water with moderate vegetation and sand/gravel bottoms. This species is likely to occur along portions of the routes.

Protected Species: Additional consultation letters to the USFWS and ODNR will be sent after the submittal of this Application. Initial coordination with ODNR-DOW was conducted during the planning stages of the Project to obtain Ohio Biodiversity Database records in November 2013 for a one-mile area around the proposed Preferred Route, Preferred Route Option B, and Alternate Route. If additional information is received from these4 agencies, to the extent such additional information is relevant or materially different that the information provided in November 2013, this additional information will be provided to the Board.. If consultation with the USFWS or ODNR identifies a protected species as possibly being located within the Project vicinity, the Applicant will coordinate with the appropriate agency to avoid or minimize construction impacts to the associated habitat to the extent possible. Current information on a species list obtained from USFWS county lists and the ODNR Ohio Biodiversity Database is provided in Tables 7-11 and 7-12:

TABLE 7-11
USFWS SPECIES LIST FOR THE PROJECT AREA

Common Name (Federal Status)[1]	Species Name[1]	County of Occurrence[1]	General Habitat Notes[1, 2]	Habitat Present/ Absent
Indiana bat (Endangered)	*Myotis sodalis*	Erie and Sandusky	Hibernates in caves and abandoned mines. Roosts in exfoliating/loose tree bark of living and dead trees, or cavities and hollows of dead trees.[2]	Present
Northern long-eared bat (Proposed Endangered)	*Myotis septentrionalis*	Erie and Sandusky	Hibernates in caves and mines. Swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.[1]	Present
Red Knot (Proposed Threatened)	*Calidris canutus rufa*	Erie and Sandusky	Present in Ohio during spring and fall migration.[1]	Present
Kirtland's warbler (Endangered)	*Dendroica kirtlandii*	Erie and Sandusky	Breeds in scrubby jack pine trees and winters in low scrub and transitional habitats.[2]	Absent
Piping plover (Endangered – Sandusky; Endangered and Critical Habitat - Erie)	*Charadrius melodus*	Erie and Sandusky	Breeds on sand and gravel shorelines, and behind foredunes among cobble and sparse vegetation on islands.[2]	Absent
Lakeside daisy (Threatened)	*Hymenoxys herbacea*	Erie	Full sun in dry calcareous sites. Thins soils over limestone or dolomite outcrops/exposures. Occurs nearly exclusively on alvars or bare rock, or in openings of a forest matrix.[2]	Present
Eastern massasauga (Candidate)	*Sistrurus catenatus*	Erie and Sandusky	Habitat in the eastern part of the range includes sphagnum bogs, fens, swamps, marshes, peatlands, wet meadows, and floodplains; also open savannas, prairies, old fields, and dry woodland; the snakes often occur in wetlands in fall, winter, and spring, in drier adjacent uplands in summer.[2]	Present
Rayed bean (Endangered)	*Villosa fabalis*	Sandusky	Lives in small, headwater creeks but also large streams, small or medium rivers, and occasionally natural lakes. Prefers gravel and sand substrates, and is often associated with aquatic vegetation.[2]	Present
Eastern prairie fringed orchid (Threatened)	*Platanthera leucophaea*	Sandusky	Mesic to wet prairies and wet sedge meadows. Peripheral habitat includes sedge-sphagnum bog mats around neutral pH kettle lakes, and fallow agricultural fields. Wet ditches and railroad rights-of-way (ROW) also serve as refugia.[2]	Present

TABLE 7-11
USFWS SPECIES LIST FOR THE PROJECT AREA

Common Name (Federal Status)[1]	Species Name[1]	County of Occurrence[1]	General Habitat Notes[1, 2]	Habitat Present/ Absent

Data sources include:

[1]U.S. Fish and Wildlife Service (USFWS). 2013. Ohio County Distribution of Federally-Listed Threatened, Endangered, Proposed, and candidate Species. Revised Oct. 2013. http://www.fws.gov/midwest/Endangered/lists/pdf/OhioCtyList2013.pdf. Accessed November 14, 2013.

[2]NatureServe Explorer. An Online Encyclopedia of Life. 2013. http://www.natureserve.org/explorer/. Accessed November and December 2012; August 2013; November 2013.

TABLE 7-12
ODNR SPECIES LIST FOR THE PROJECT AREA

Common Name (State; Federal Status)[1, 2]	Species Name[1]	Known Record Location/ County[1, 2]	General Habitat Notes[3, 4]	Habitat Present/ Absent
Eastern foxsnake (State Species of Concern)	*Pantherophis gloydi*	Occurs as multiple records approximately 0.9 - 3.9 miles east of the eastern terminus of the Project area; appears to be located within NASA Plum Brook Station property in occurrences provided/ Sandusky and Erie	Inhabits shoreline marshes and vegetated dunes and beaches of the Great Lakes; it sometimes ranges into adjacent farm fields, pastures, and woodlots; it occupies rocky areas and open woodlands on Lake Erie islands; it rarely climbs into trees or shrubs, and it readily crosses bodies of water; hibernation occurs in mammal burrows, old buildings, or similar shelters.[2]	Present
Bushy horseweed (State Potentially Threatened)	*Conyza ramosissima*	One occurrence approximately 0.5-mile north of the preferred route and 0.8-mile east of the alternate route near the intersection of Mason Road and Skadden Road; appears to be associated with the Skadden Road ROW or a cemetery in this area/ Sandusky and Erie	Habitats include dry upland areas of prairies, glades, pastures, abandoned fields, areas along railroads and roadsides, vacant lots with sterile soil, lawns, and miscellaneous waste areas. Dry disturbed areas with scant vegetation are preferred.[5]	Present
Greater redhorse (State Threatened; Federal Listed Species of Concern)	*Moxostoma valenciennesi*	One population extending approximately four miles is documented 1.5 river miles upstream (south) of the Project area in the Sandusky River/ Sandusky	Habitat is moderate to fast-flowing, medium to large rivers. Prefers clear water with sand, gravel, or boulder substrates.[2]	Present
Blanding's turtle (State Threatened;	*Emydoidea blandingii*	One record for this species was identified within the search area; however, due to the sensitivity of the	Habitat includes marshes, ponds, swamps, lake shallows, backwater sloughs, shallow slow-moving rivers, protected coves and inlets of large	Present

Federal Listed Species of Concern)		species, ODNR provided a buffer area instead of an exact location. The buffer area is hexagonal in shape and approximately 7.8 square miles on the western end of the Project area./ Sandusky and Erie	lakes, oxbows, and pools adjacent to rivers. Prefers waters with soft bottom and aquatic vegetation.[2]	
Bald eagle (Federal Listed Species of Concern)	*Haliaeetus leucocephalus*	Four locations across the Project area. One is approximately 0.2 miles southeast of the Sandusky River and another is adjacent to Raccoon Creek. The two other locations are near an open water/wetland area near the headwaters of Mills Creek/ Sandusky and Erie	Large bodies of water that generally reflect the availability of primary food sources. Nests usually are in tall trees or on pinnacles or cliffs near water.[2]	Present

Data sources include:

[1]Ohio Department of Natural Resources (ODNR), Division of Wildlife. 2013. Ohio Biodiversity Database Request. Pers. Comm. Greg Schneider via email August 29, 2013.

[2]Ohio Department of Natural Resources (ODNR), Division of Wildlife. 2013. Ohio State-Listed Species by County. From Data in the Ohio Natural Heritage Database. http://www.dnr.state.oh.us/Home/wild_resourcessubhomepage/ResearchandSurveys/OhioNaturalHeritageDatabase/rareplantsbycounty/tabid/23654/Default.aspx. Accessed December 18, 2012 and August 30, 2013.

[3]NatureServe Explorer. An Online Encyclopedia of Life. 2013. http://www.natureserve.org/explorer/. Accessed November and December 2012; August 2013; November 2013.

[4]Hilty, John. 2012. Illinois Wildflowers. http://www.illinoiswildflowers.info/weeds/plants/dwf_fleabane.htm. Accessed December 18, 2012.

Although species-specific surveys were not performed, two of these species, the bald eagle (*Haliaeetus leucocephalus*) and eastern foxsnake (*Pantherophis gloydi*), were observed during field surveys of the Project area.

The Applicant examined set back distance to known bald eagle nest locations for the Preferred and Alternate Routes. Both routes are greater than the USFWS setback requirement of 660 feet from any known nests, indicating impacts to nesting eagles is unlikely.

(2) Operation and Maintenance Impact

During operation of the transmission line along the Preferred Route, impacts to protected wildlife is likely to be minor. While portions of the transmission line corridors will need to be cleared, the undeveloped land not disturbed by construction will retain its current vegetation composition. Periodic maintenance along the transmission line corridor is not expected to result in a significant impact to the local wildlife. Operational impact to local wildlife is also expected to be negligible given the quantity of additional comparable habitat throughout the Project area.

(3) Mitigation Procedures

Consultation will be performed with the USFWS and ODNR to determine if the Preferred Route, Preferred Route Option B, and Alternate Route, or portions of these routes, contain significant problem areas that would require the use of special mitigation measures for wildlife. If, such conditions are recognized in the consultation process, the condition will be mitigated appropriately on an individual basis.

(G) SLOPES AND ERODIBLE SOILS

(1) Construction Impact

Very few areas along the Preferred and Alternate Routes have a slope greater than or equal to 12 percent. There are three soil types exceeding 12 percent slope within the area of the Preferred Route survey corridor, and two soil types within the Alternate Route survey corridor. No soil types exceeding 12 percent slope within the area of the Preferred Route Option B survey corridor. A description of these soil types is provided below in Table 07-11.

TABLE 07-13
HAYES-WEST FREMONT TRANSMISSION LINE PROJECT
SOILS EXCEEDING 12% SLOPE

Soil Series	Symbol	Map Unit Description	County	Topographic Setting
Preferred Route				

TABLE 07-13
HAYES-WEST FREMONT TRANSMISSION LINE PROJECT
SOILS EXCEEDING 12% SLOPE

Soil	Symbol	Map Unit Description	County	Topographic Setting
Mentor	MeF	Mentor silt loam, 25 to 50 percent slopes	Sandusky	Lake plain, outwash terrace
Spinks	SpD	Spinks loamy fine sand, 12 to 18 percent slope	Erie	Beach ridges, outwash plains, dunes, lake plains, moraines
Zurich	ZuD2	Zurich silt loam, 12 to 18 percent slopes, eroded	Erie	Outwash plains
Alternate Route				
Mentor	MeF	Mentor silt loam, 25 to 50 percent slopes	Sandusky	Lake plain, outwash terrace
Zurich	ZuD2	Zurich silt loam, 12 to 18 percent slopes, eroded	Erie	Outwash plains

NOTES:
Data sources include:
USDA, NRCS Soil Survey Geographic (SSURGO) database, Erie County, Ohio, April 2003. Available online at: http://www.ftw.nrcs.usda.gov/ssur_data.html
USDA, NRCS Soil Survey Geographic (SSURGO) database, Sandusky County, Ohio, April 2003. Available online at: http://www.ftw.nrcs.usda.gov/ssur_data.html
USDA, NRCS Geospatial Data Gateway, U.S. General Soil Map (STATSGO) – Ohio Subset. Available online at: http://datagateway.nrcs.usda.gov/

A SWPPP will be implemented during construction to control erosion.

(2) Operation and Maintenance Impact

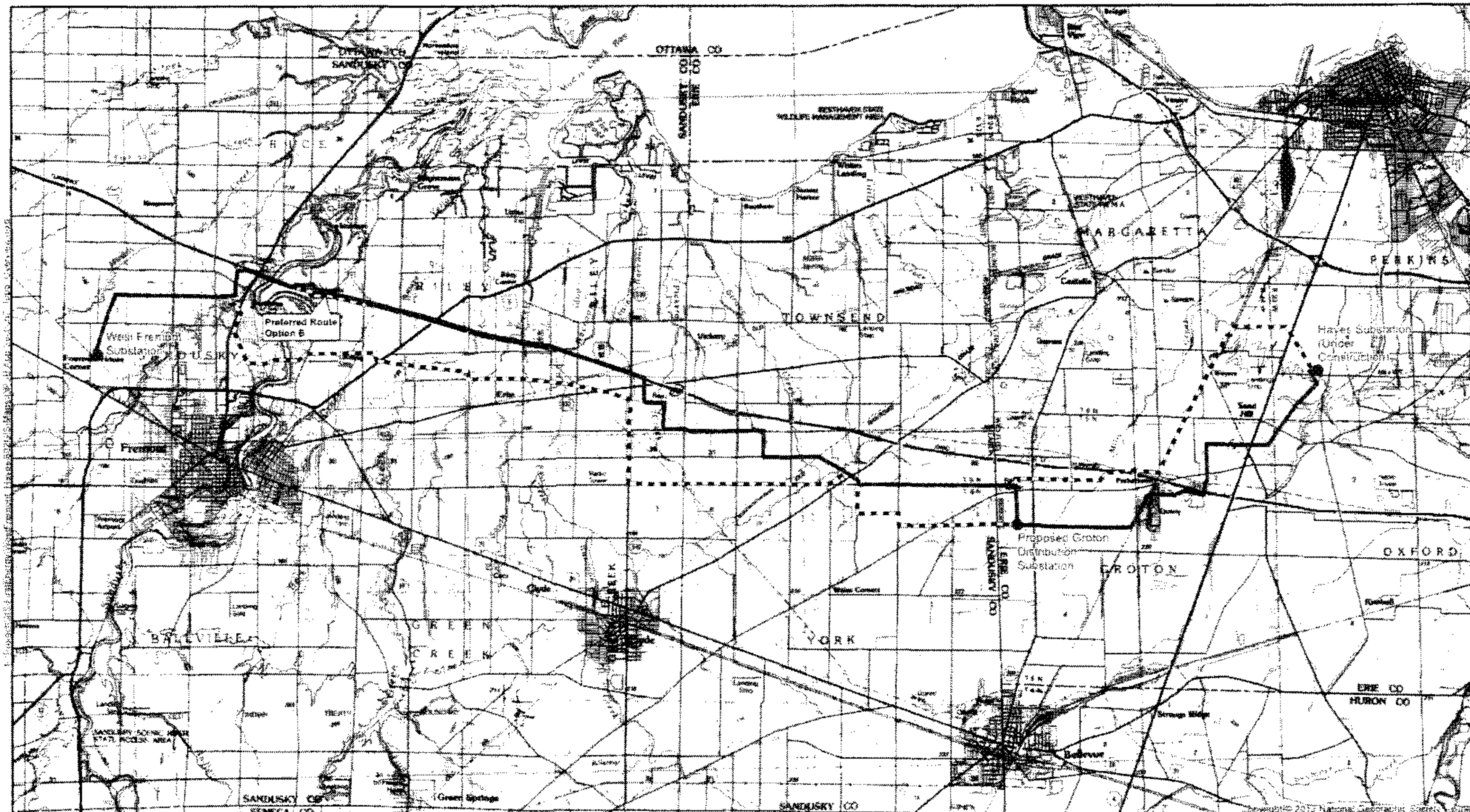
Once the transmission line is in place, no impacts or erosion hazards are expected.

(3) Mitigation Procedures

No special mitigation procedures are anticipated beyond those required as part of the stormwater permit and SWPPP.

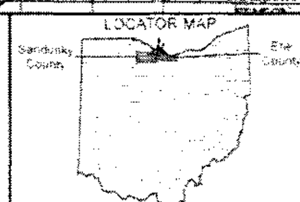
(H) Other Issues

No other issues are anticipated.



LEGEND:

- ● Substation
- ── Preferred Route
- ▪ ▪ Alternate Route
- ▪ ▪ Preferred Route Option B



N

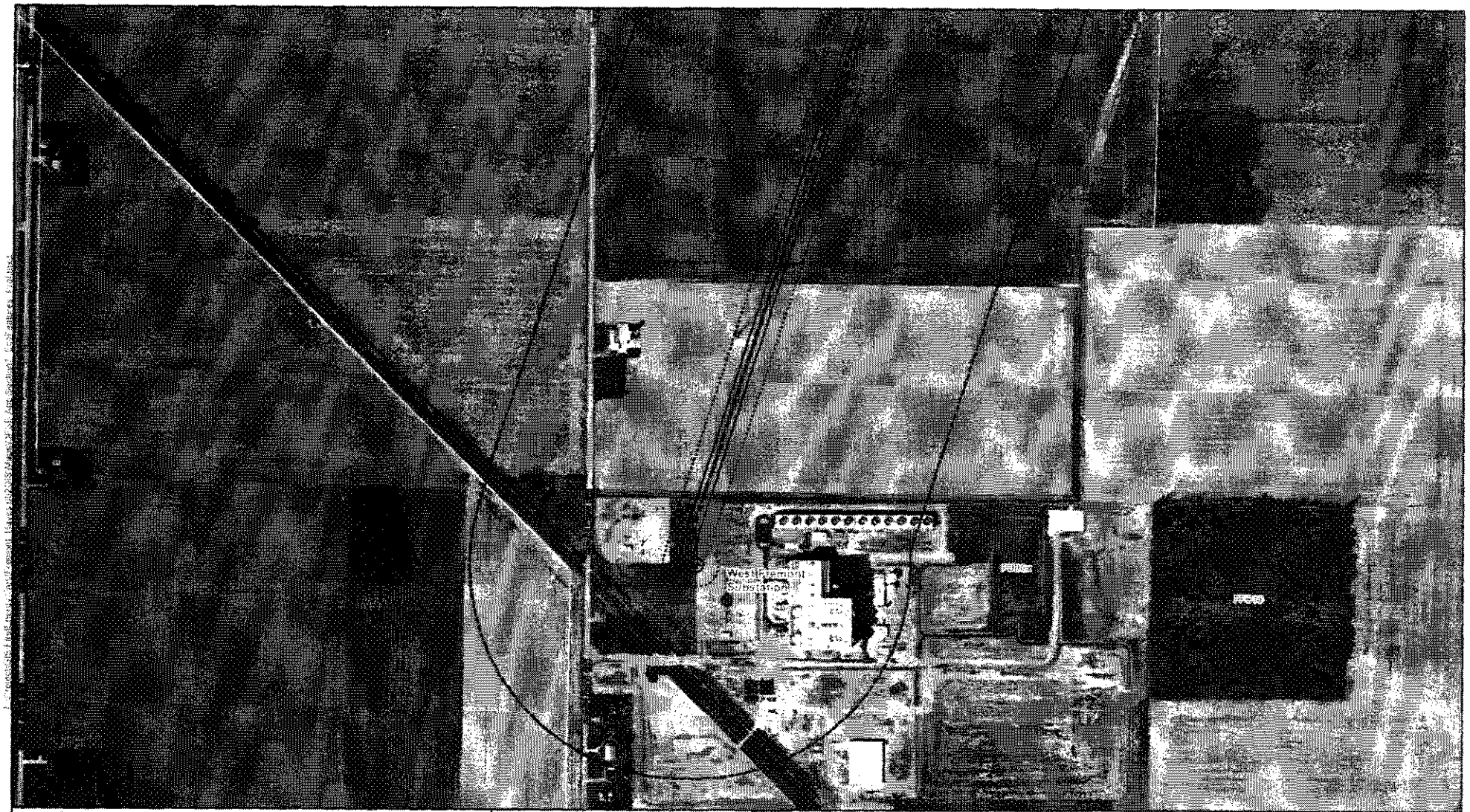
0 1.5 3
Scale In Miles

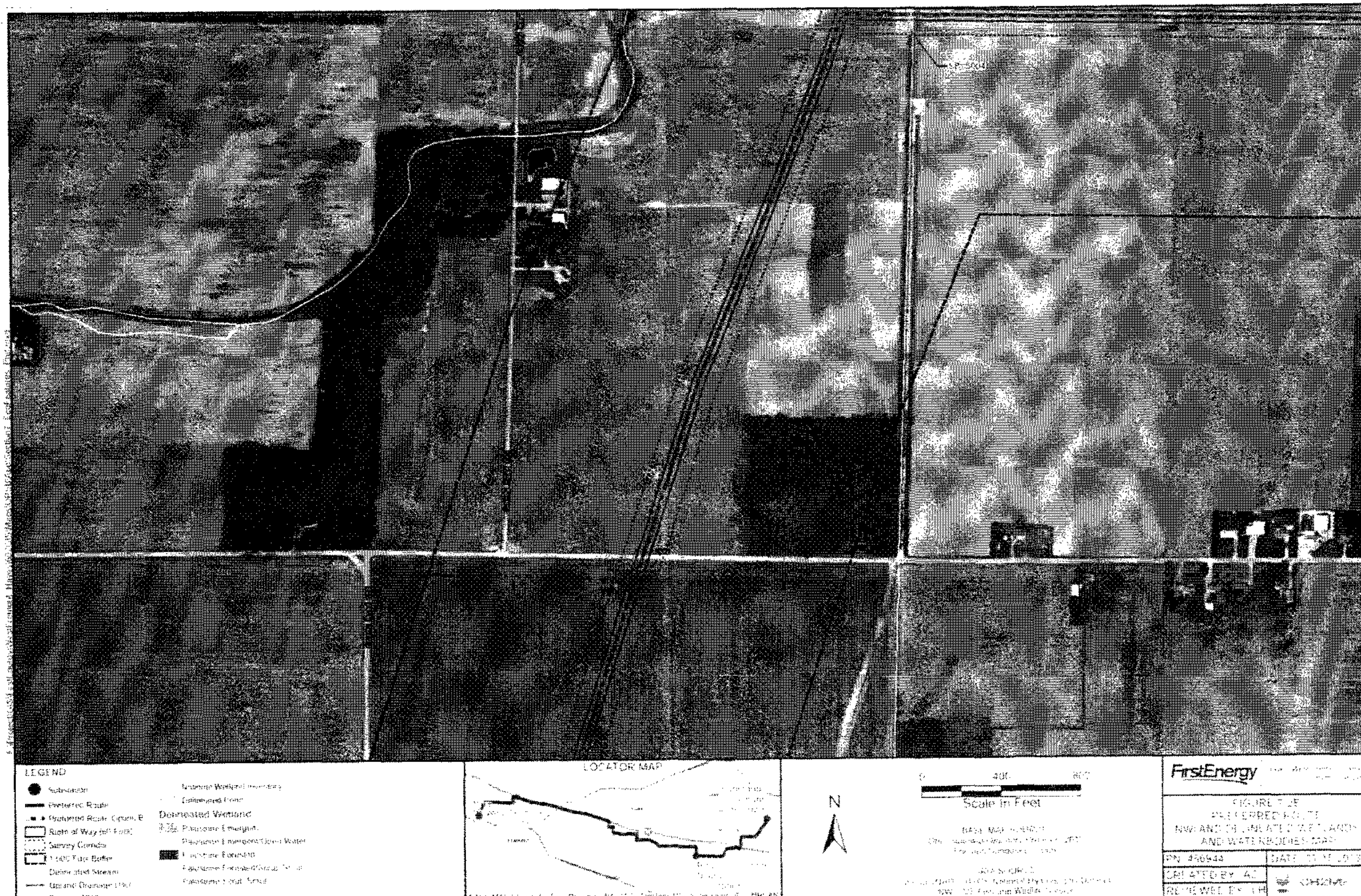
BASE MAP SOURCE:
National Geographic TOPO! and USGS 7.5-minute
Topographic Quadrangles:
Lindsey, Fremont West, Wightmans Grove, Vickery,
Castalia, Sandusky, Fremont East, Clyde, Bellevue, and Kimball

FirstEnergy

FIGURE 7-1
OVERVIEW MAP

PN 456944	DATE 11/26/2013
CREATED BY AC	CH2MHILL
REVIEWED BY JH	

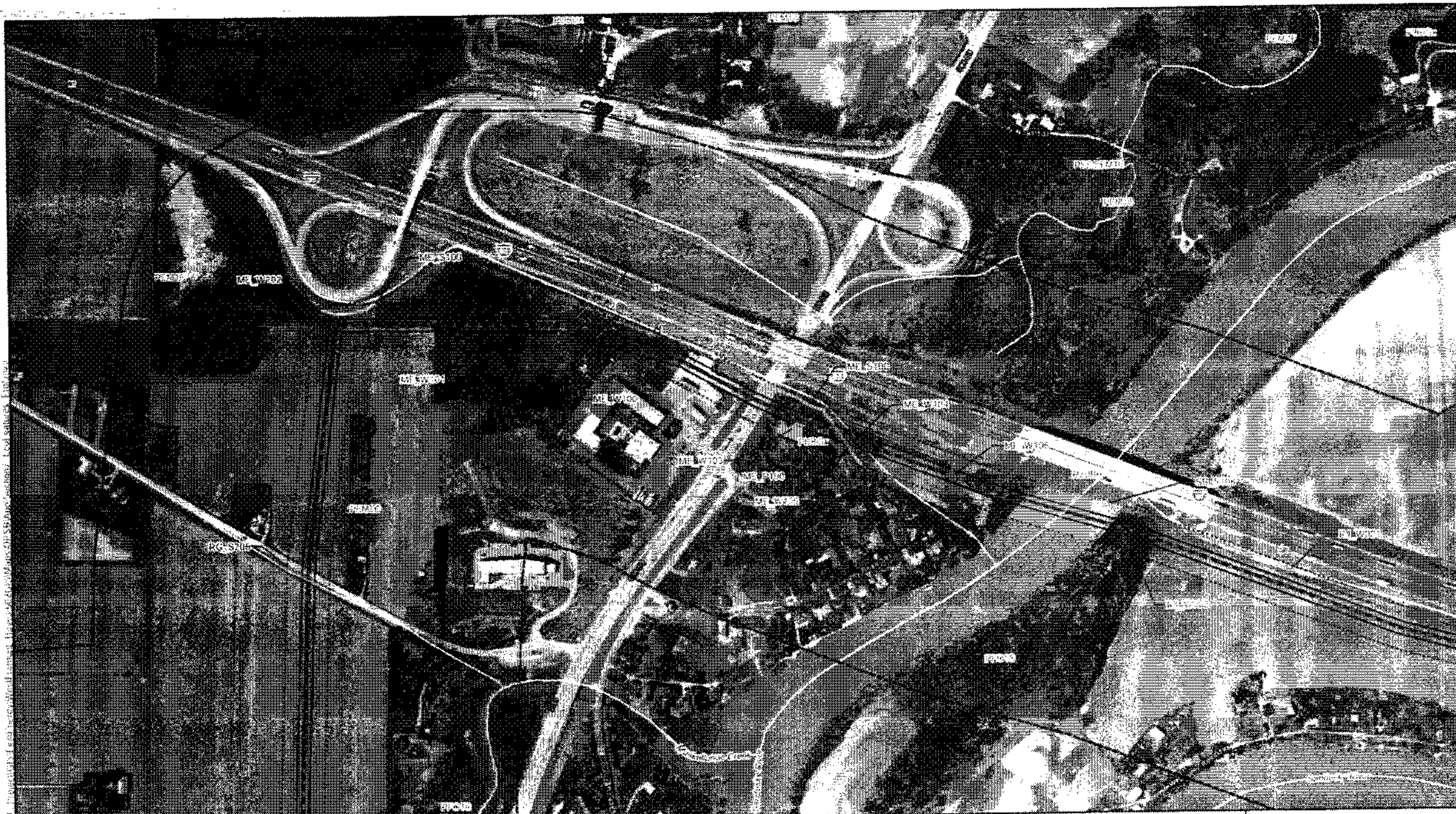

Westmoreland Substation
LEGEND:
Substation
Preferred Route
Preferred Route Option
Right of Way (50 Foot)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainageway
Stream (NHD)
National Wetland Inventory
Delineated Point
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub-Shrub
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Proposed Greater Direct Current Substation
0
400
800
Scale in Feet
N
FirstEnergy
FIGURE 7.0A
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
DATE


LEGEND
Substation
Preferred Route
Right of Way
Survey Corridor
Delineated Stream
Delineated Wetland
Palustrine Forested
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
PN 456944
CREATED BY AC


LEGEND
Substation
Survey Corridor
Delineated Wetland
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
CREATED BY
REVIEWED BY
PN
DATE


LEGEND
Substation
Proposed Route
Proposed Route Option B
Right-of-Way (ROW)
Survey Corridor
100' Feed Buffer
Delineated Stream
Upland Drainage/Ditch
Stream (NHD)
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub-Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
450
900
Scale In Feet
FirstEnergy
PROPOSED
PROPERTY NORTH
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
DRAWN BY: A.
CHECKED BY: J.H.


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 feet)
Survey Corridor
1,000 Feet Buffer
Delineated Stream
Upland Drainage/Ditch
Stream (NHD)
Potential Wetland Boundary
Delineated Pond
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Scrub-Shrub
Palustrine Scrub-Shrub
Industrial Forested/Shrub Wetland
Cascading Scrub-Shrub
LOCATOR MAP
N
400
800
Scale in Feet
FirstEnergy
FIGURE 3.0E
PREFERRED ROUTE
DELINEATED WETLAND
AND WATERBODIES MAP
DRAWN BY: AC
REVIEWED BY: TH



LEGEND

Delineated Wetland

N

0 400 800

Scale In Feet

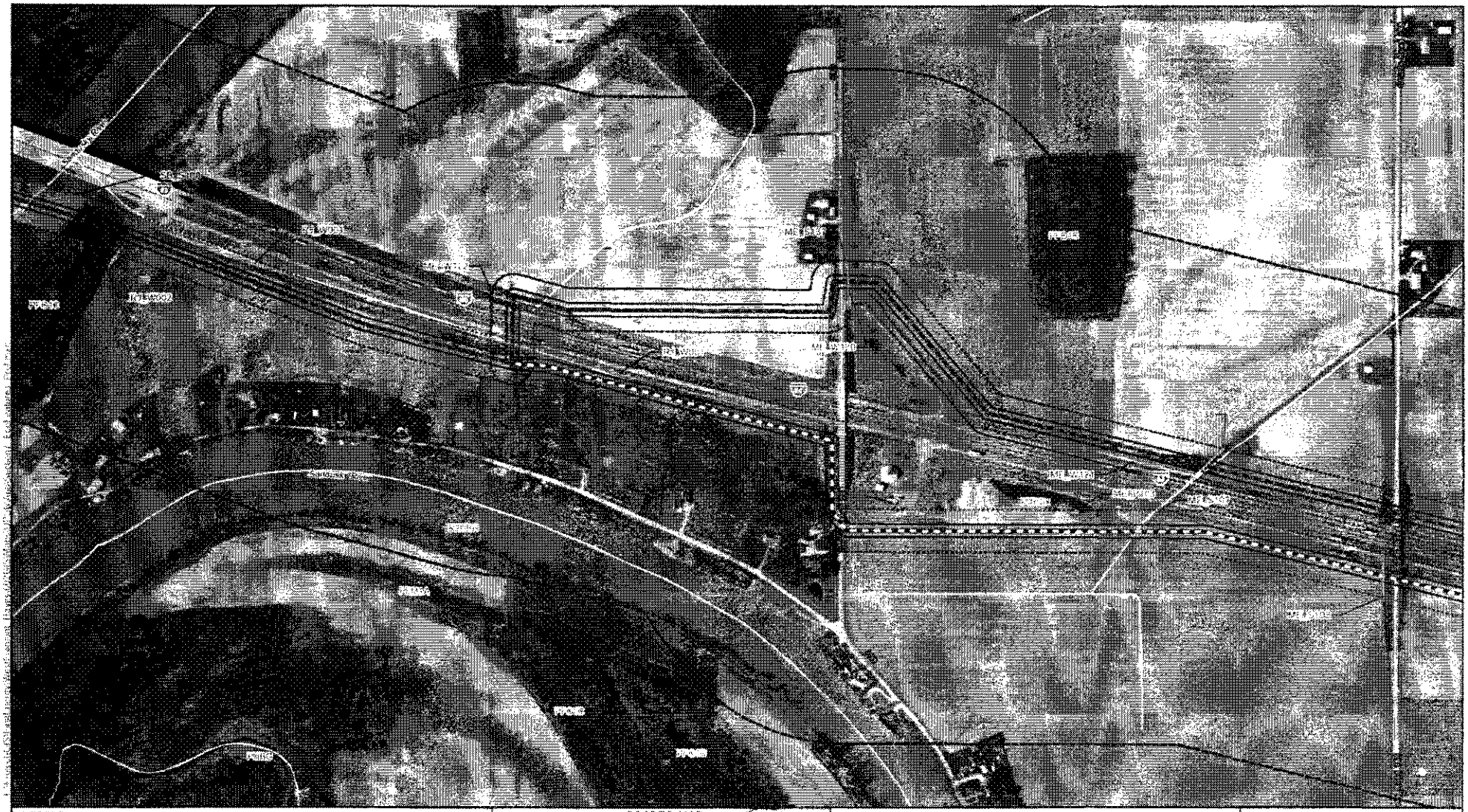
FirstEnergy

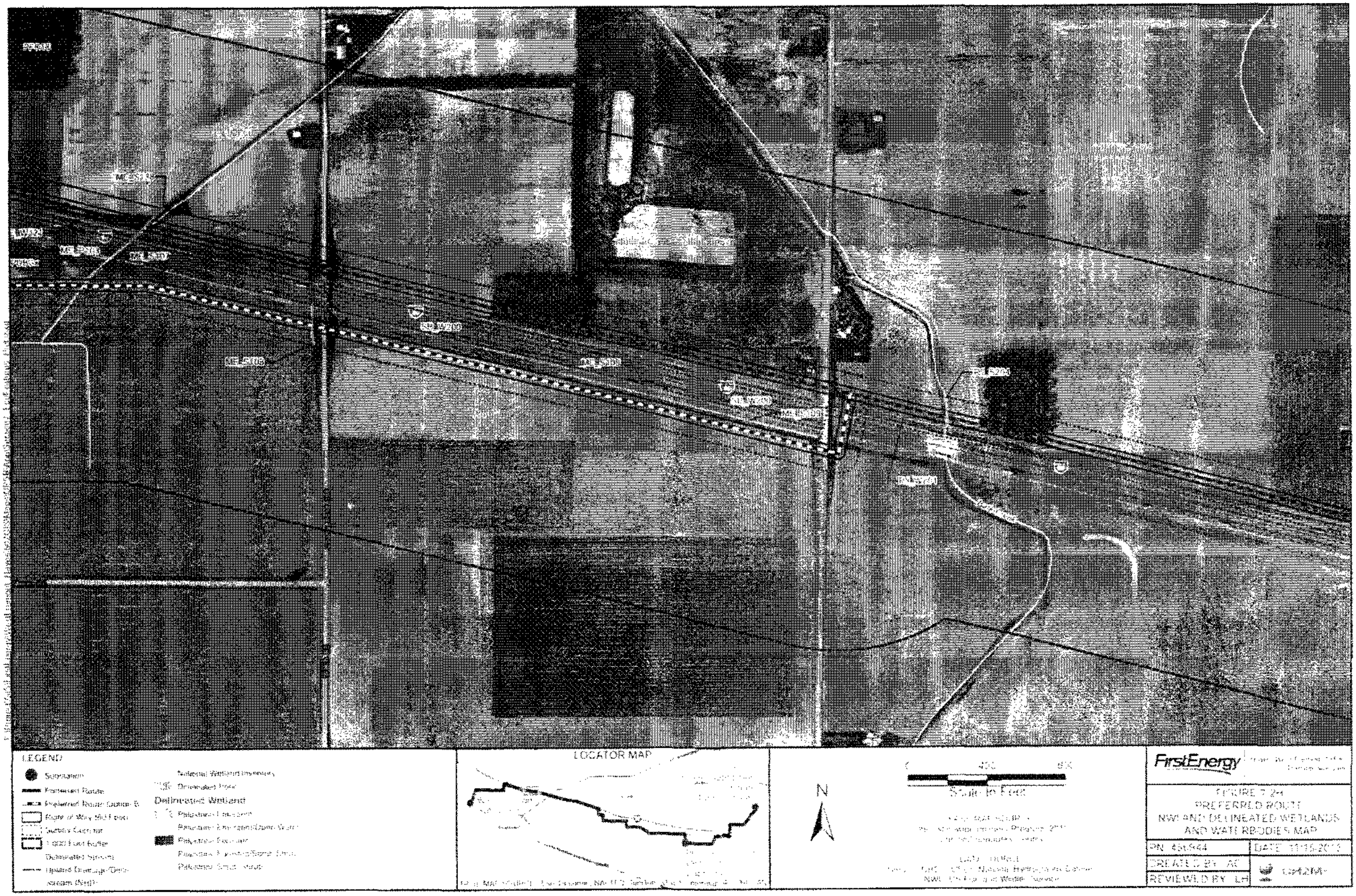
FIGURE 1-2

PREFERRED ROUTE

NWI AND DELINEATED WETLANDS AND WATERBODIES MAP

PN: 456944	DATE: 11/15/2013
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	

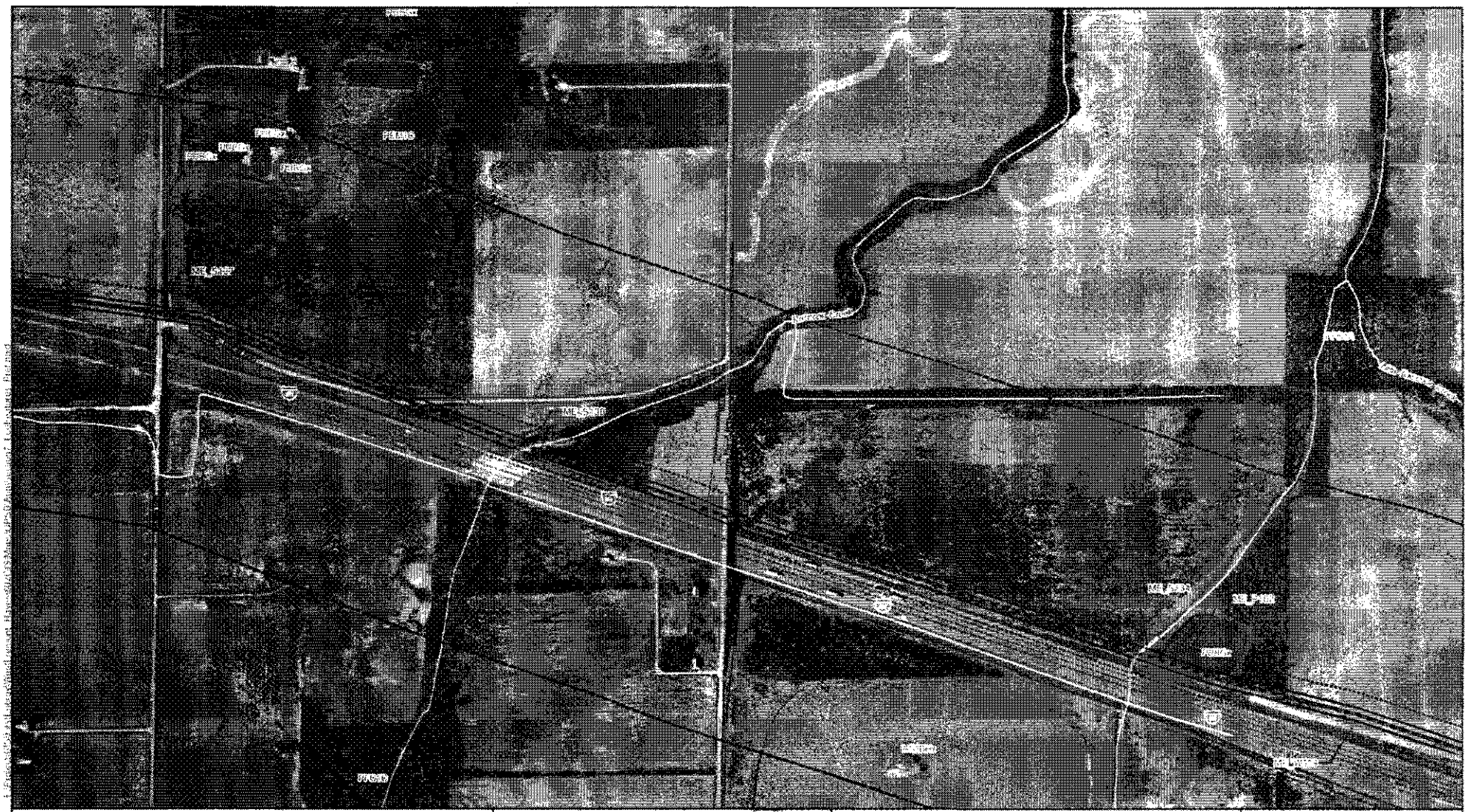

LEGEND
Substation
Preferred Route
Preferred Route Option B
Right-of-Way (typ.)
Survey Corridor
1,000 Foot Buffer
Delineated Streams
Upland Drainageways
Seeps (typ.)
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Scrub-Shrub
Palustrine Forested
LOCATOR MAP
N
Scale in Feet
FirstEnergy
FIGURE 2.2C
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 460944
DATE 11/15/2013
PREPARED BY AC
REVIEWED BY CH

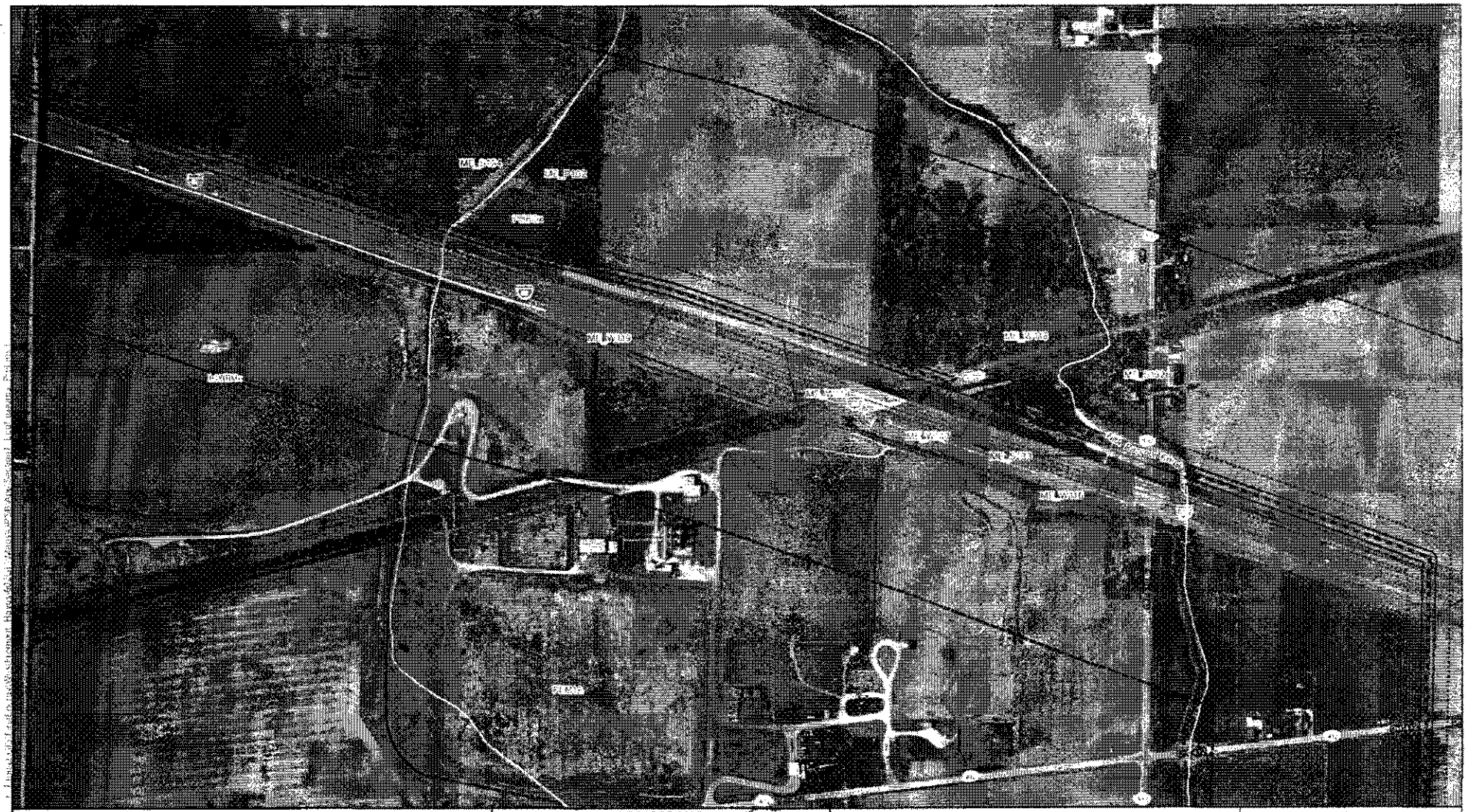

LEGEND
Substation
Preferred Route
Right of Way
1,000 Foot Buffer
Delineated Wetland
LOCATOR MAP
N
Scale In Feet
FirstEnergy
FIGURE 7-24
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
DATE 11/15/2013
REVIEWED BY LH


LEGEND:
Substation
Preferred Route
Preferred Route Opposite
Right-of-Way (80 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainageway
Stream (RHD)
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Scrub-Shrub
Palustrine Forested
Palustrine Unconsolidated Water
Delineated Forested
Palustrine Unconsolidated Shore
Palustrine Scrub-Shrub
Palustrine Forested
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 3.0I
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE 11/15/2013
CREATED BY AS
REVIEWED BY

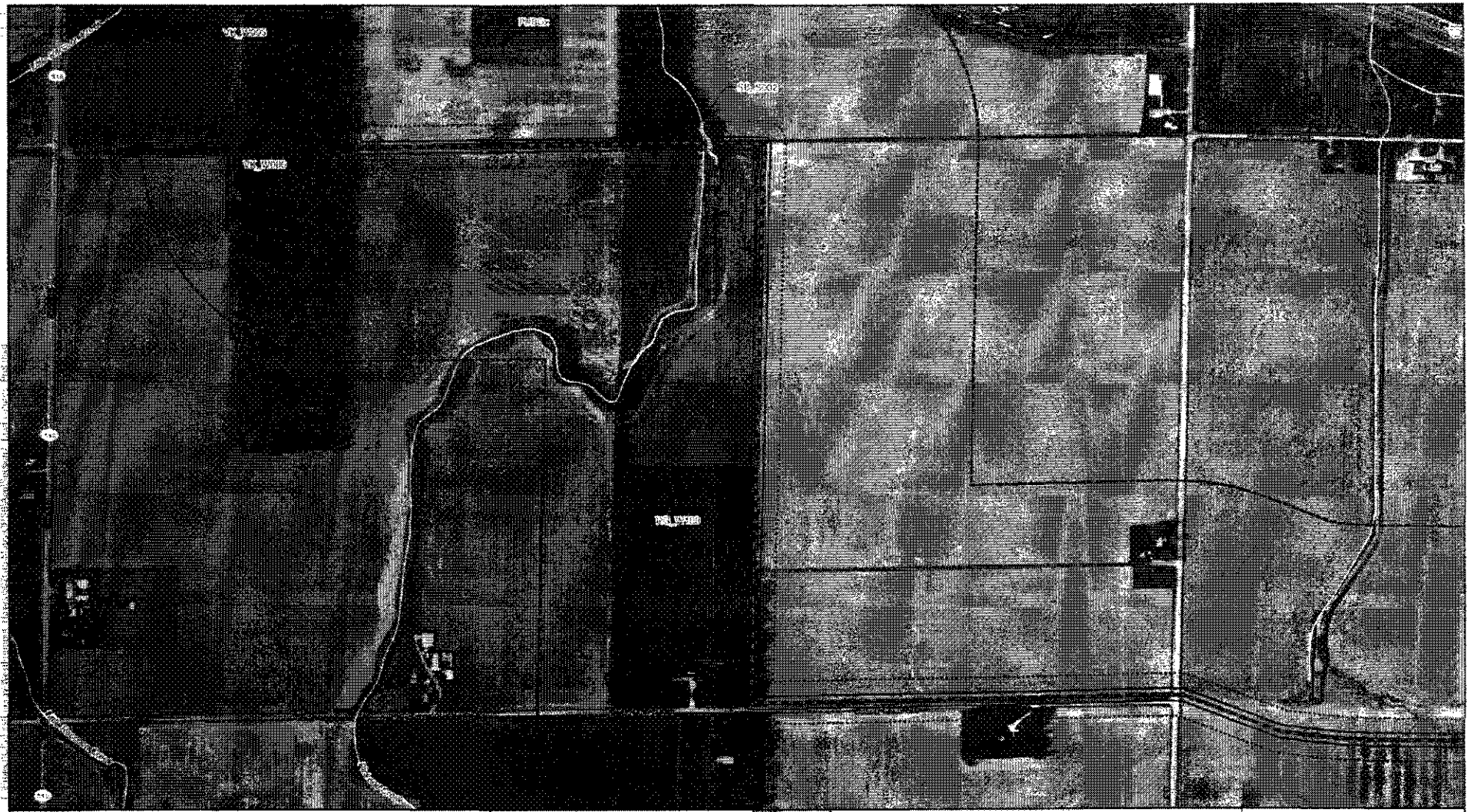

LEGEND
Substation
Preferred Route
Preferred Route Center Line
Right of Way (85 Feet)
Survey Corridor
1,000 Feet Buffer
Delineated Stream
Upstream Extension/Stream
Stream (NHD)
National Wetland Inventory
Emergent Marsh
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub Shrub
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 7.C-1
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE 7/19/2012
CREATED BY AC
REVIEWED BY JM


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (60 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Regional Drainage/Ditch
Narrow (NARR)
National Wetland Inventory
Delineated Point
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested-Scrub Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
400
800
Scale in Feet
FirstEnergy
FIGURE 7-24
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 45944
DATE 11-15-2017
CREATED BY AC
REVIEWED BY JH

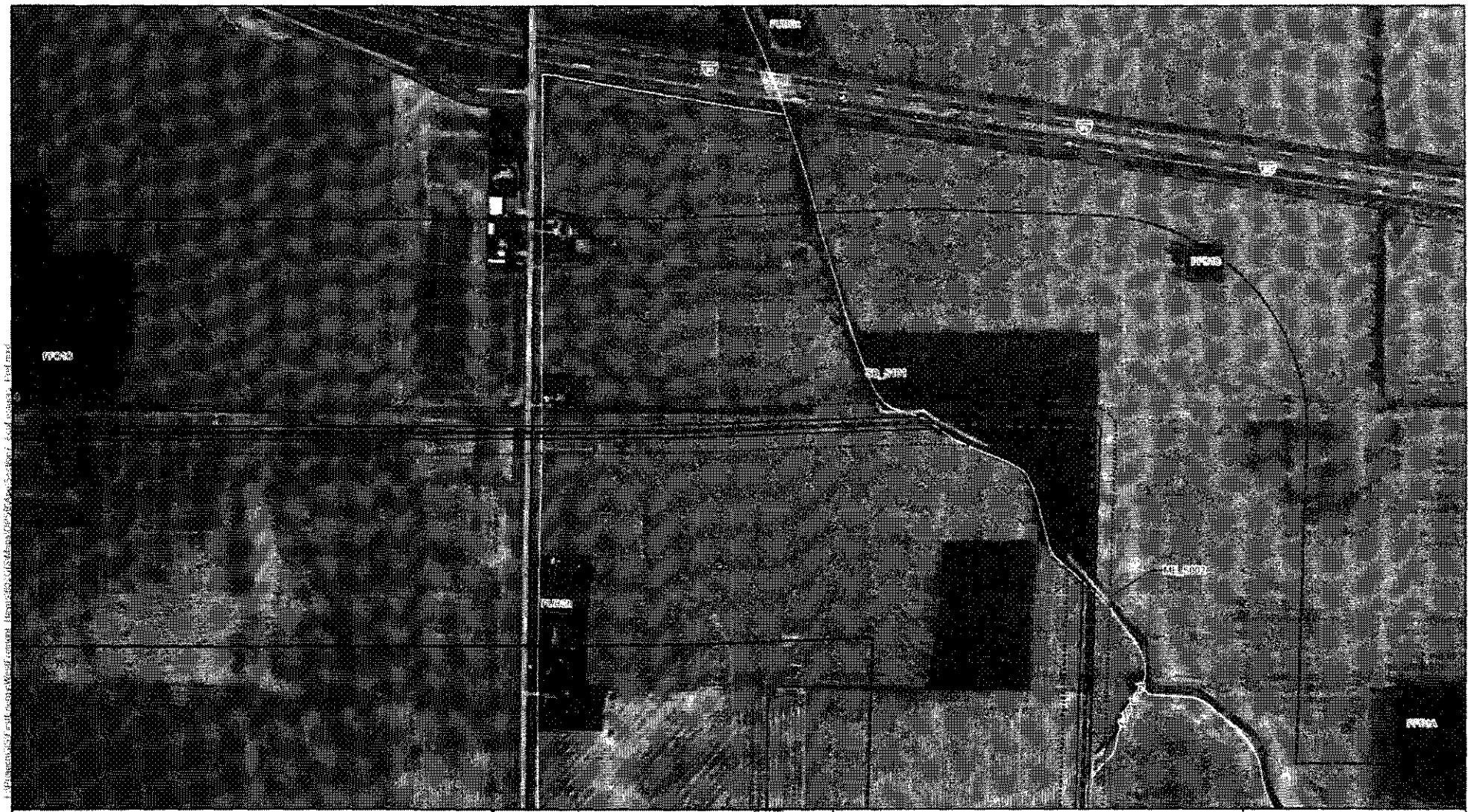

LEGEND:
Substation
Preferred Route
Preserved Route Option B
Right-of-Way (60 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainageway
Stream (NHD)
National Wetland Inventory
Drainageway (NHD)
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub-Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
400
800
Scale in Feet
FirstEnergy
FIGURE 7.2L
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
CREATED BY AS
REVIEWED BY LH

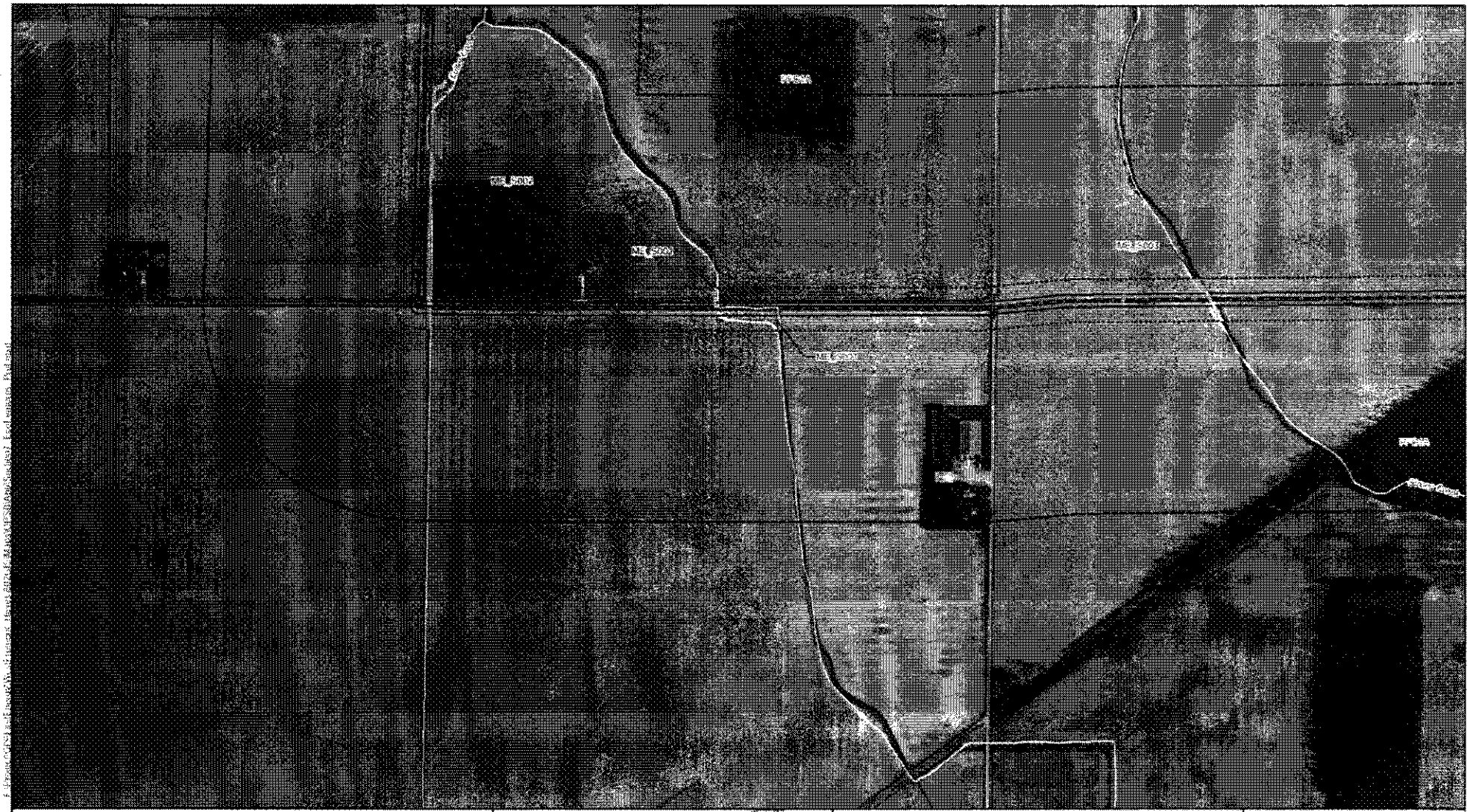

LEGEND
Substation
Preferred Route
Preferred Route Option B
Right-of-Way (80 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Streams
Upland Drainageways
Stream (NHD)
National Wetland Inventory
Delineated Pond
Delineated Wetlands
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine
Palustrine Forested/Shrub Scrub
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 1.0M
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 450644
DRAWN BY MC
CHECKED BY
REVIEWED BY


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 Feet)
Survey Corridor
1,000 Feet Buffer
Delineated Streams
Upland Drainage/Ditch
Stream (R4SB)
National Wetland Inventory
Delineated Ponds
Delineated Wetlands
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub. Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 2-2N
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 436944
DATE
CREATED BY AC
REVIEWED BY LH

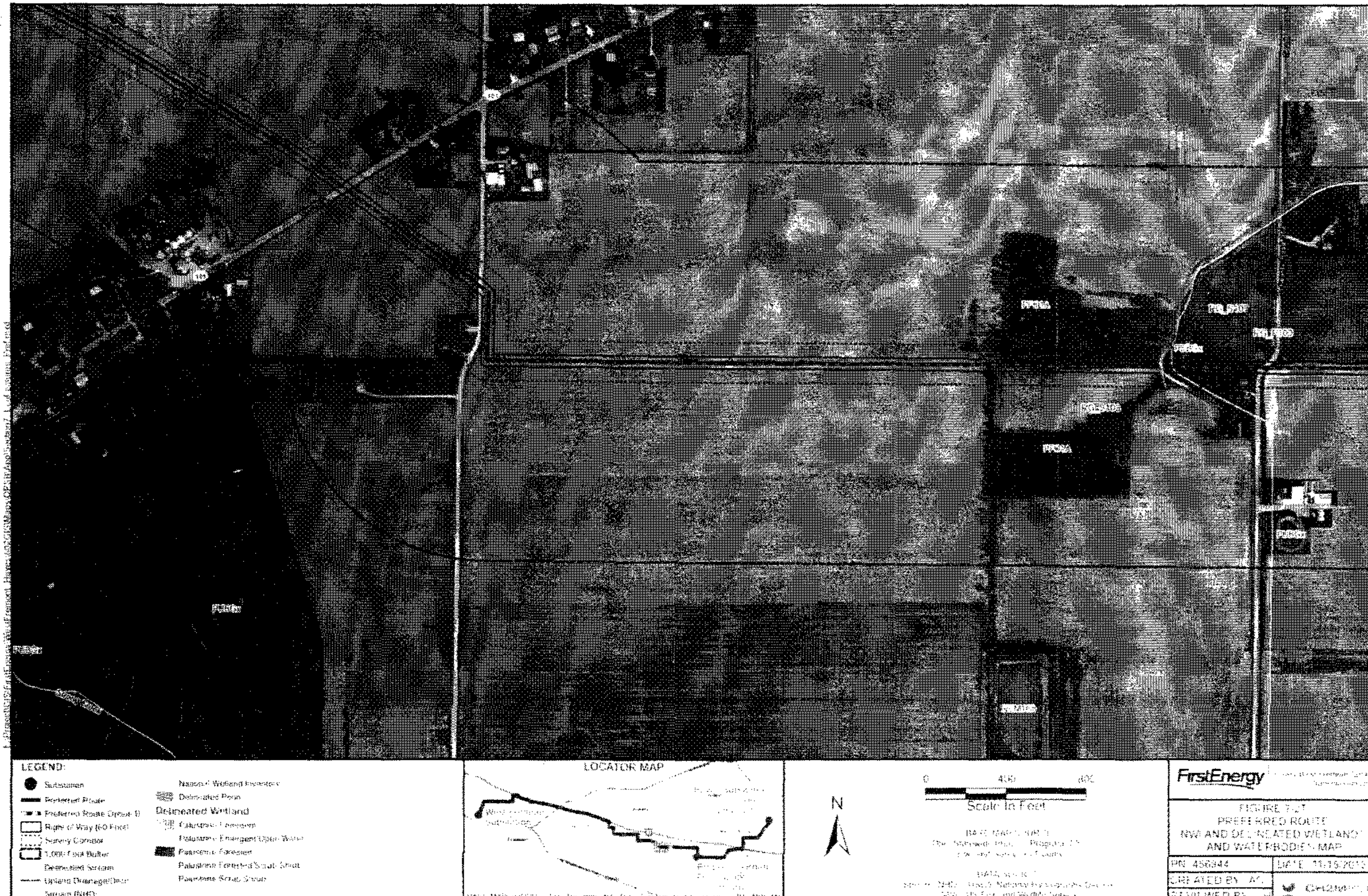

LEGEND
Substation
Preferred Route
Preferred Route Options A
Right of Way (60 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Streams
Delineated Streams (Open Water)
Delineated Wetlands
Palustrine Emergent
Palustrine Emergent (Open Water)
Palustrine Forested
Palustrine Forested (Open Water)
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale in Feet
FirstEnergy
FIGURE 3-2C
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
DATE 11/15/2013

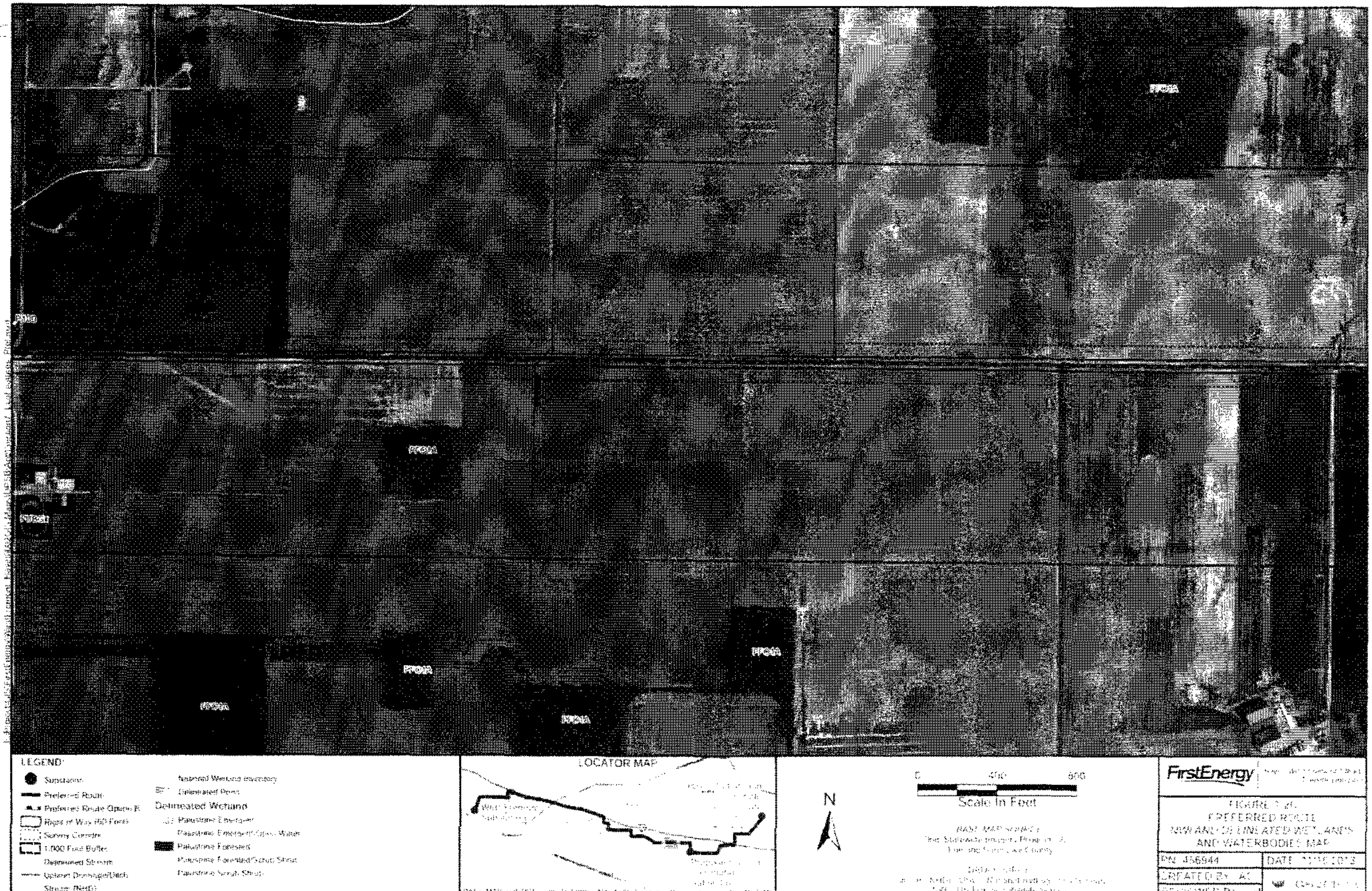

LEGEND:
Substation
Preferred Route
Preferred Route Option B
Right of Way (60 ft wide)
Survey Corridor
1,000' Field Buffer
Delineated Stream
Natural Waterbody Boundary
Delineated Pond
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested Scrub Shrub
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale in Feet
FirstEnergy
FIGURE 3.0P
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE 11/18/2013
CREATED BY AC
REVIEWED BY TH


LEGEND:
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 Feet)
Survey Corridor
1000 Foot Buffer
Drive and Stream
Upland Deciduous Forest
Nominal Wetland Investigation
Delineated Wetland
Palustrine Emergent
Palustrine Forested
LOCATOR MAP
N
0
400
800
Scale in Feet
FirstEnergy
FIGURE 7.2C
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS,
AND WATERBODIES MAP
DATE
CREATED BY: AC
REVIEWED BY: TH


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (60 Foot)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainage/Ditch
Stream: Perl 80
National Wetland Inventory
Delineated Pond
Delineated Wetland
Palustrine Emergent
Palustrine Forested
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
400
800
Scale in Feet
FirstEnergy
FIGURE 7.2F
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
DATE 11/15/2013


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 Feet)
Survey Corridor
1,000 Feet Buffer
Delineated Wetland
Upland Drainage Ditch
Stream (NHD)
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Scrub-Shrub
Palustrine Forested
Palustrine Forested/Scrub-Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
400
800
Scale in Feet
FirstEnergy
FIGURE 7-2A
PREFERRED ROUTE
NW AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE 10/30/2012
CREATED BY AC
REVIEWED BY CH


LEGEND:
Substation
Right of Way (60 Feet)
Delineated Pond
Delineated Wetland
Palustrine Forested
LOCATOR MAP
N
0
400
Scale In Feet
FirstEnergy
PREFERRED ROUTE
NWI AND DELINEATED WETLAND
AND WATERBODIES MAP
DATE
CREATED BY
REVIEWED BY


PFO1A
LEGEND:
Substation
Preferred Route
Preferred Route Option B
Right of Way (60 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainage/Ditch
Stream (NHD)
National Wetland Inventory
Delineated Point
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub Shrub
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
BASE MAP SOURCE
FirstEnergy
FIGURE
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN: 456944
DATE
CREATED BY: AC
REVIEWED BY

LEGEND:

- Substation
- Preferred Route
- Preferred Route Option B
- Right of Way (ROW) Limit
- Survey Corridor
- 1,000-Foot Buffer
- Delineated Stream
- Upland Drainageway
- Stream (NHD)
- National Wetland Inventory
- Delineated Pond

Delineated Wetland

- Palustrine Emergent
- Palustrine Emergent/Open Water
- Palustrine Forested
- Palustrine Forested/Emergent
- Palustrine Scrub-Shrub

LOCATOR MAP

BASE MAP SOURCE: [illegible]

N

0 400 800

Scale in Feet

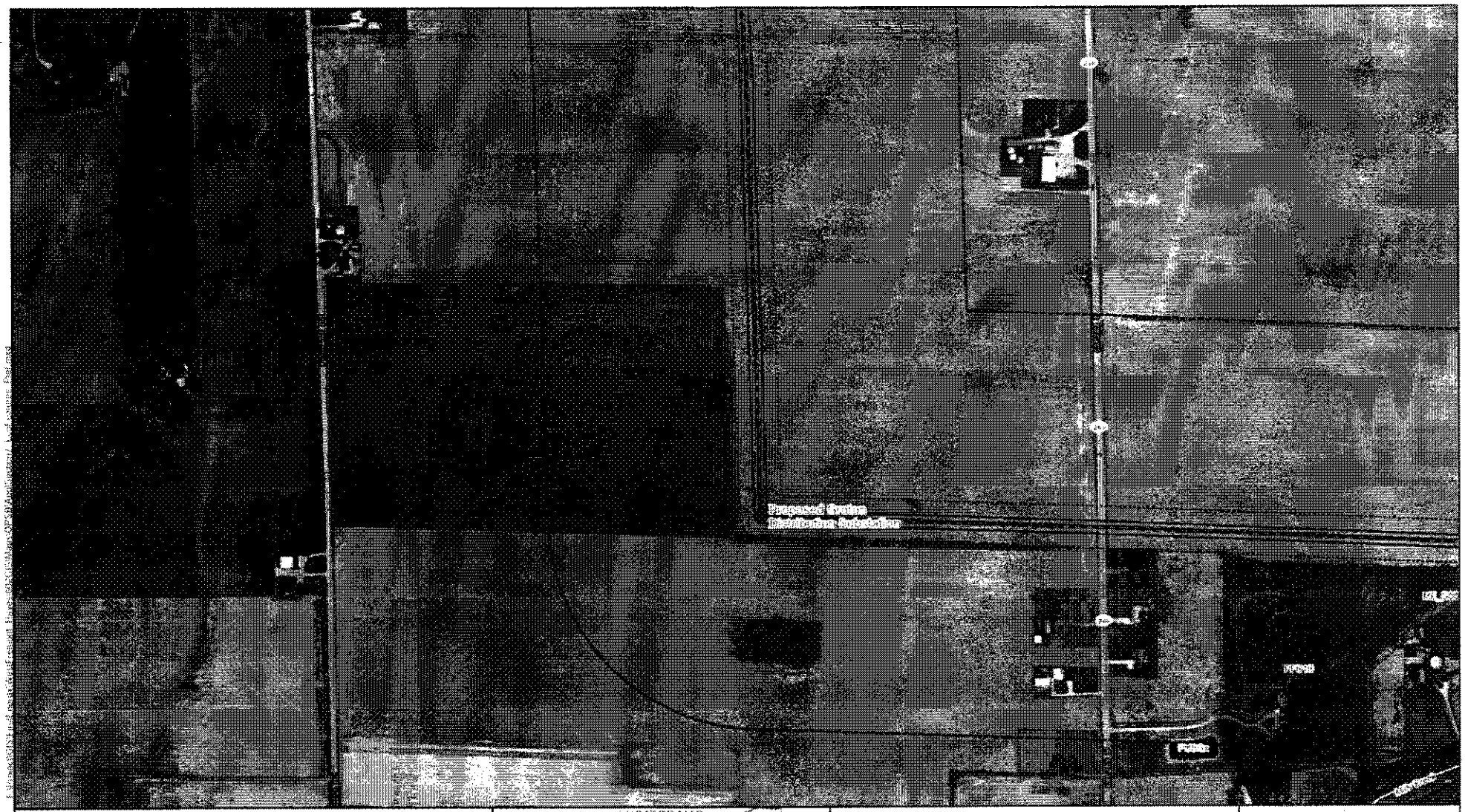
BASE MAP SOURCE:

DATA SOURCE:

FirstEnergy

FIGURE 7.5V
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456044	DATE 07/15/2013
CREATED BY AC	CH2MHILL
REVIEWED BY [illegible]	



LEGEND:

- Substation
- Preferred Route
- Preferred Route Option B
- Right of Way (ROW) Limit
- Survey Corridor
- 1,000-Foot Buffer
- Delineated Stream
- Upland Drainageway
- Stream (NHD)
- National Wetland Inventory
- Delineated Pond

Delineated Wetland

- Palustrine Emergent
- Palustrine Emergent/Open Water
- Palustrine Forested
- Palustrine Forested/Open Water
- Palustrine Scrub Shrub

LOCATOR MAP

0 400 800

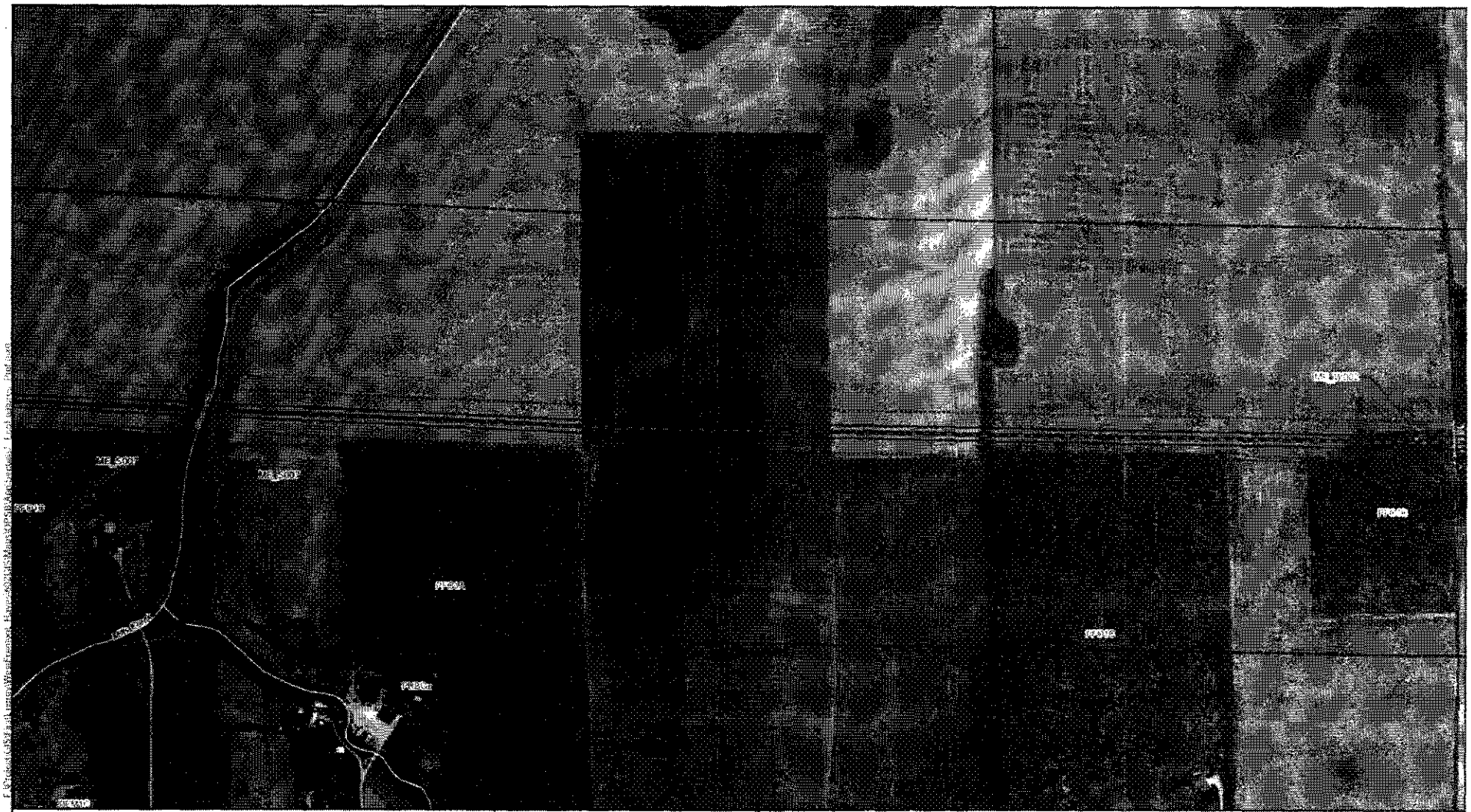
Scale in Feet

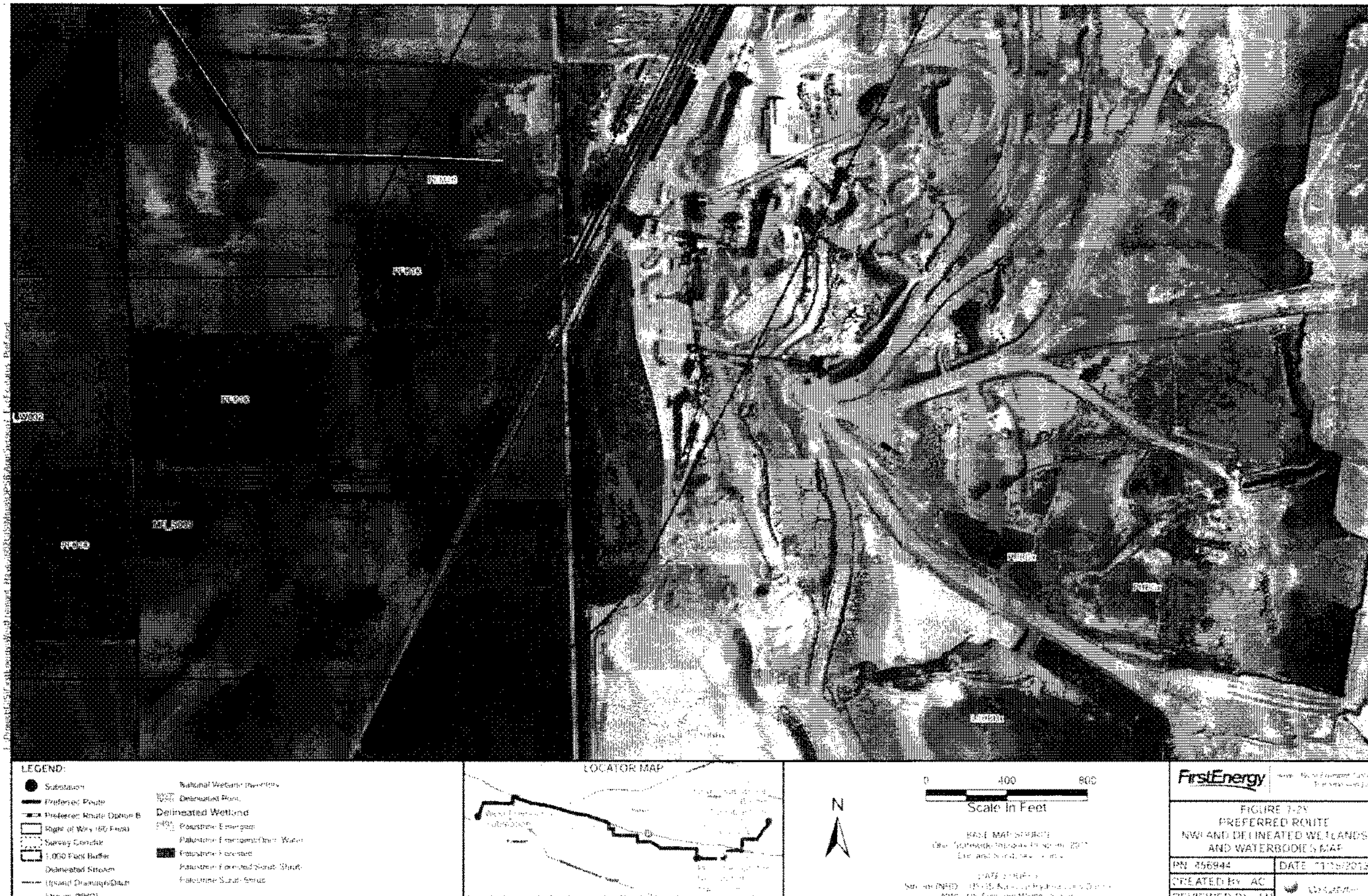
N

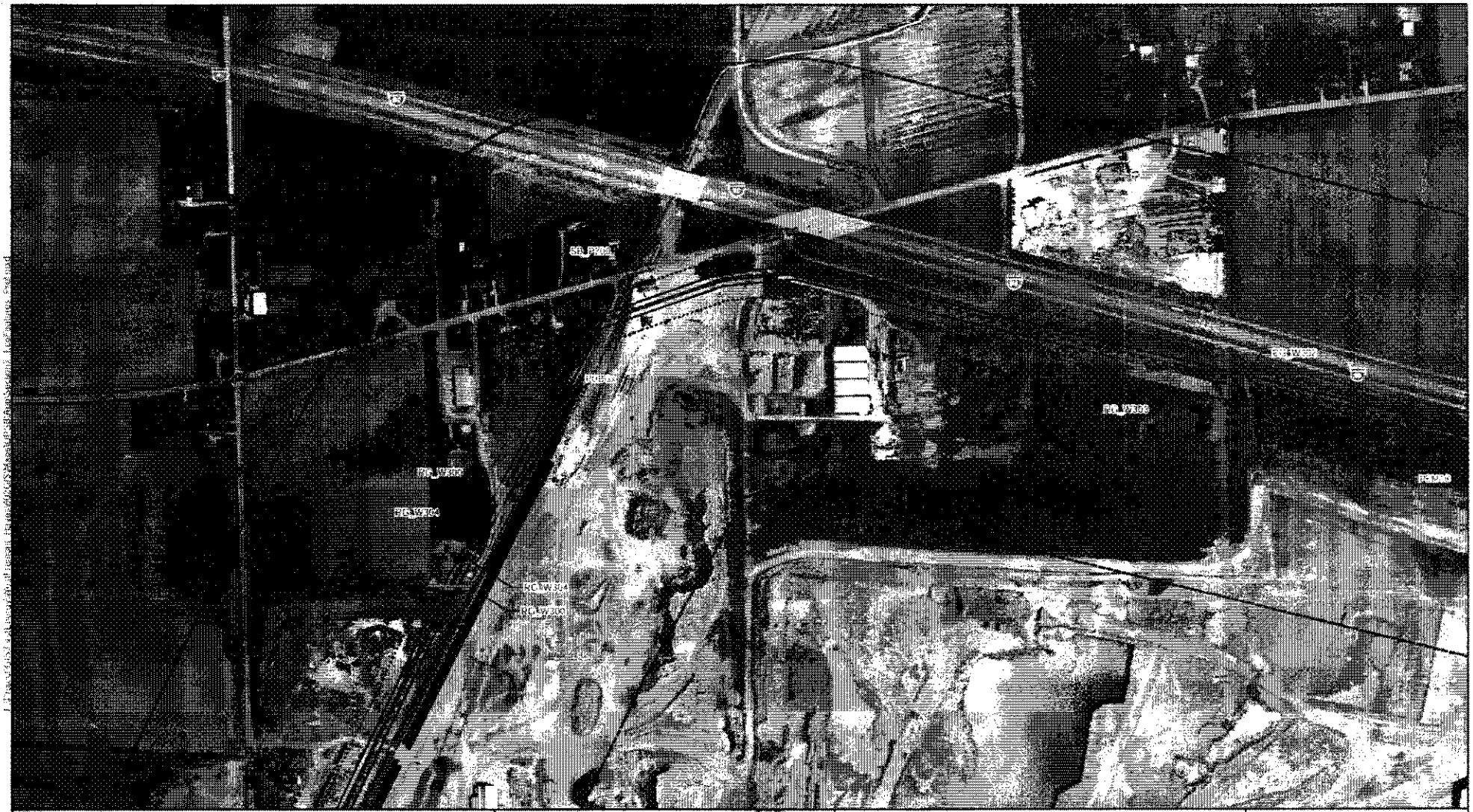
FirstEnergy

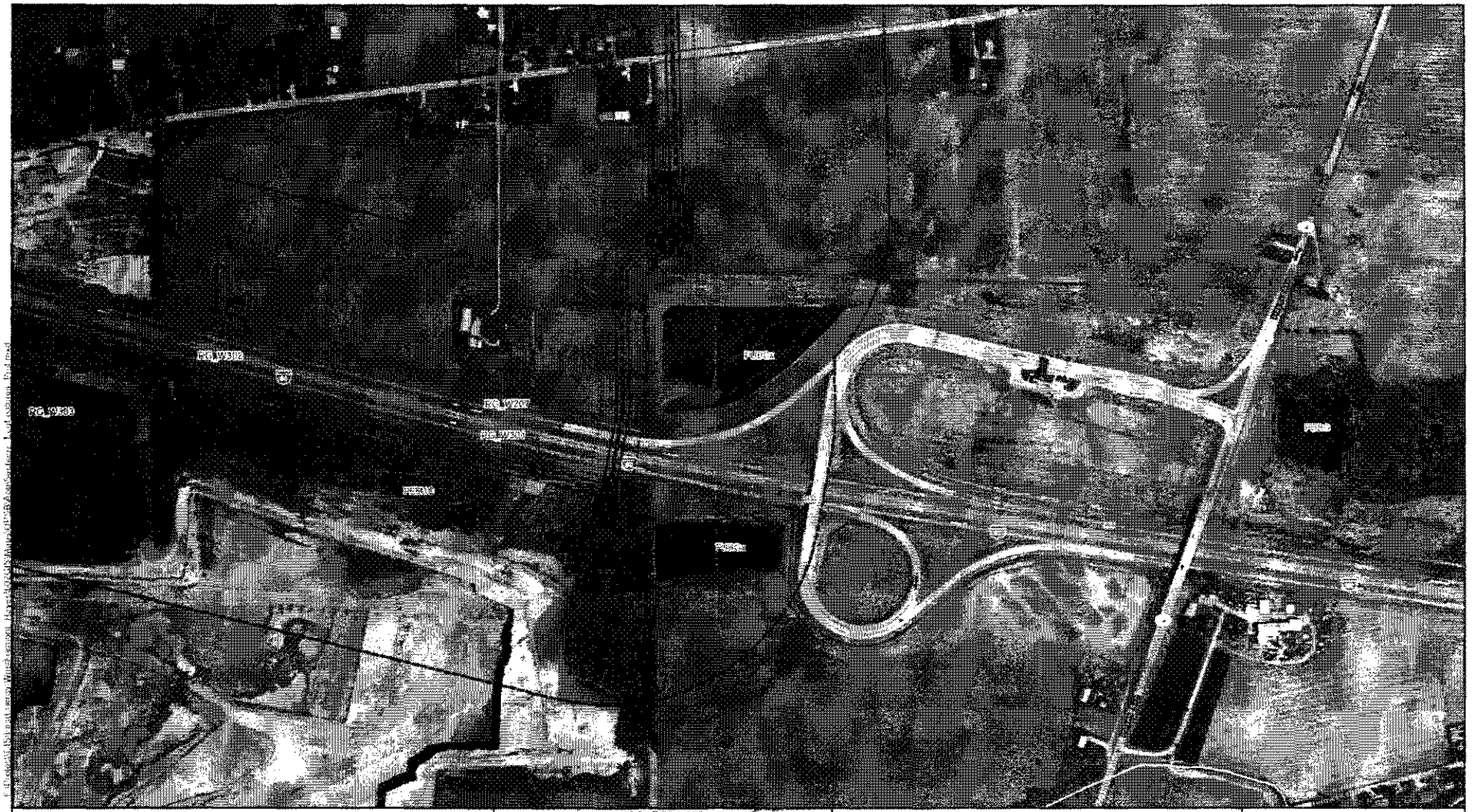
FIGURE 7.2W
PREFERRED ROUTE
UPLAND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 45x944	DATE 11/15/2012
CREATED BY AC	CHECKED
REVIEWED BY LH	


LEGEND:
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainageway
Stream (Field)
Delineated Wetland
Palustrine Forested
Palustrine Emergent/Open Water
Palustrine Forested Scrub-Shrub
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 7.6A
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
DATE: 10/31/2018
CREATED BY: AC


LEGEND:
Substation
Preferred Route
Preferred Route Option B
Right of Way (60 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainage/Ditch
Stream (NHD)
National Wetland Inventory
Delineated Pond
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub Shrub
Palustrine Scrub Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
BASE MAP SOURCE
FirstEnergy
FIGURE 7-2Y
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE
CREATED BY AC
REVIEWED BY LH


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainage Line
Stream (NHD)
National Wetland Inventory
Delineated Pond
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub-Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
400
800
Scale in Feet
DATA SOURCE(S)
FirstEnergy
FIGURE 7-22
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN. 456944
DATE
CREATED BY: AC
REVIEWED BY: LH



LEGEND:

- Substation
- Preferred Route
- Preferred Route Option B
- Right of Way (ROW)
- Survey Corridor
- 1,000 Foot Buffer
- Delineated Stream
- Upland Drainage/Ditch
- Stream (NHD)
- National Wetland Inventory
- Delineated Point

Delineated Wetland

- Palustrine Emergent
- Palustrine Emergent/Open Water
- Palustrine Forested
- Palustrine Forested/Scrub-Shrub
- Palustrine Scrub-Shrub

LOCATOR MAP

N

0 400 800

Scale in Feet

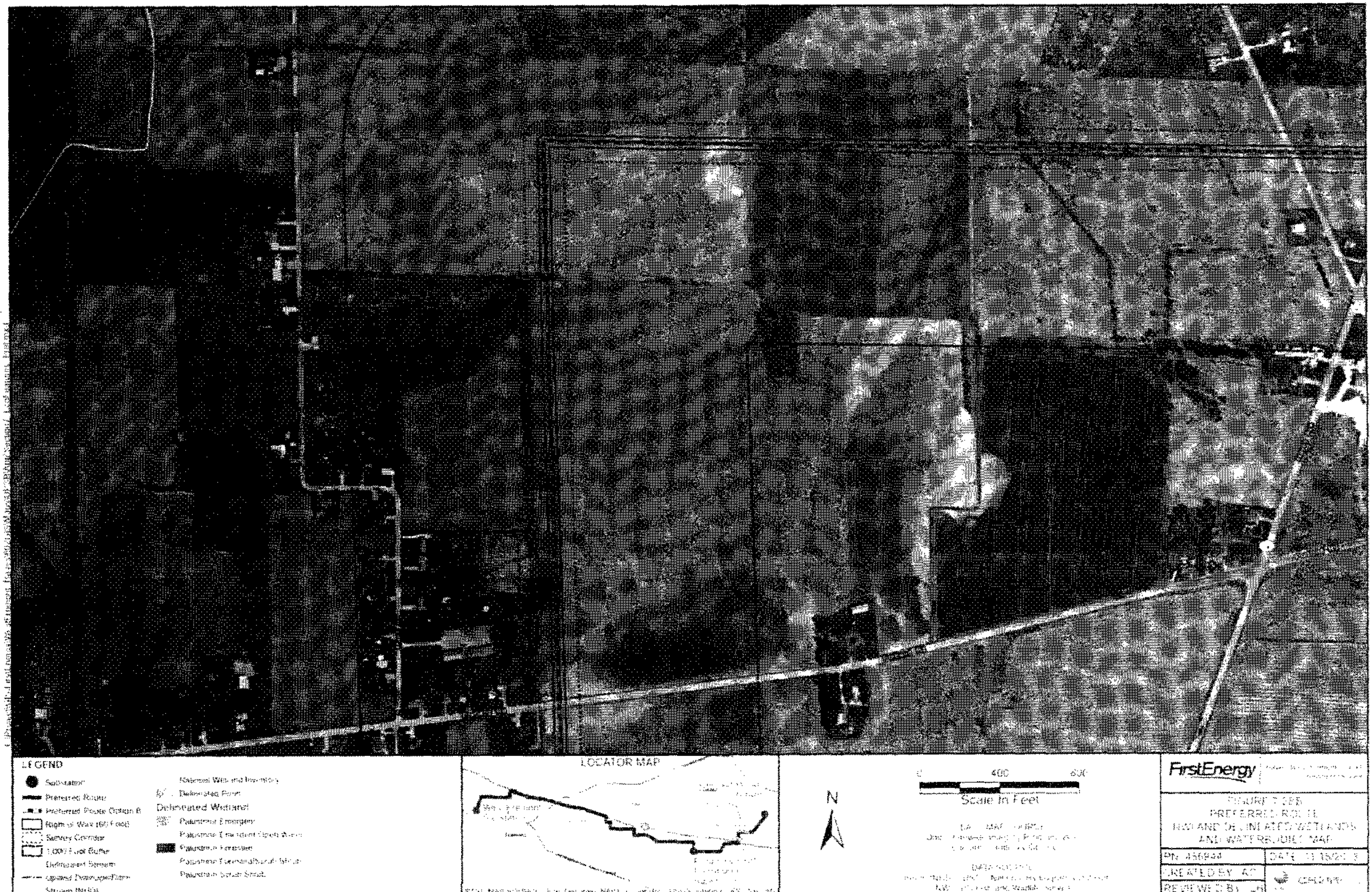
FirstEnergy

FIGURE 7.2AA
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PR. 49B044 | DATE 12-21-2015

CREATED BY: AC

REVIEWED BY: CH


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way (60 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Delineated Wetland
Palustrine Emergent
Palustrine Forested
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
AND WATERBODY MAP
CREATED BY: AC


LEGEND:
Substation
Preferred Route
Preferred Route Option B
Right of Way (80 Feet)
Survey Corridor
1,000 Foot Buffer
Delineated Stream
Upland Drainage Line
Survey (RHD)
National Wetland Inventory
Delineated Point
Delineated Wetland
Palustrine Emergent
Palustrine Emergent/Open Water
Palustrine Forested
Palustrine Forested/Scrub-Shrub
Palustrine Scrub-Shrub
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 7-2CP
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN: 458644
DATE:
DRAWN BY: AC
REVIEWED BY:
EXHIBIT

LEGEND

- Substation
- Preferred Route
- Preferred Route Option B
- Right of Way (ROW) Field
- Survey Corridor
- 1,000' Field Buffer
- Delineated Wetland
- Optional Drainage/Ditch
- Stream (NHD)
- National Wetland Inventory
- Conservation Parks
- Delineated Wetland
- Palustrine Emergent
- Palustrine Emergent/Open Water
- Palustrine Forested
- Palustrine Forested/Emergent
- Palustrine Scrub-Shrub

LOCATOR MAP

N

0 400 800

Scale in Feet

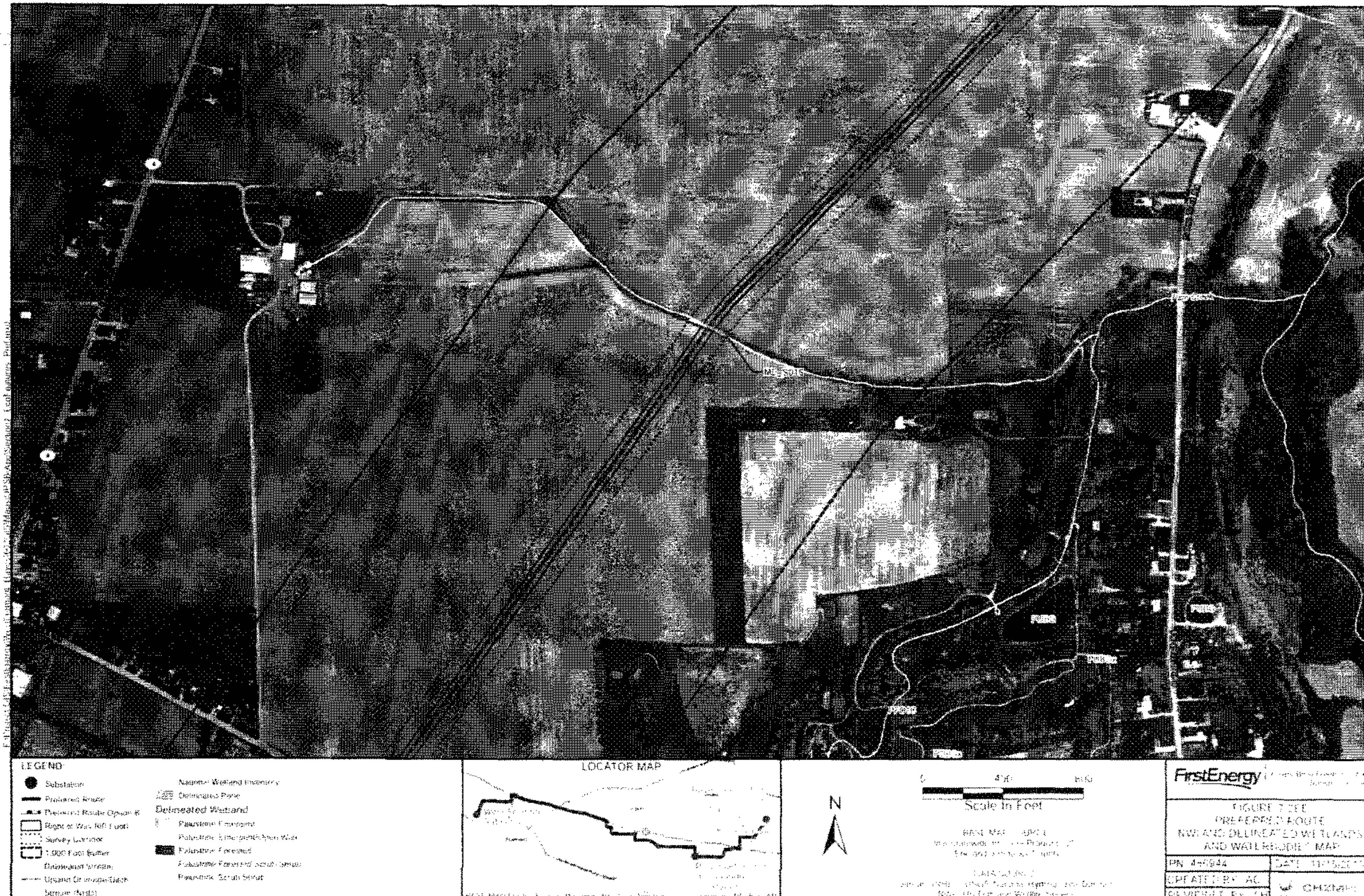
BASE MAP SOURCE:

DATA SOURCE:

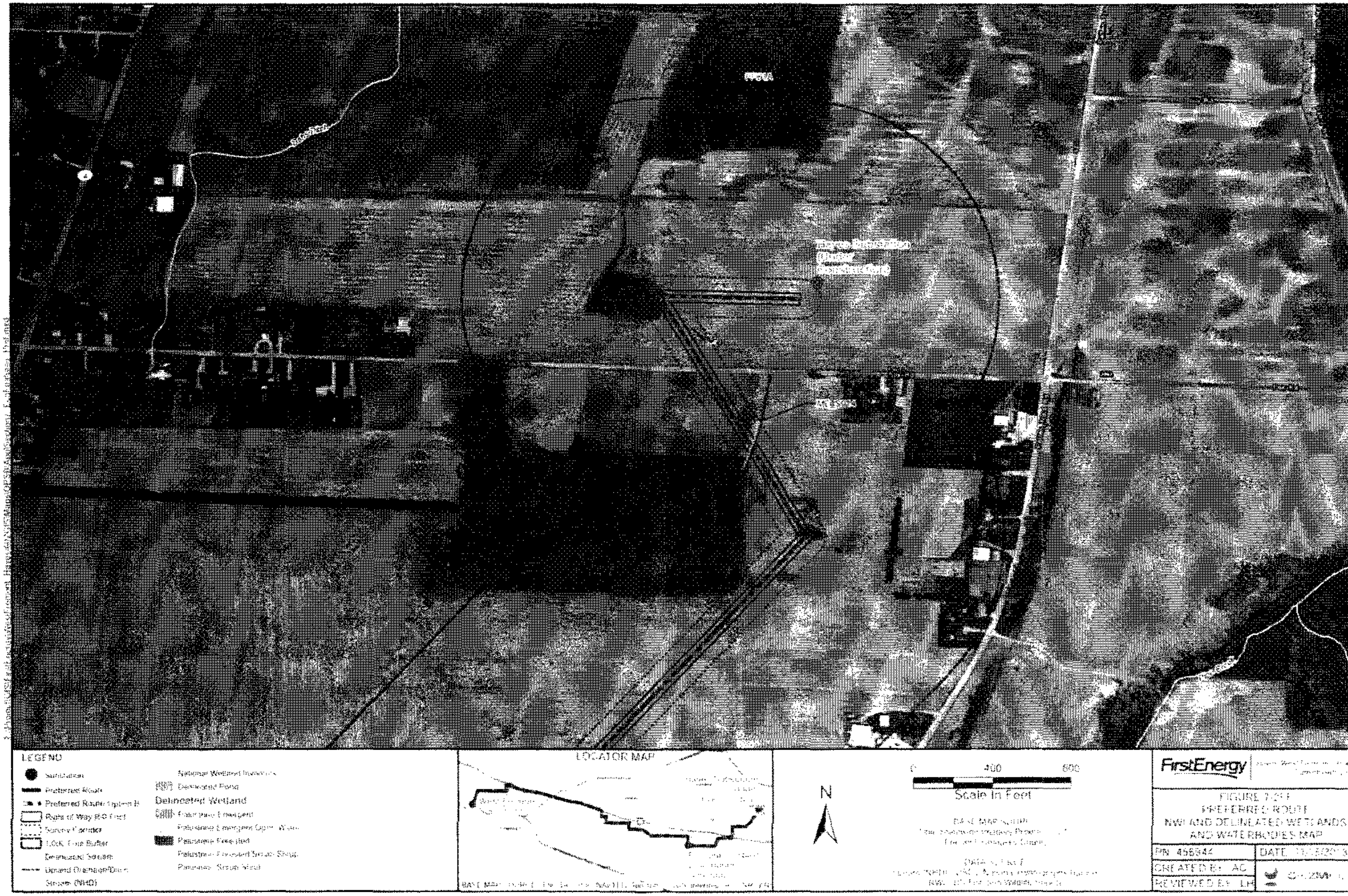
FirstEnergy

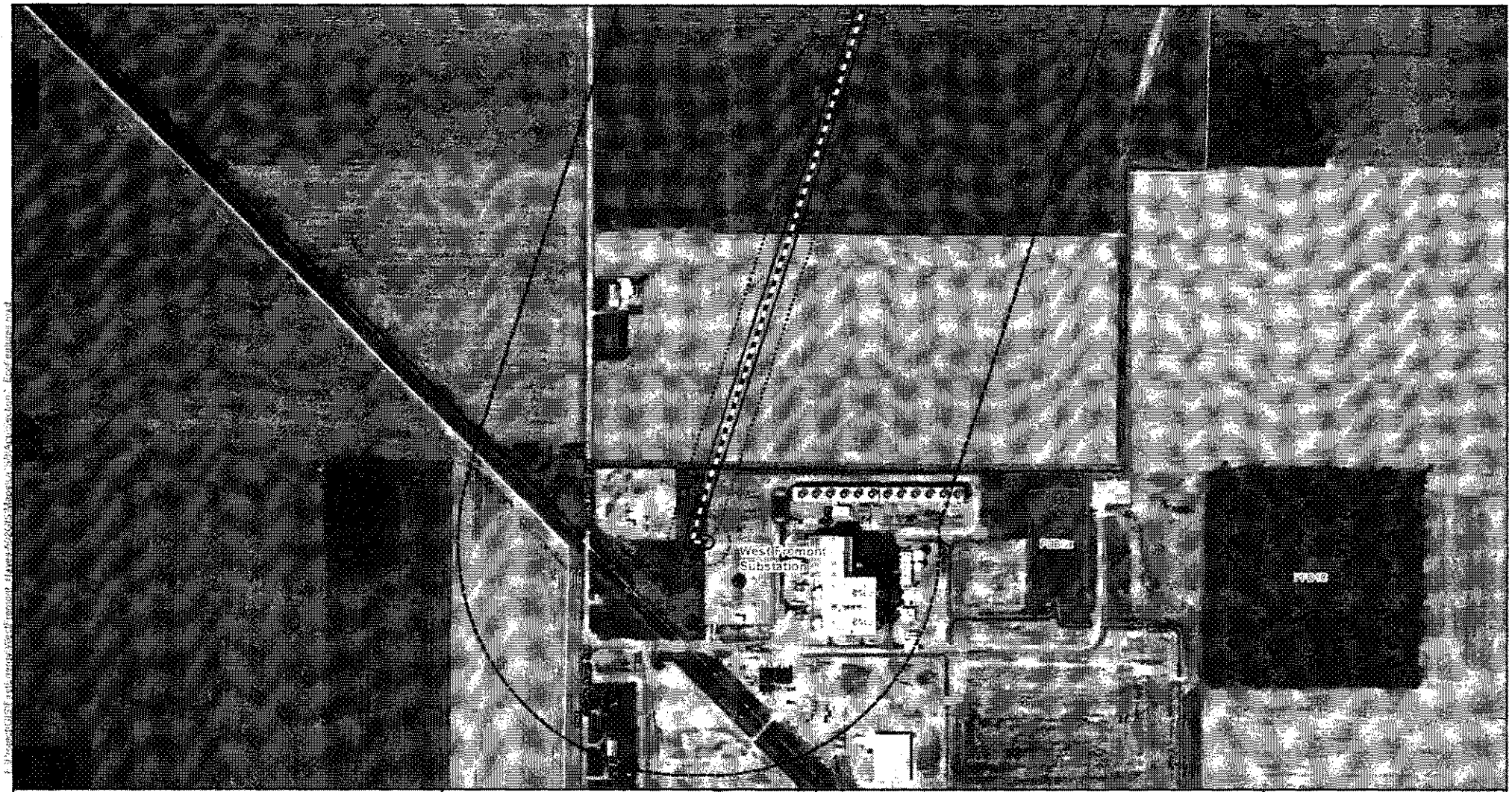
FIGURE 7.2DS
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 458844	DATE: 11/19/2015
CREATED BY: AC	
REVIEWED BY: LH	



LEGEND
Substation
Preferred Route
Delineated Wetland
Palustrine Forested
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
PREFERRED ROUTE
CREATED BY: AC


LEGEND
Substation
Preferred Route
Preferred Route Option B
Right of Way 80 Feet
Survey Corridor
Delineated Pond
Delineated Wetland
Palustrine Emergent
Palustrine Forested
Delineated Stream
Upland Drainage/Drain
Stream (NHD)
LOCATOR MAP
N
0
400
800
Scale In Feet
FirstEnergy
FIGURE 7-2
PREFERRED ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE
CREATED BY AC
REVIEWED BY LH



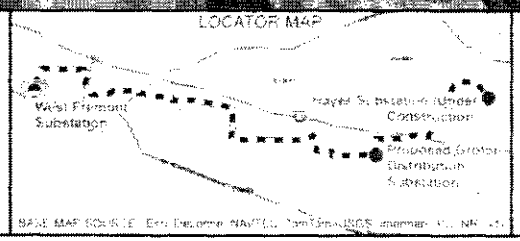
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN, Esri

N

0 400 800

Scale In Feet

BASE MAP SOURCE:
Ohio Statewide Imagery Program 2011
Erie and Sandusky County

DATA SOURCE:
Streams (NHD) - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-34
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 456944	DATE: 11/22/2013
CREATED BY: AC	
REVIEWED BY: LH	

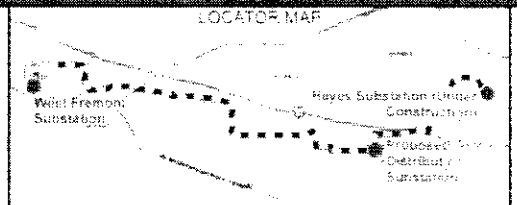
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, INCREMENT P, NRCAN, ...

N

0 400 800

Scale in Feet

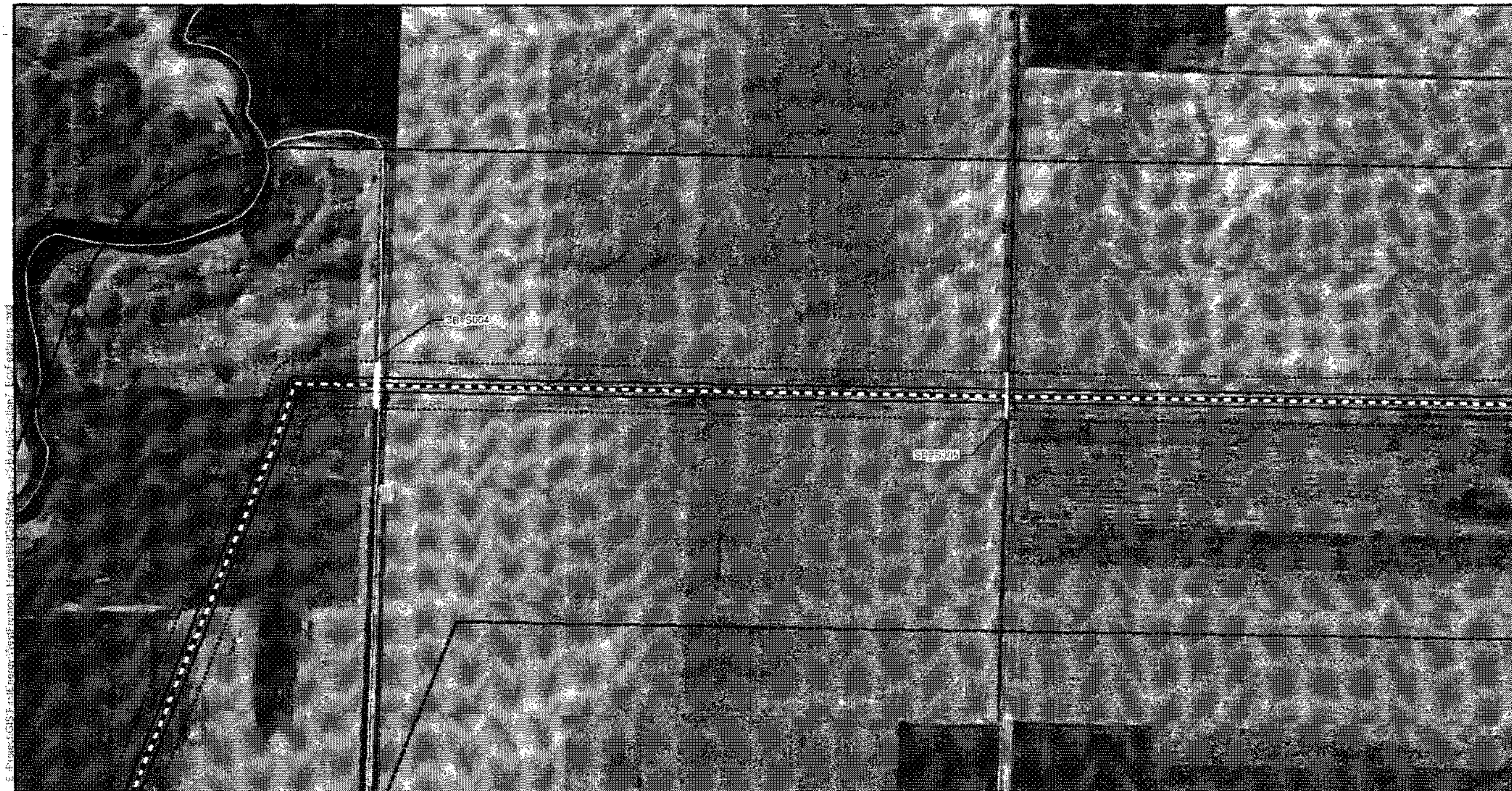
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2011
Erie and Sandusky Counties

DATA SOURCE
Streams (NHD), USGS National Hydrography Dataset
NWI, US Fish and Wildlife Service

FirstEnergy

FIGURE 7.3E
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 405944	DATE: 11/22/2013
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	



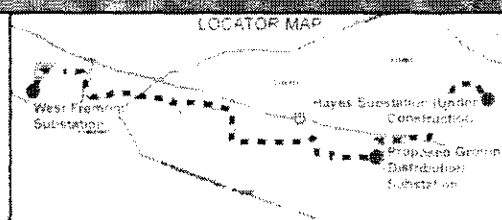
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE

DATA SOURCE

FirstEnergy

FIGURE 7.3C
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY JH	

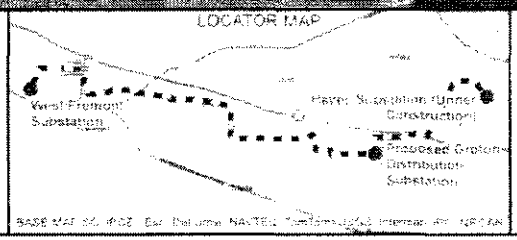
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



N

0 400 800

Scale In Feet

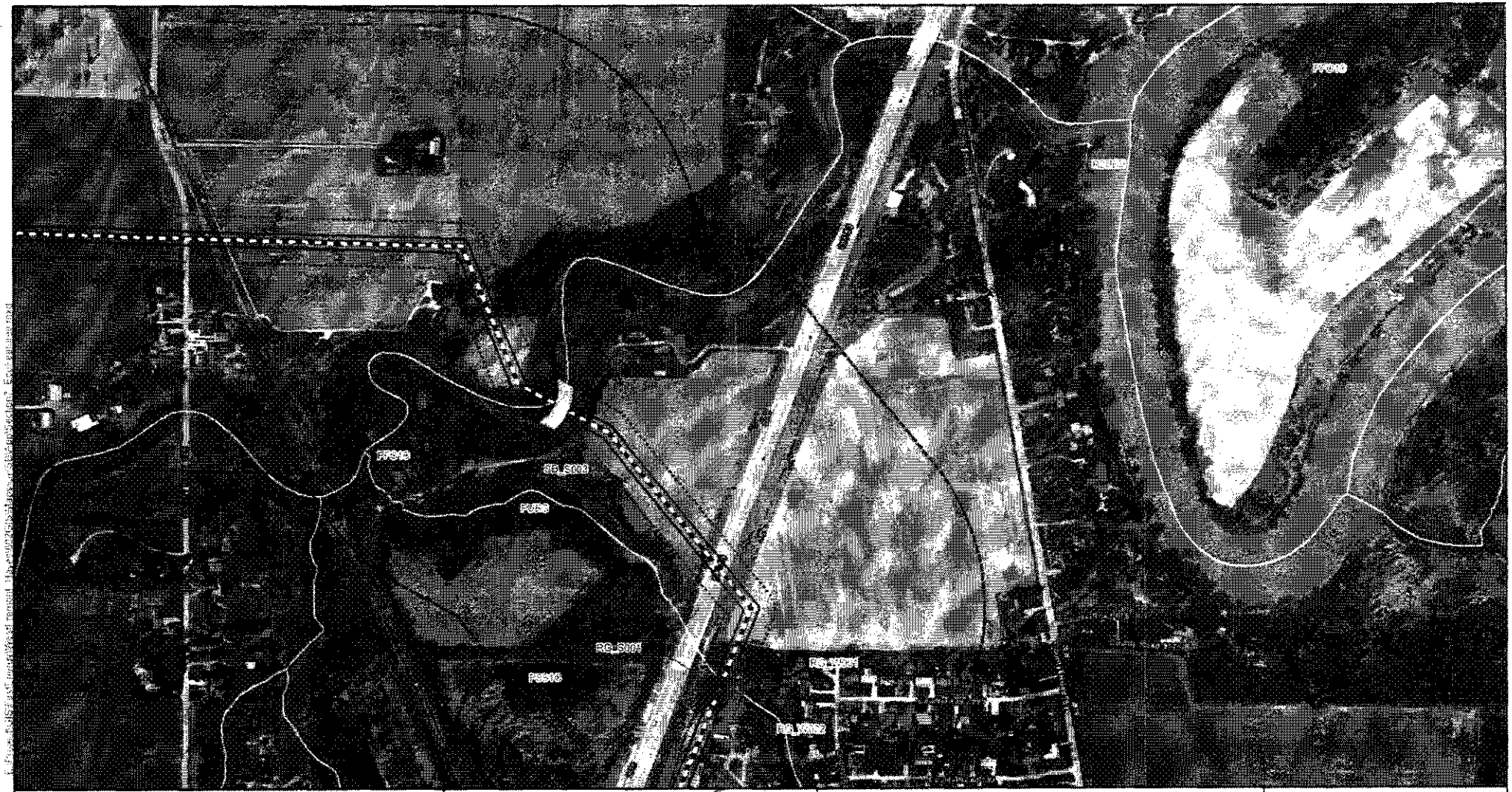
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2015
Erie and Sandusky Counties

DATA SOURCE
National (NHD) - USGS National Hydrographic Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-30
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 456944	DATE: 10/2/2015
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	



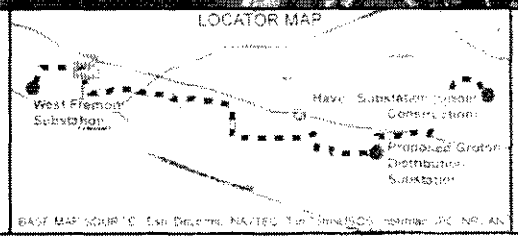
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: [illegible]

N

0 400 800

Scale in Feet

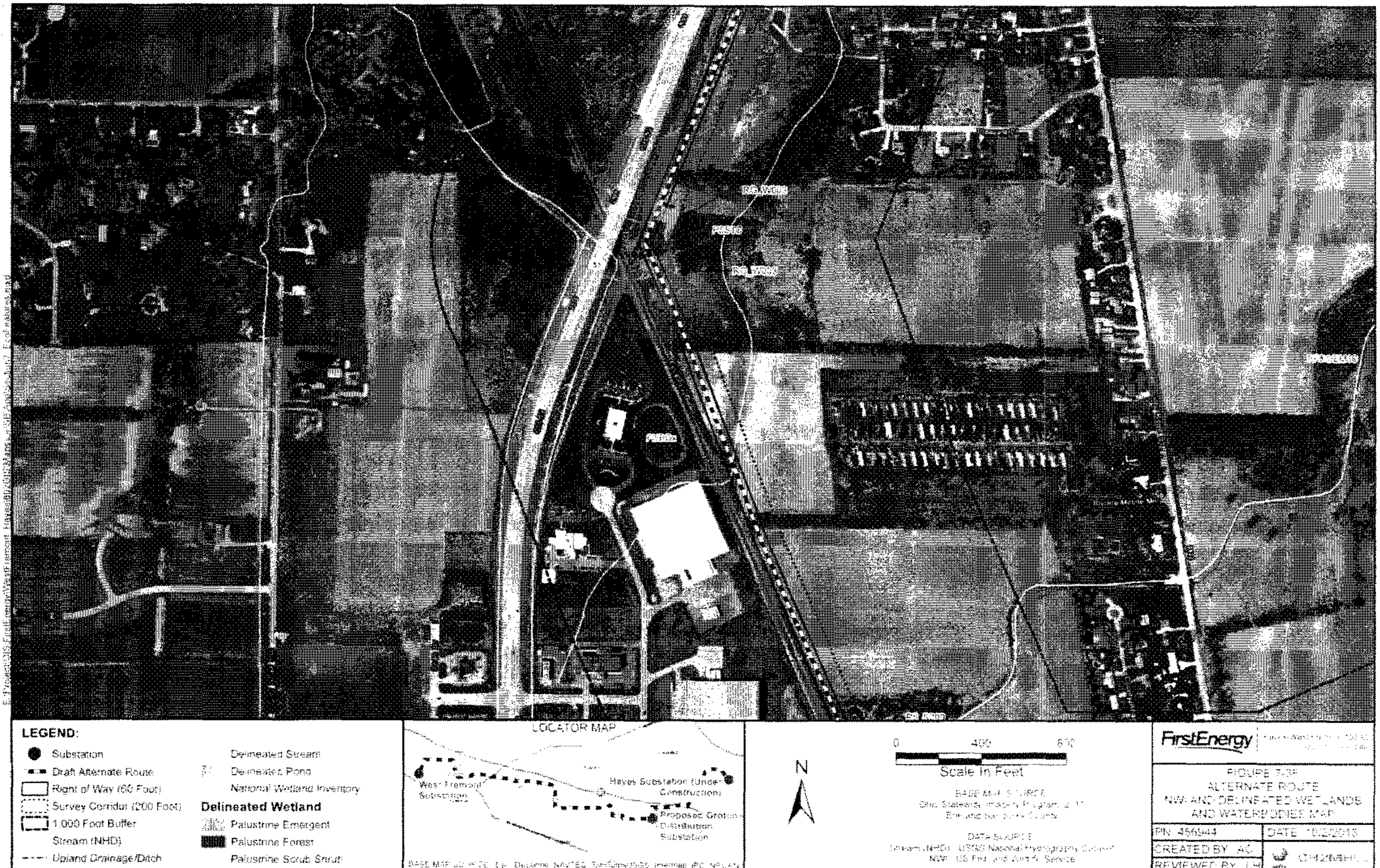
BASE MAP SOURCE
[illegible] Imagery Program, 2011
Erie and Sandusky Counties

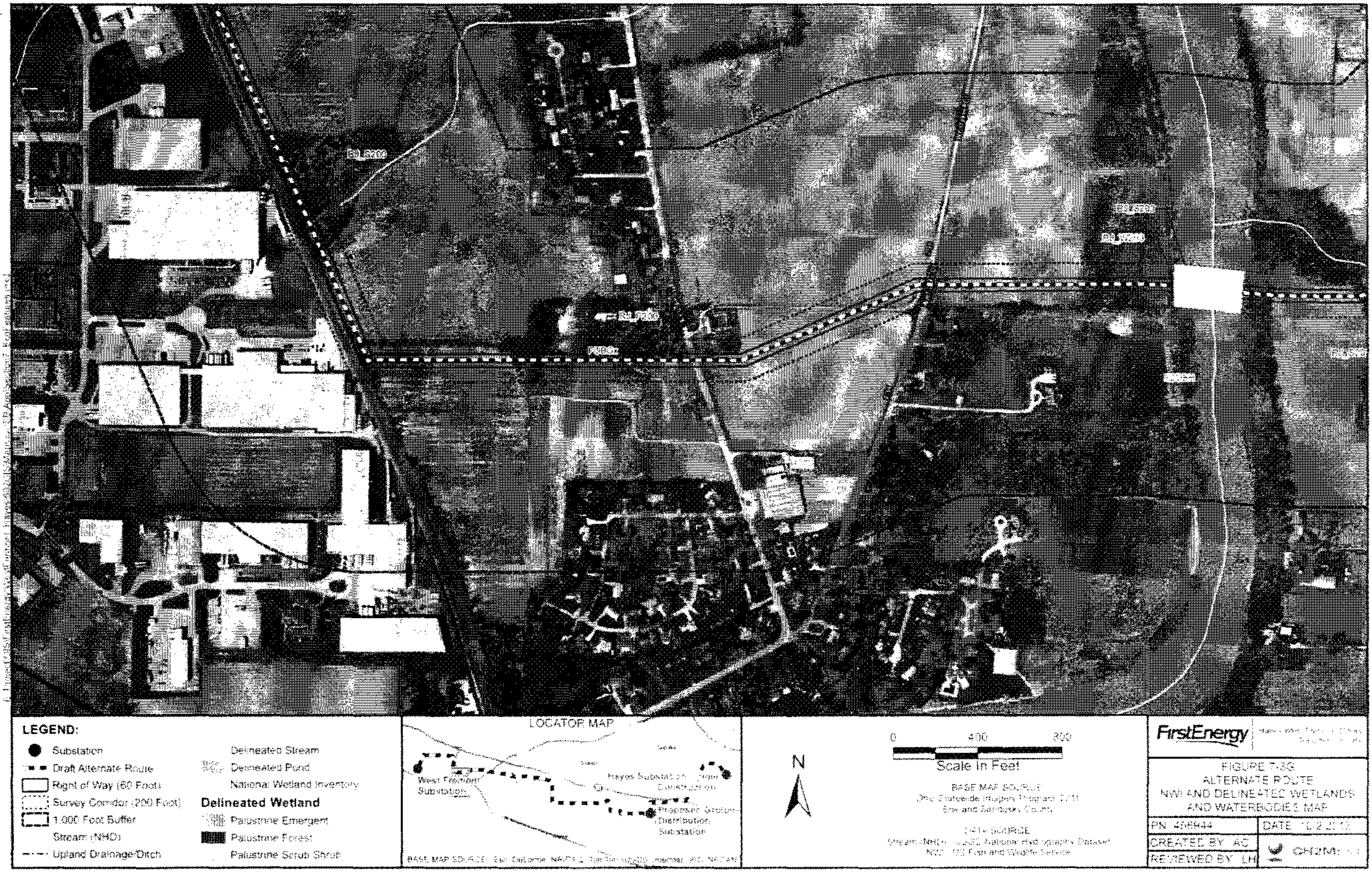
DATA SOURCE
Stream (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

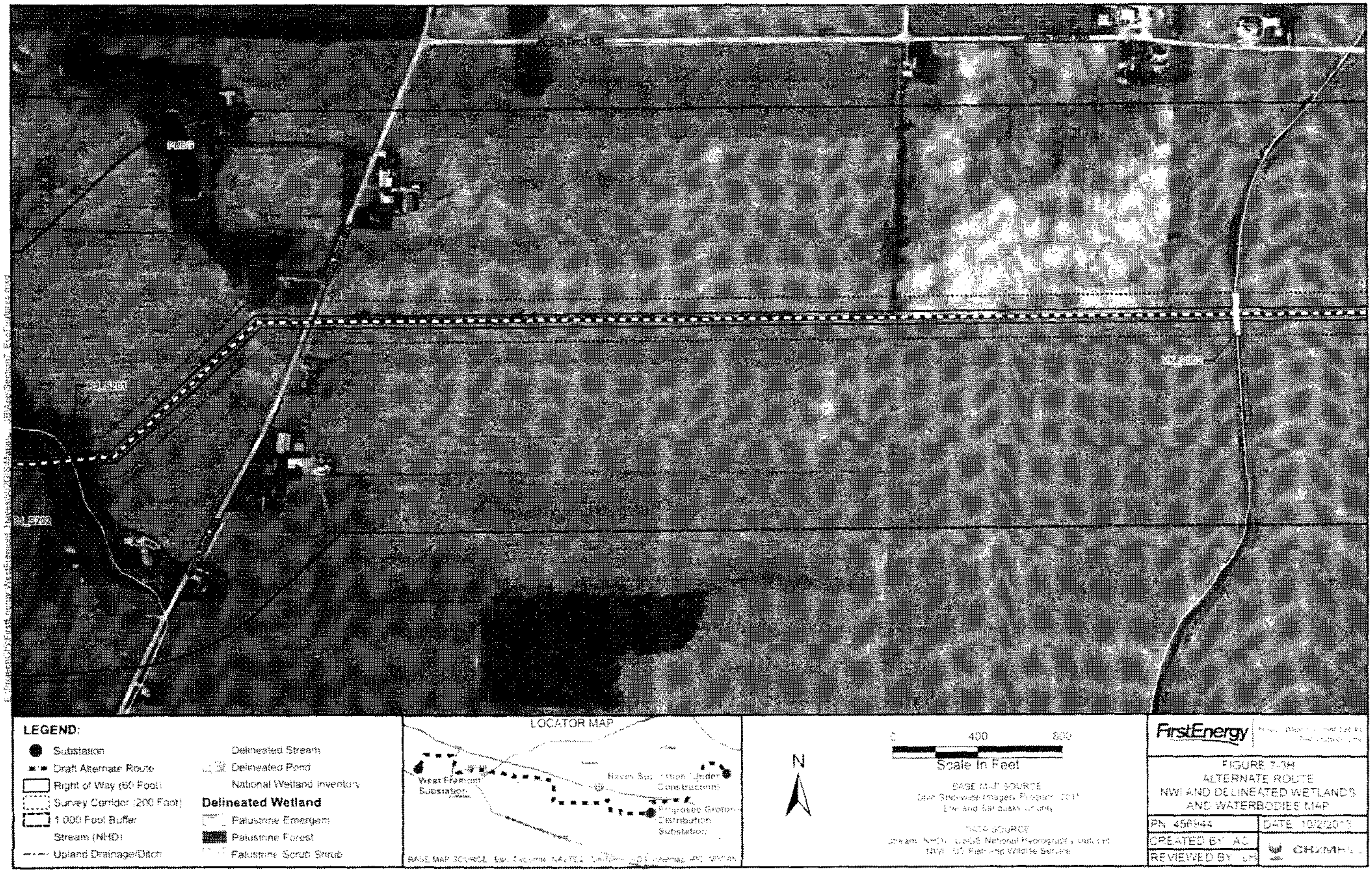
FirstEnergy

FIGURE 7.1-3E
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

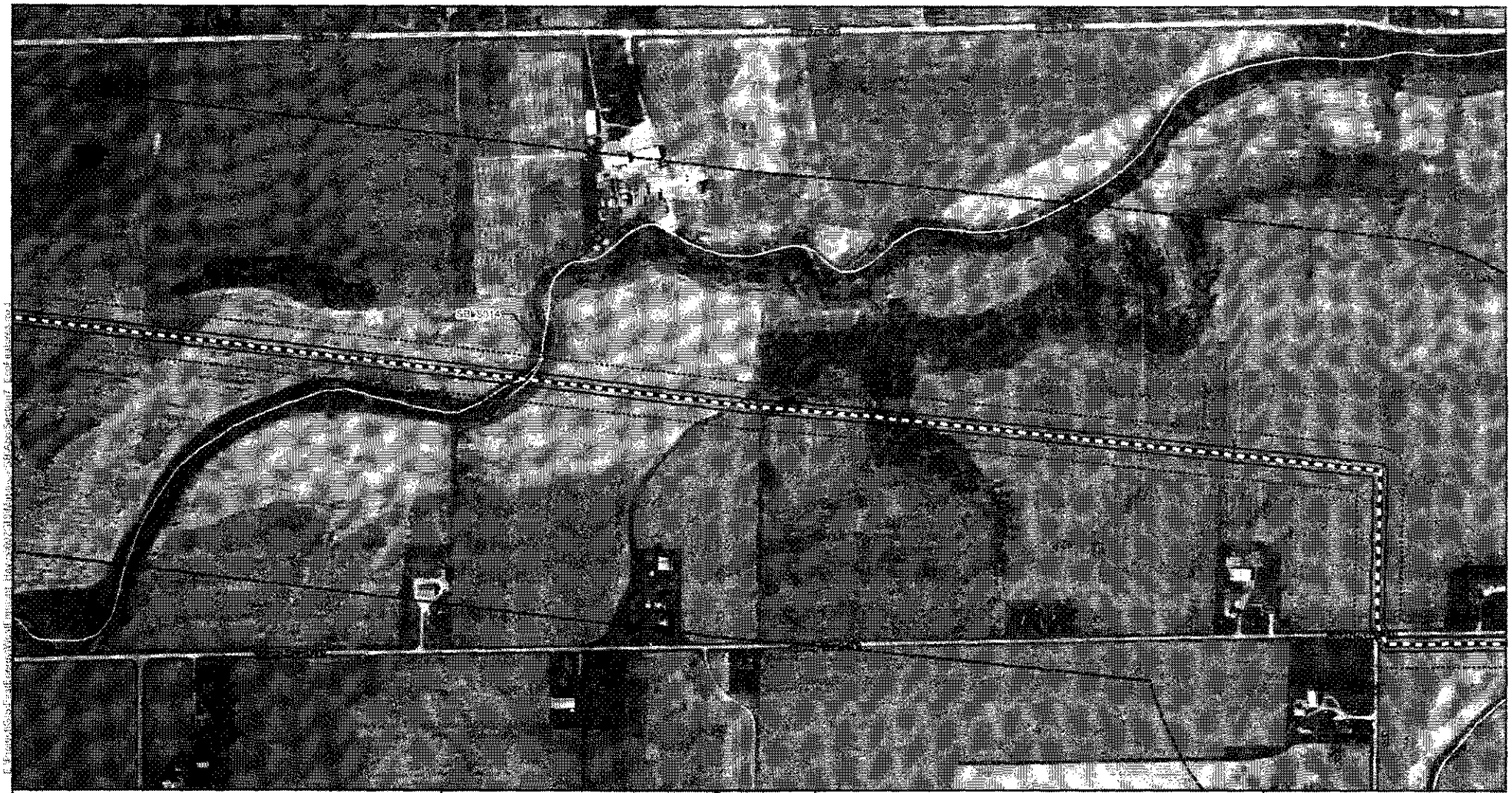
PN 456944	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY LH	


LEGEND:
Substation
Draft Alternate Route
Right of Way (60 Foot)
Survey Corridor (200 Foot)
1,000 Foot Buffer
Stream (NHD)
Upland Drainage/Ditch
Delineated Stream
Delineated Pond
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Forest
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Hayes Substation (Under Construction)
Proposed Groton Distribution Substation
N
0
400
800
Scale In Feet
DATA SOURCE
FirstEnergy
FIGURE 7-3F
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN: 456944
CREATED BY: AC
REVIEWED BY: LH


LEGEND:
Substation
Draft Alternate Route
Right of Way (60 Foot)
Survey Corridor (200 Foot)
1,000 Foot Buffer
Stream (NHD)
Upland Drainage/Ditch
Delineated Stream
Delineated Pond
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Forest
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Hayes Substation
Proposed Groton Distribution Substation
N
0
400
Scale In Feet
BASE MAP SOURCE
DATA SOURCE
FirstEnergy
FIGURE 7-3G
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
CREATED BY AC
REVIEWED BY LH
CH2MHILL


PUBG
LEGEND:
Substation
Draft Alternate Route
Right of Way (60 Foot)
Survey Corridor (200 Foot)
1,000 Foot Buffer
Stream (NHD)
Upland Drainage/Ditch
Delineated Stream
Delineated Pond
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Forest
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Hayes Substation (Under Construction)
Proposed Groton Distribution Substation
N
0
400
800
Scale In Feet
BASE MAP SOURCE
FirstEnergy
FIGURE 7-3H
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN: 456944
DATE: 10/2/2013
CREATED BY: AC
CH2MHILL


LEGEND:
Substation
Draft Alternate Route
Right of Way (60 Foot)
Survey Corridor (200 Foot)
1,000 Foot Buffer
Stream (NHD)
Upland Drainage/Ditch
Delineated Stream
Delineated Pond
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Forest
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Proposed Station Distribution Substation
N
0
400
800
Scale In Feet
BASE MAP SOURCE
Ohio Statewide Imagery Program 2011
Erie and Sandusky Counties
DATA SOURCE
NHD - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service
FirstEnergy
FIGURE 7-3i
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE 10/2/2013
CREATED BY AC
REVIEWED BY LH
CH2MHILL



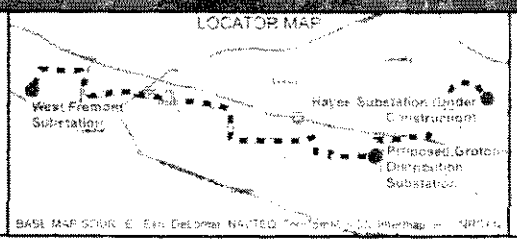
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOUR E: Esri DeLorme NAVTEQ

N

0 400 800

Scale in Feet

BASE MAP SOURCE
[illegible] Program, 2011
Erie and Sandusky Counties

DATA SOURCE
Layer: NHD - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7.3J
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/2 2013
CREATED BY AC	
REVIEWED BY LH	

CHOMPO

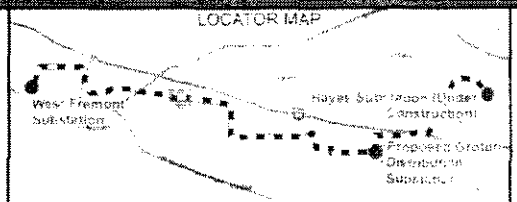
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, HERE, TomTom, USGS, Intermap, INCREMENT P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

0 400 800

Scale in Feet

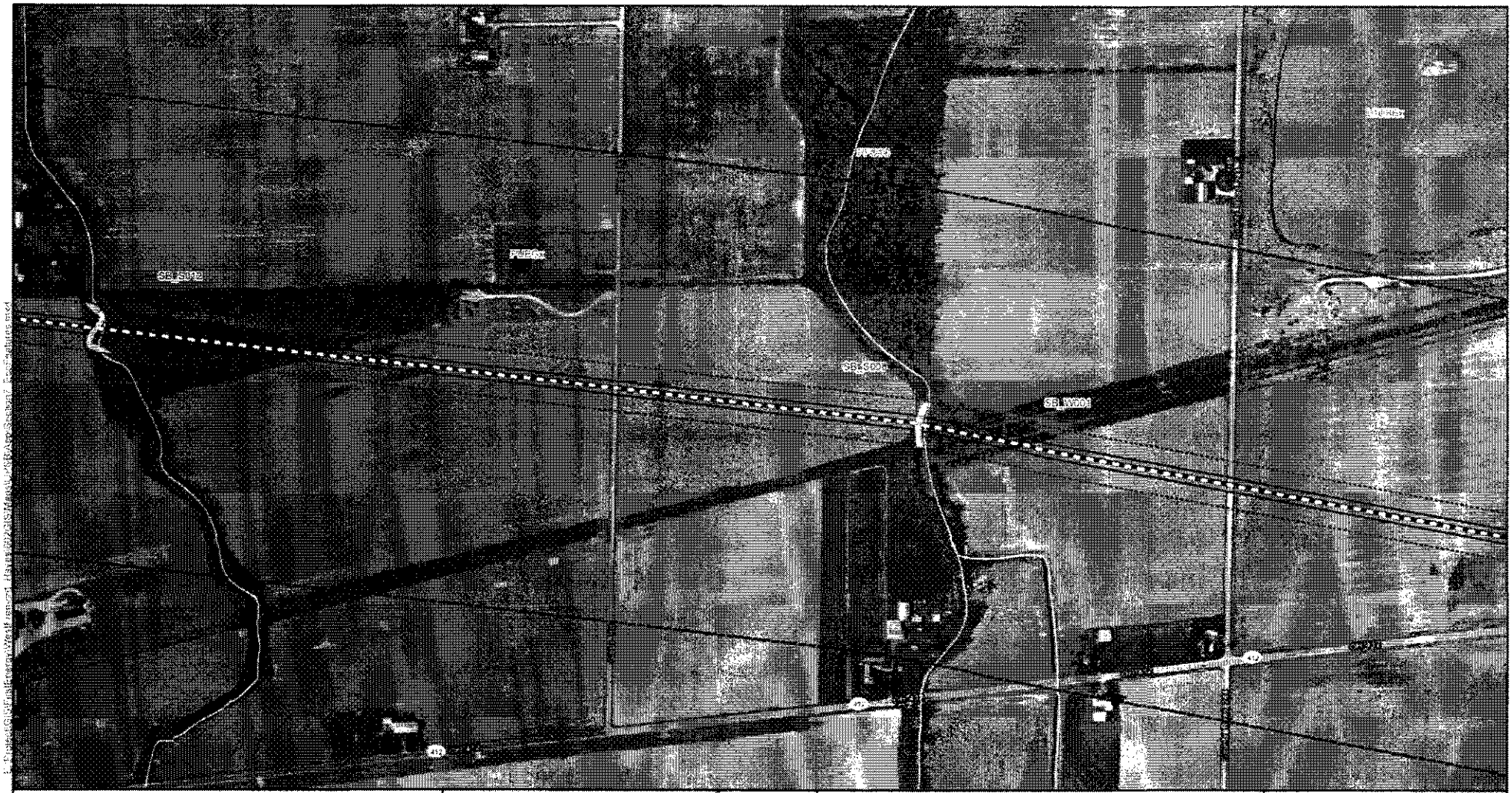
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2017
Erie and Sandusky County

DATA SOURCE
Stream: NHD - USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3K
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 466644	DATE 10/2/2018
CREATED BY AC	C4I2MV
REVIEWED BY LH	



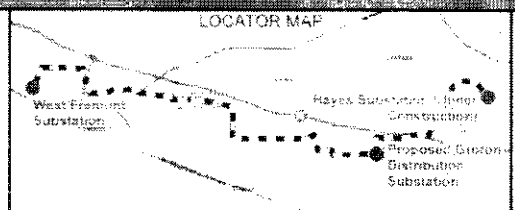
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN,

N

0 400 800

Scale In Feet

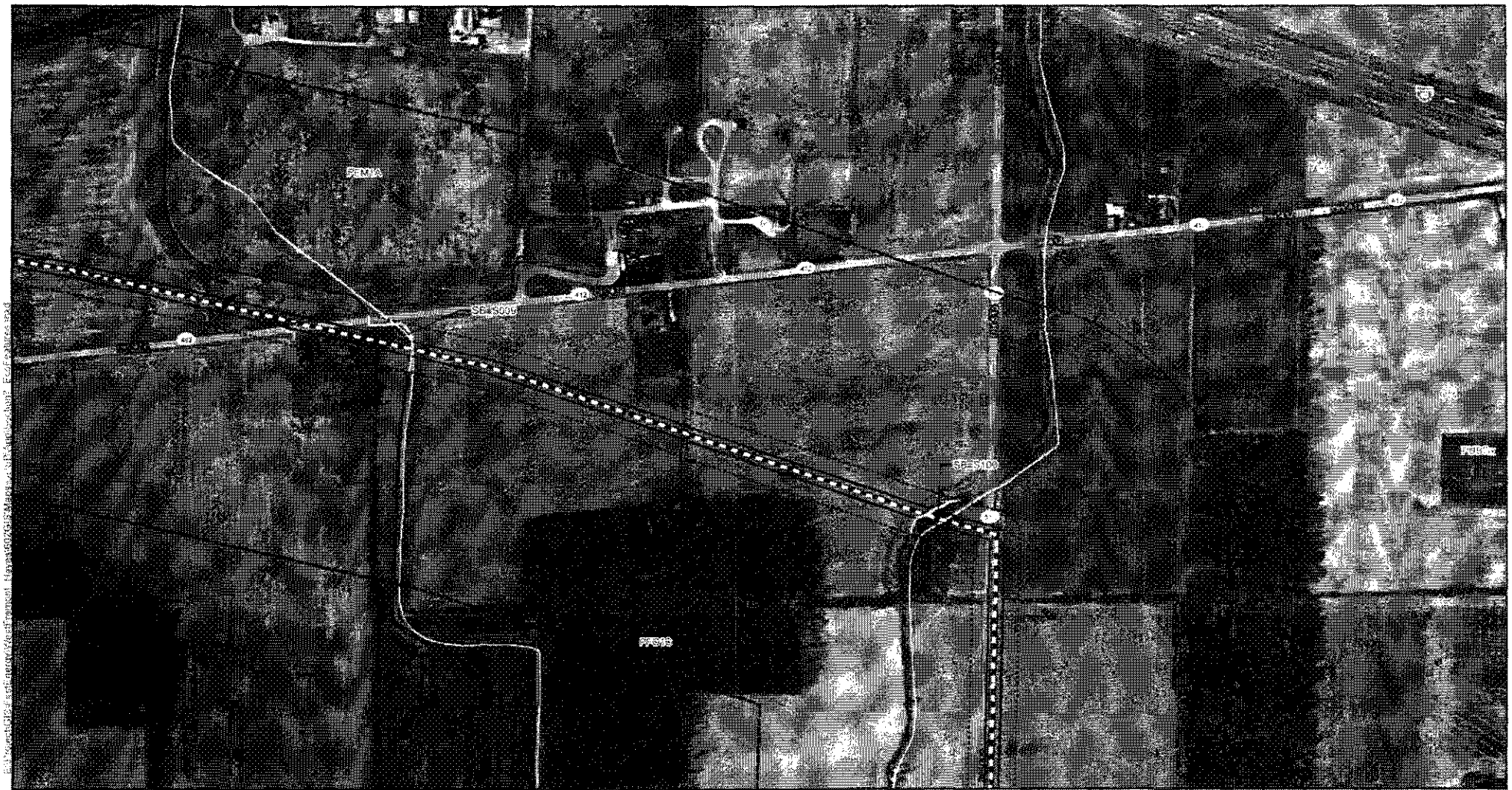
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2011
Erie and Ottawa Counties

DATA SOURCE
Stream (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3L
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS AND WATERBODIES MAP

PN 456644	DATE 10/2/2013
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	



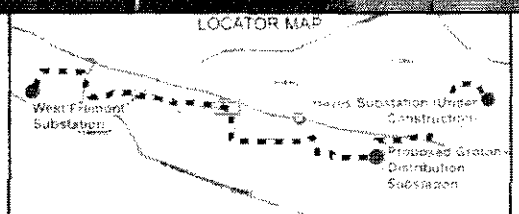
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: ESRI, DELORME, NAVTEQ, TOMTOM, INTERMAP, INCREMENT P, NRCAN,

N

0 400 800

Scale In Feet

BASE MAP SOURCE:
Ohio Statewide Imagery Program, 2011
Erie and Sandusky County

DATA SOURCE:
Stream (NHD) - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7.10M
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 465944	DATE 10/2/2013
CREATED BY AC	CHKD BY
REVIEWED BY LH	

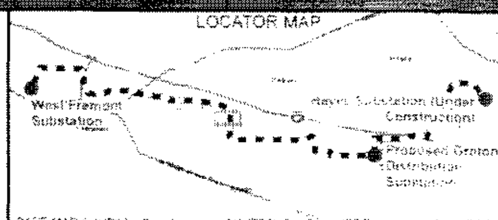
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



N

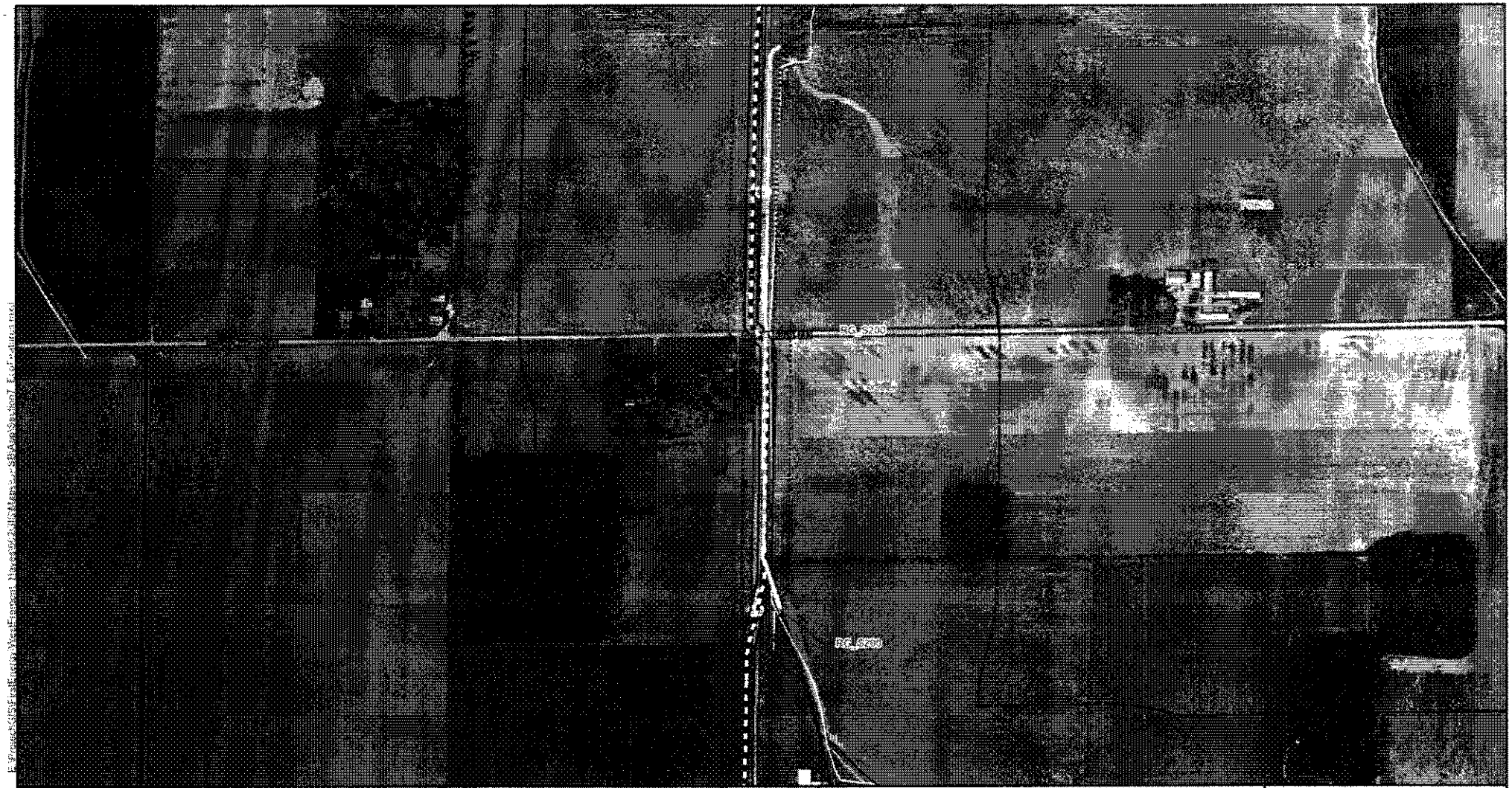
0 400 800
Scale In Feet

FirstEnergy

FIGURE 7-3N
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944 | DATE 10/2/2013
CREATED BY AC
REVIEWED BY LH

CH2MHILL



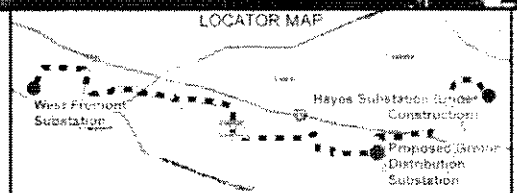
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, NRCAN

N

0 400 800

Scale In Feet

BASE MAP SOURCE
Ohio Statewide Imagery Program, 2011
Erie and Sandusky County

DATA SOURCE
Stream (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3C
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

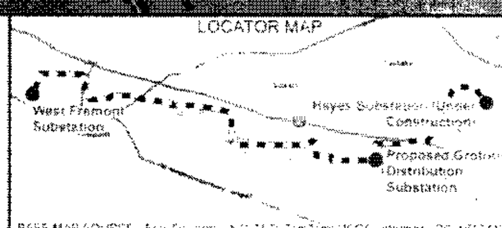
PN 456944	DATE 10/2/2013
CREATED BY AC	CH2M
REVIEWED BY LH	

LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN

N

0 400 800

Scale In Feet

BASE MAP SOURCE:
Ohio Statewide Imagery Program, 2011
Erie and Sandusky County

DATA SOURCE:
Stream - NHD - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3P
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 456944	DATE: 10/2/2013
CREATED BY: AC	
REVIEWED BY: JH	CH2MHILL

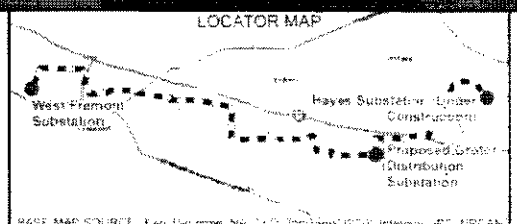
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, AN

N

0 400 800

Scale In Feet

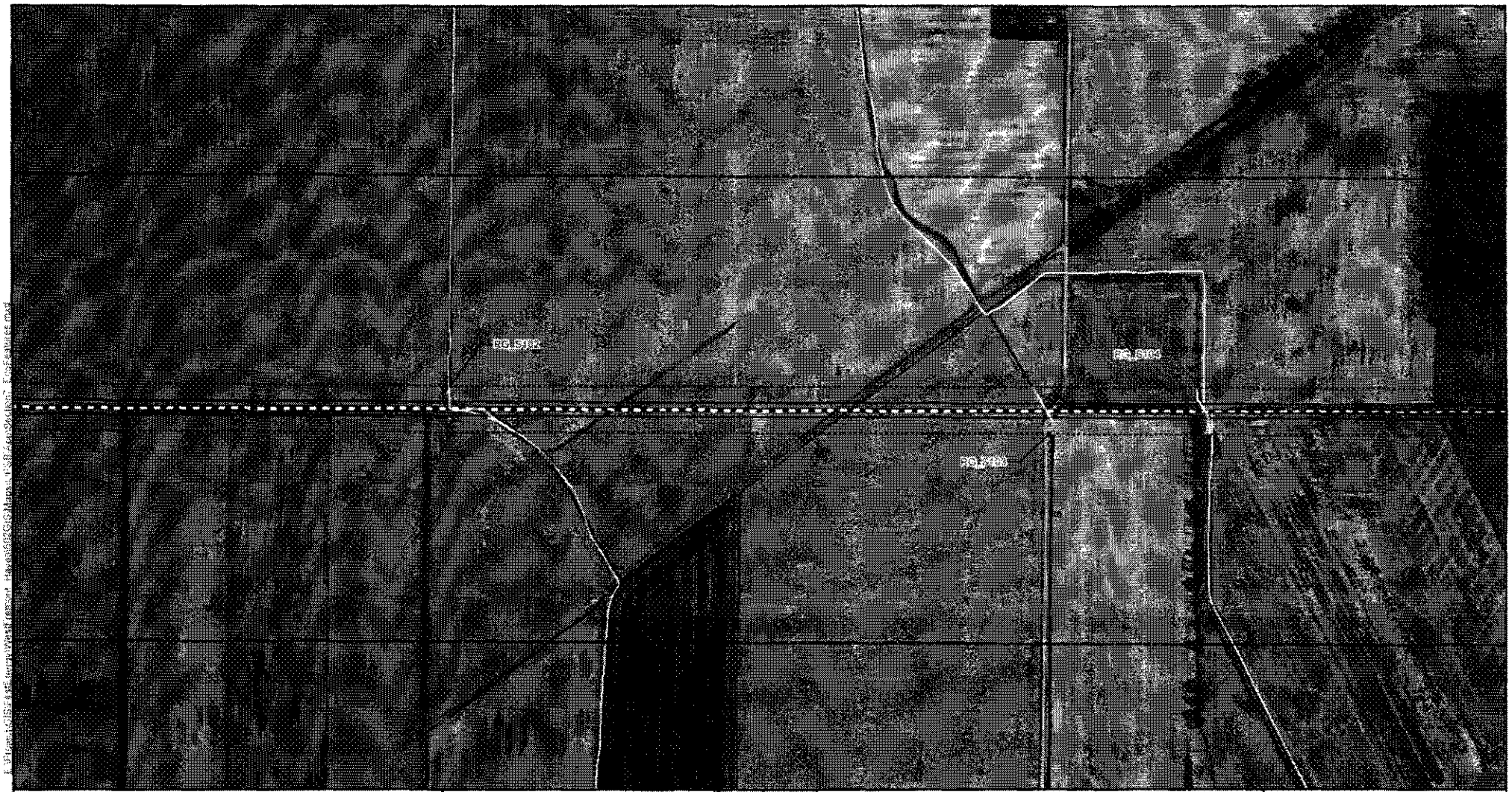
BASE MAP SOURCE
Esri, Statewide Imagery Program, 2011
Erie and Sandusky County

DATA SOURCE
Stream (NHD) - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3Q
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY LH	



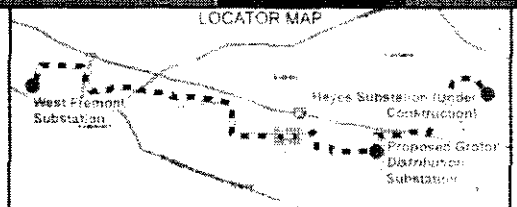
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN

N

0 400 800

Scale In Feet

BASE MAP SOURCE
Ohio Statewide Imagery Program 2011
Esri and Sanborn Layers

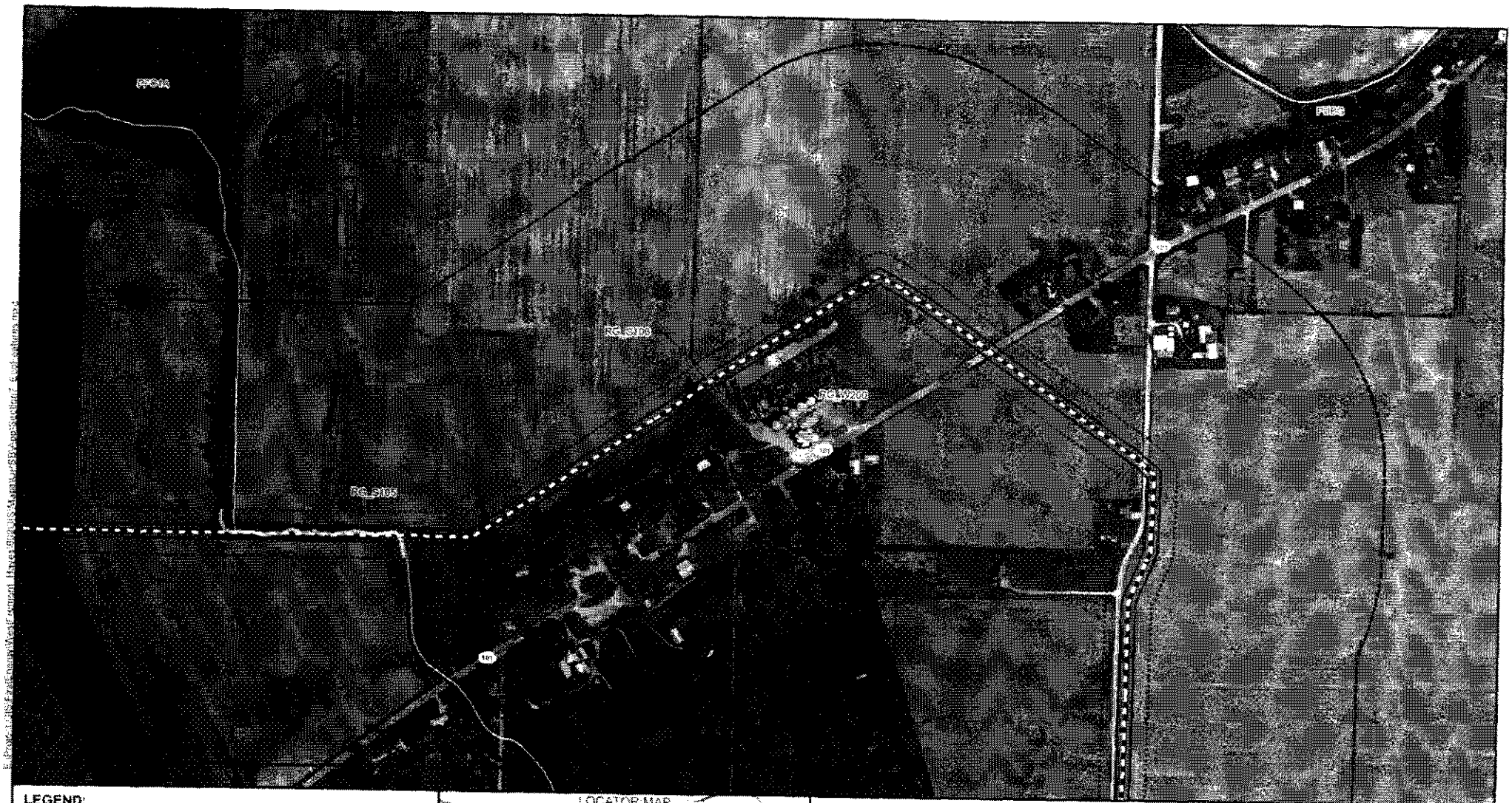
DATA SOURCE
Stream: USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7.3R
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 466944	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY LH	

CH2MHILL



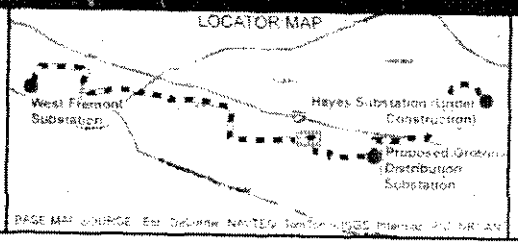
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, INCREMENT P, NRCAN

N

0 400 600

Scale In Feet

BASE MAP SOURCE:
Ohio Statewide Imagery Program, 2011
Erie and Sandusky County

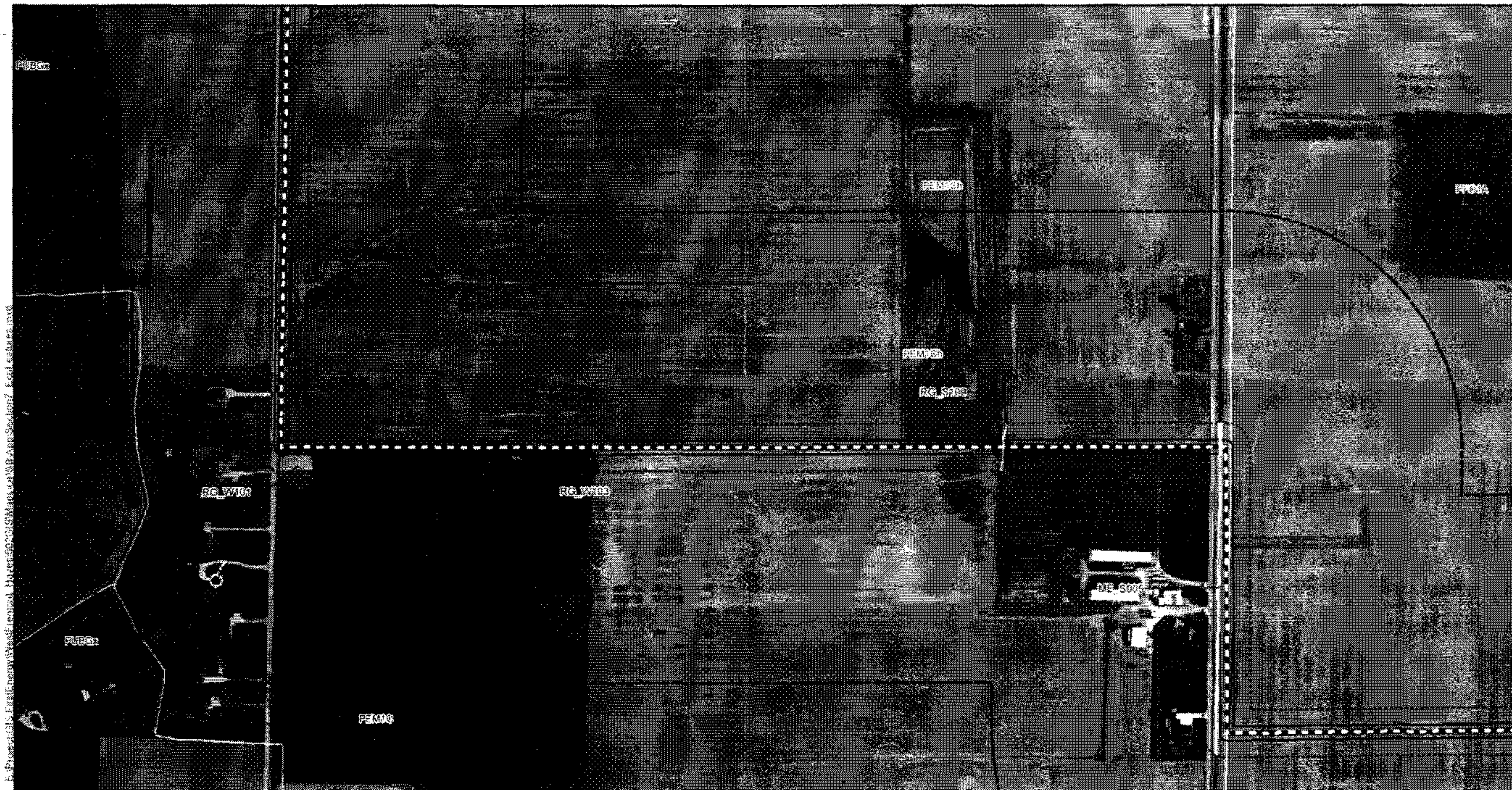
DATA SOURCE:
Stream (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7.3S
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 466944	DATE 10/2/2013
CREATED BY: AC	
REVIEWED BY: LH	

CH2M HILL



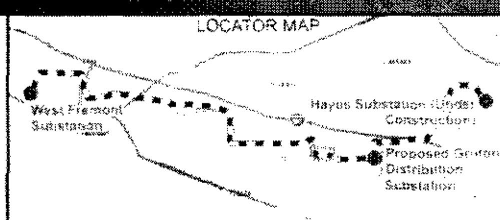
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- *Palustrine Emergent*
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



N

0 400 800

Scale In Feet

BASE MAP SOURCE: Ohio Statewide Imagery Program (OSIP), Erie and Sandusky County

DATA SOURCE: Stream (NHD) - USGS National Hydrography Dataset; NWI - US Fish and Wildlife Service

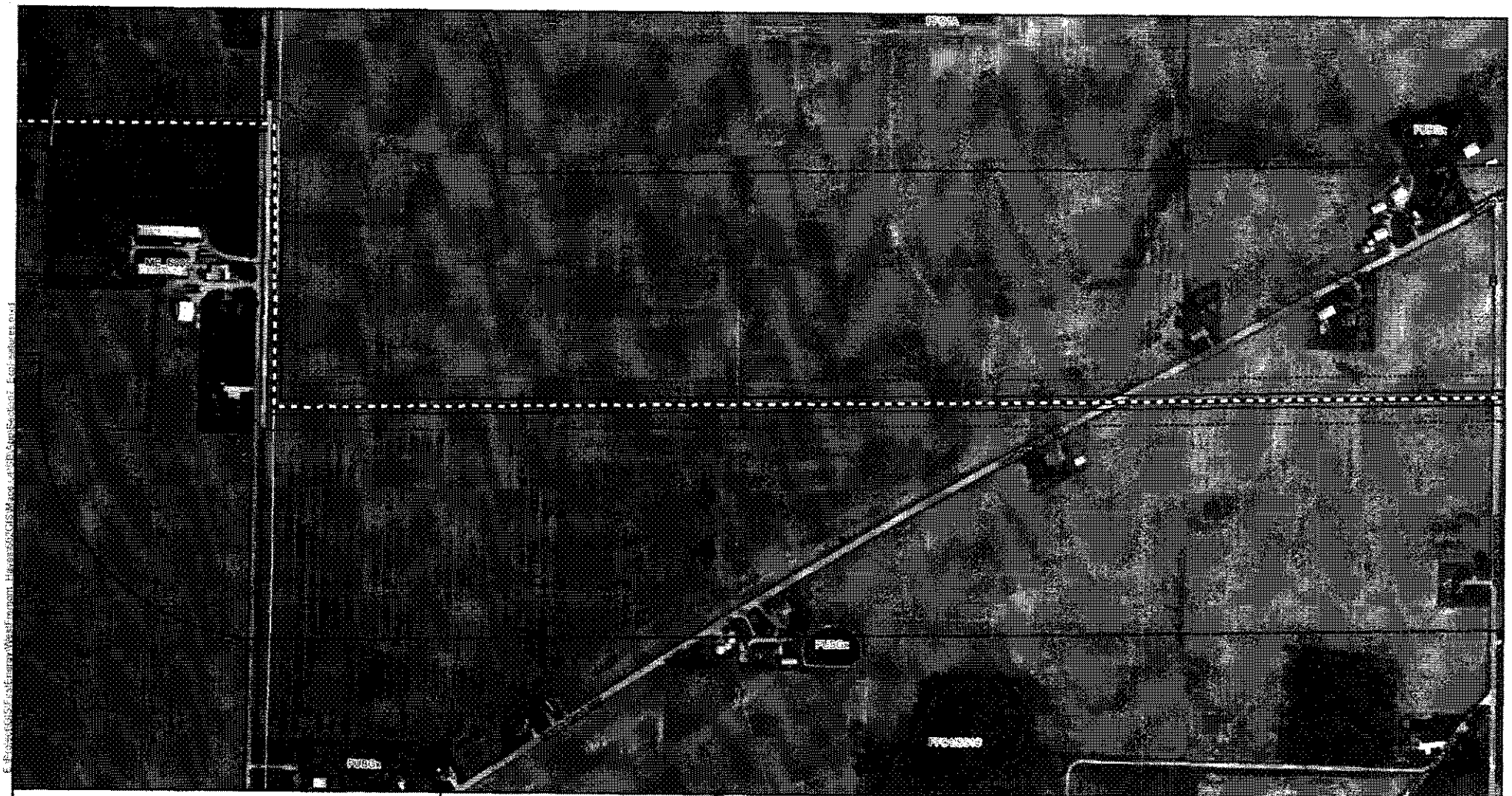
BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN

FirstEnergy

FIGURE 7-3T
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 455944 DATE: 10/2/2013
CREATED BY: AC
REVIEWED BY: LH

CH2MHILL



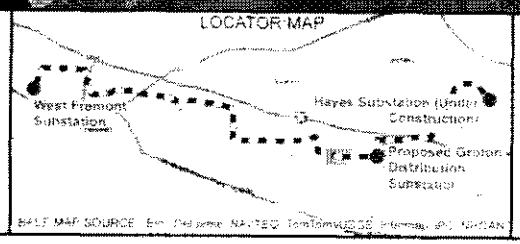
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DigitalGlobe, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN

N

0 400 800

Scale in Feet

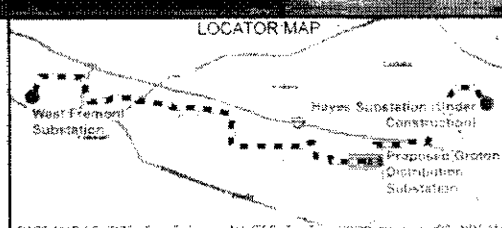
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2015
Erie and Sandusky Counties

DATA SOURCE
Stream (NHD): U.S. National Hydrography Dataset
U.S. - U.S. Fish and Wildlife Service

FirstEnergy

FIGURE 7-3U
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/27/2015
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	



LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

N

0 400 800
Scale In Feet

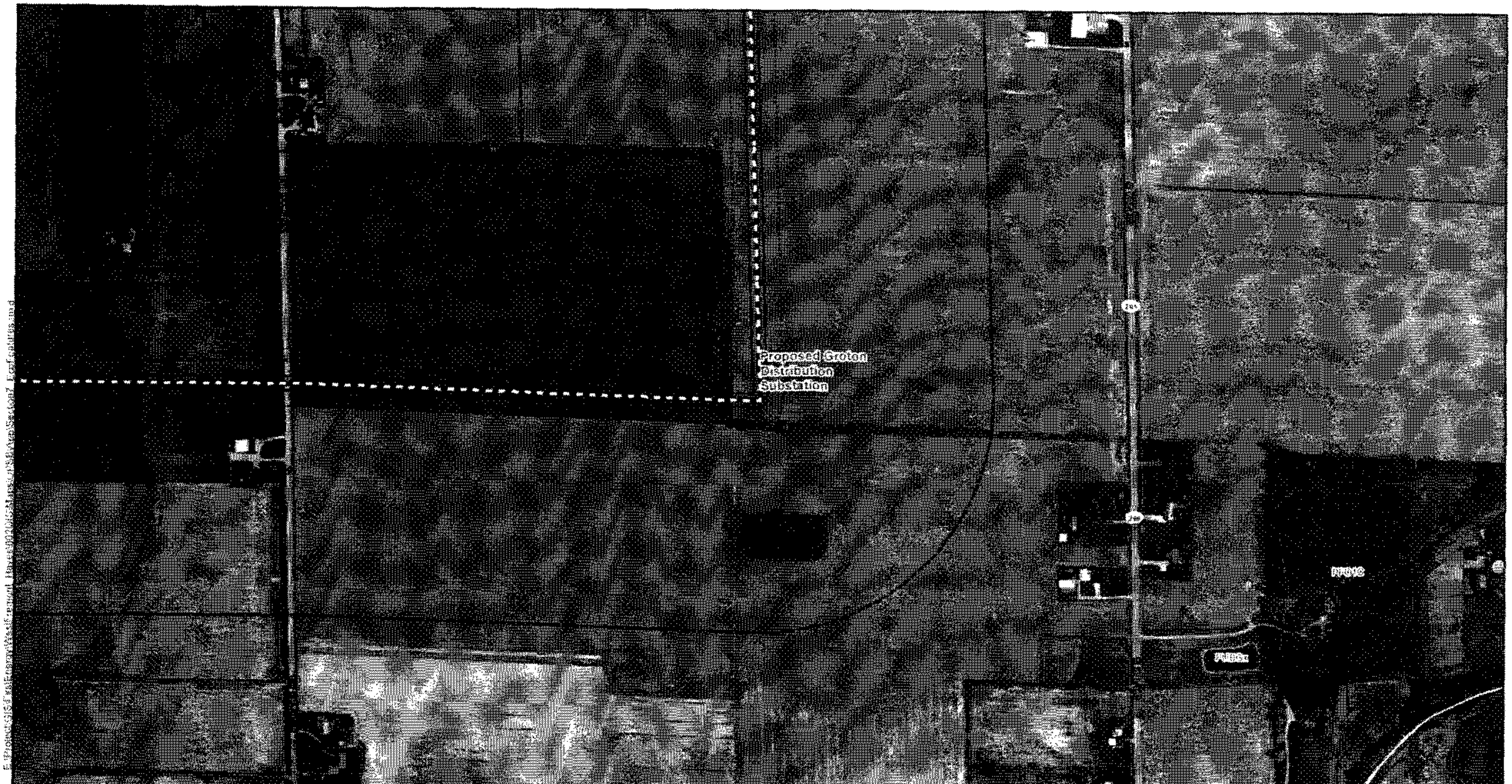
BASE MAP SOURCE
Ohio Statewide Imagery Program 2011
Erie and Sandusky County

DATA SOURCE
Streams (NHD) - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3V
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/2/2013
CREATED BY AC	CH2MHILL
REVIEWED BY LH	



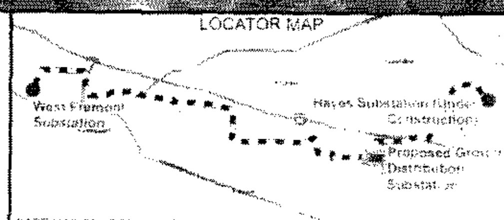
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



N

0 400 800
Scale In Feet

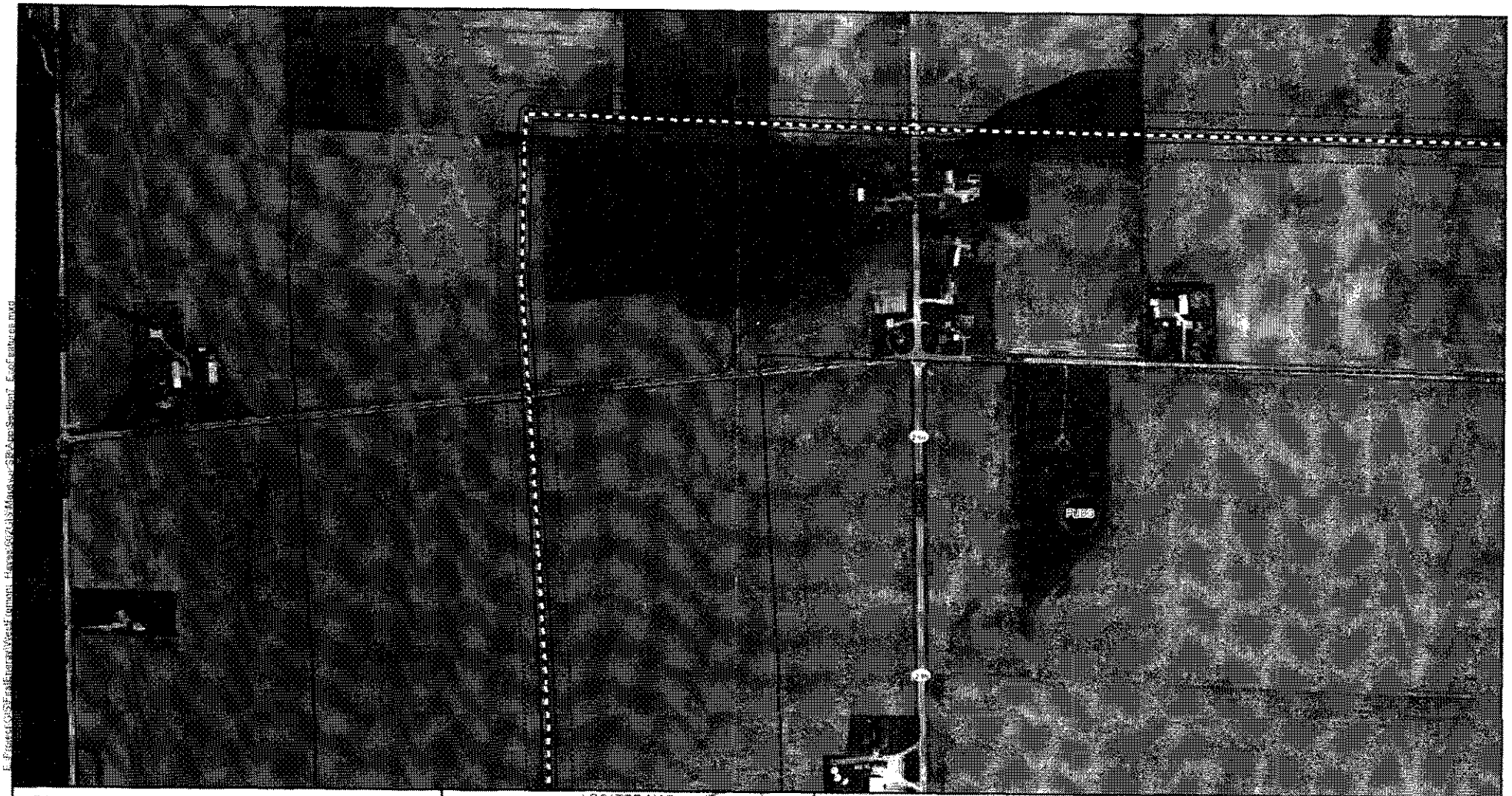
BASE MAP SOURCE
Ohio Statewide Imagery Program
Erie and Sandusky County

DATA SOURCE
Stream/NHD - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3W
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 456944	DATE: 10/2/2013
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	



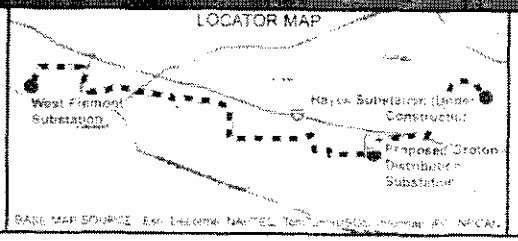
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Feet)
- Survey Corridor (200 Feet)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, NRCAN

N

0 400 800

Scale In Feet

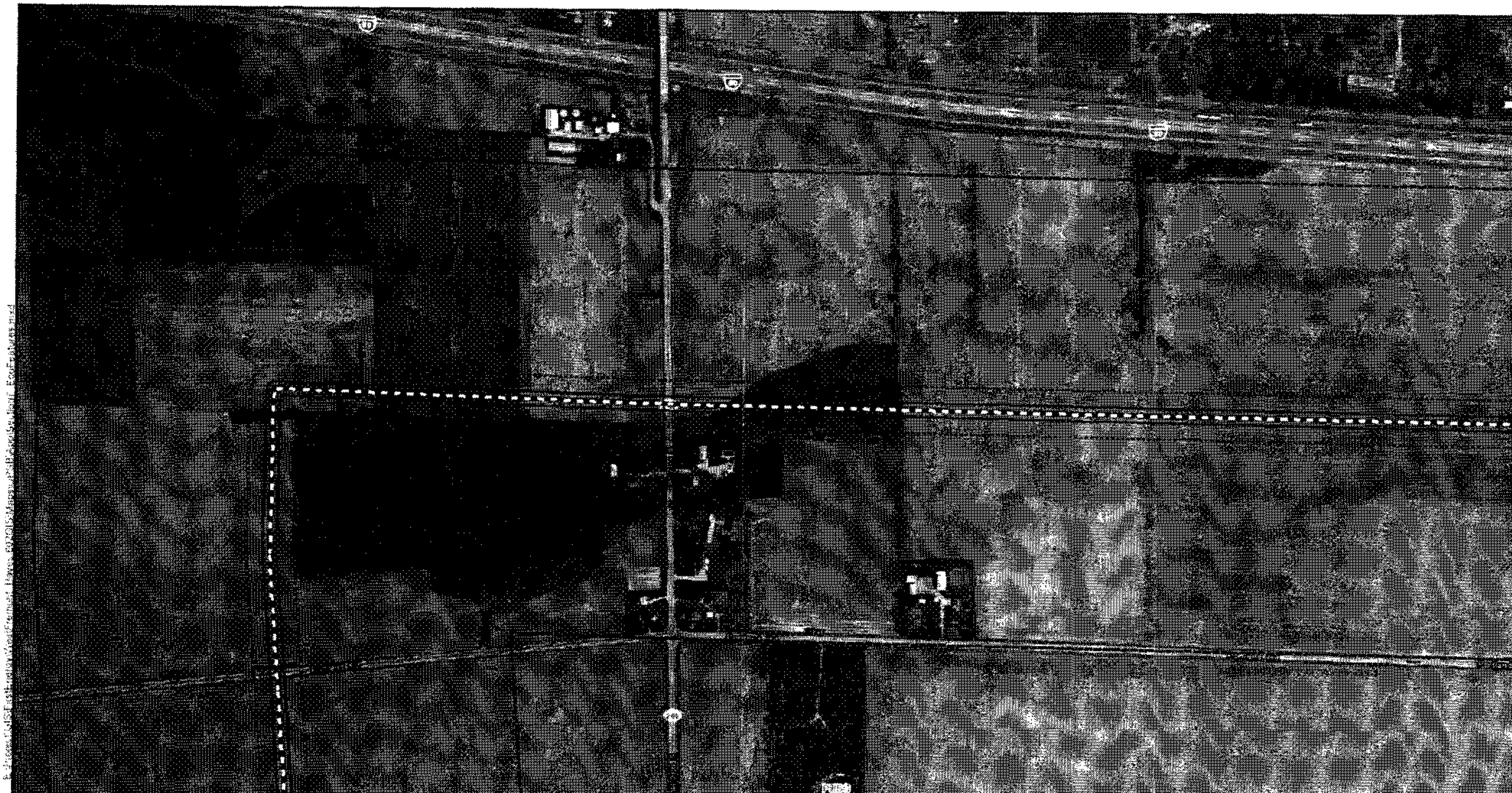
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2010
Erie and Sandusky Counties

DATA SOURCE
Ohio EPA, USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7.3X
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY LH	



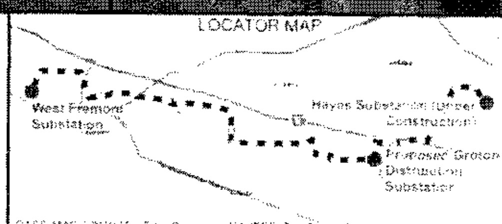
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



N

0 400 800

Scale In Feet

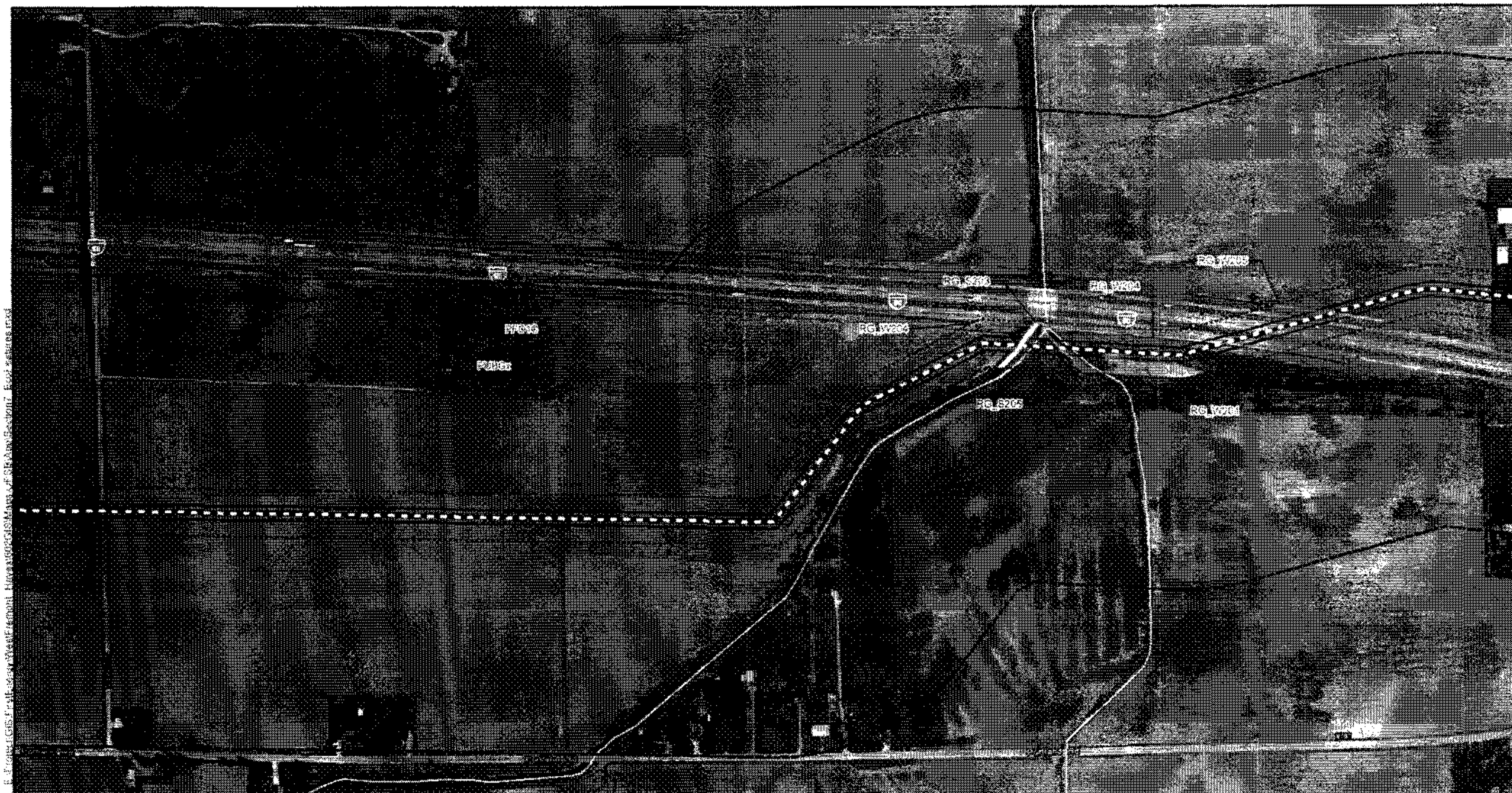
BASE MAP SOURCE

DATA SOURCE

FirstEnergy

FIGURE 7-2Y
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN #56944	DATE 10.2.2013
CREATED BY AC	
REVIEWED BY LH	



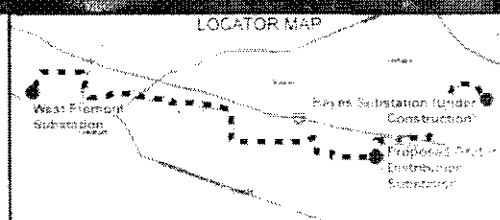
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN

N

0 400 800

Scale In Feet

BASE MAP SOURCE
Ohio Statewide Imagery Program, 2011
Erie and Sandusky County

DATA SOURCE
Stream: NHD - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-32
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 456944	DATE: [illegible]
CREATED BY: AC	
REVIEWED BY: LH	CH2MHILL

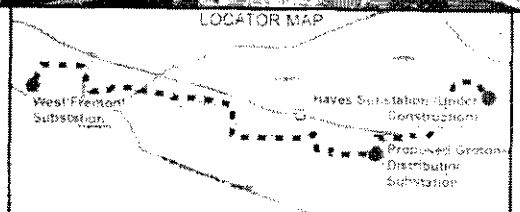
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, and NRCAN

N

0 400 800

Scale In Feet

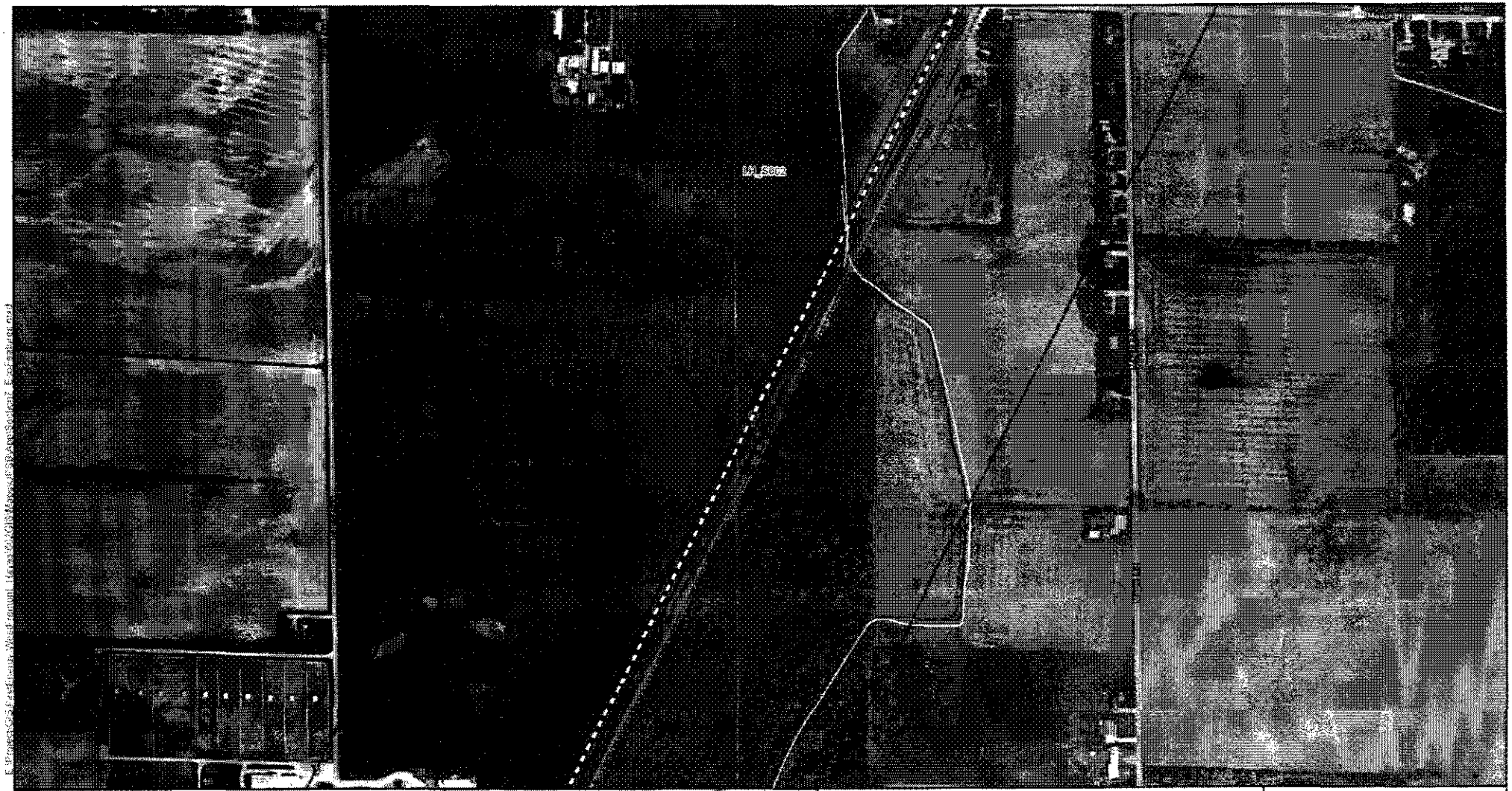
BASE MAP SOURCE
Ohio Statewide Imagery Program, 2011
Erie and Sandusky Counties

DATA SOURCE
Streams (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7-5AA
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456N44	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY LH	



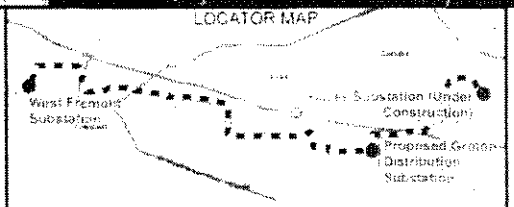
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, INCREMENT P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

0 400 800

Scale In Feet

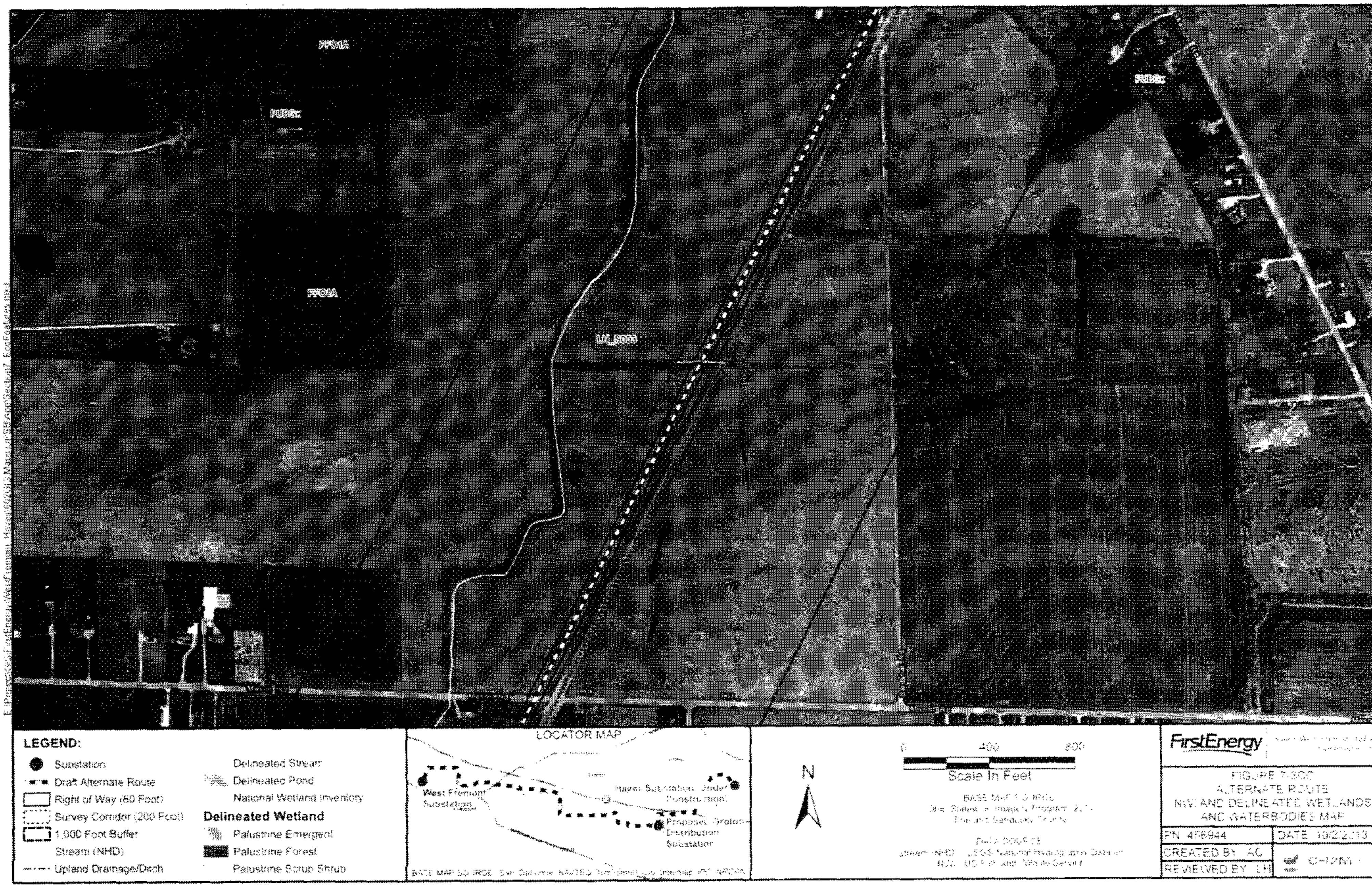
BASE MAP SOURCE:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, INCREMENT P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

DATA SOURCE:
Stream (NHD): USGS National Hydrography Dataset
NWI: U.S. Fish and Wildlife Service

FirstEnergy

FIGURE 7-18B
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 458644	DATE 10/2013
CREATED BY AC	
REVIEWED BY LH	



PFO1A
PUBGx
PFO1A
UL_S003
PUBGx
LEGEND:
Substation
Draft Alternate Route
Right of Way (60 Foot)
Survey Corridor (200 Foot)
1,000 Foot Buffer
Stream (NHD)
Upland Drainage/Ditch
Delineated Stream
Delineated Pond
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Forest
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Hayes Substation (Under Construction)
Proposed Groton Distribution Substation
N
0
400
800
Scale In Feet
FirstEnergy
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
CREATED BY AC
REVIEWED BY LH

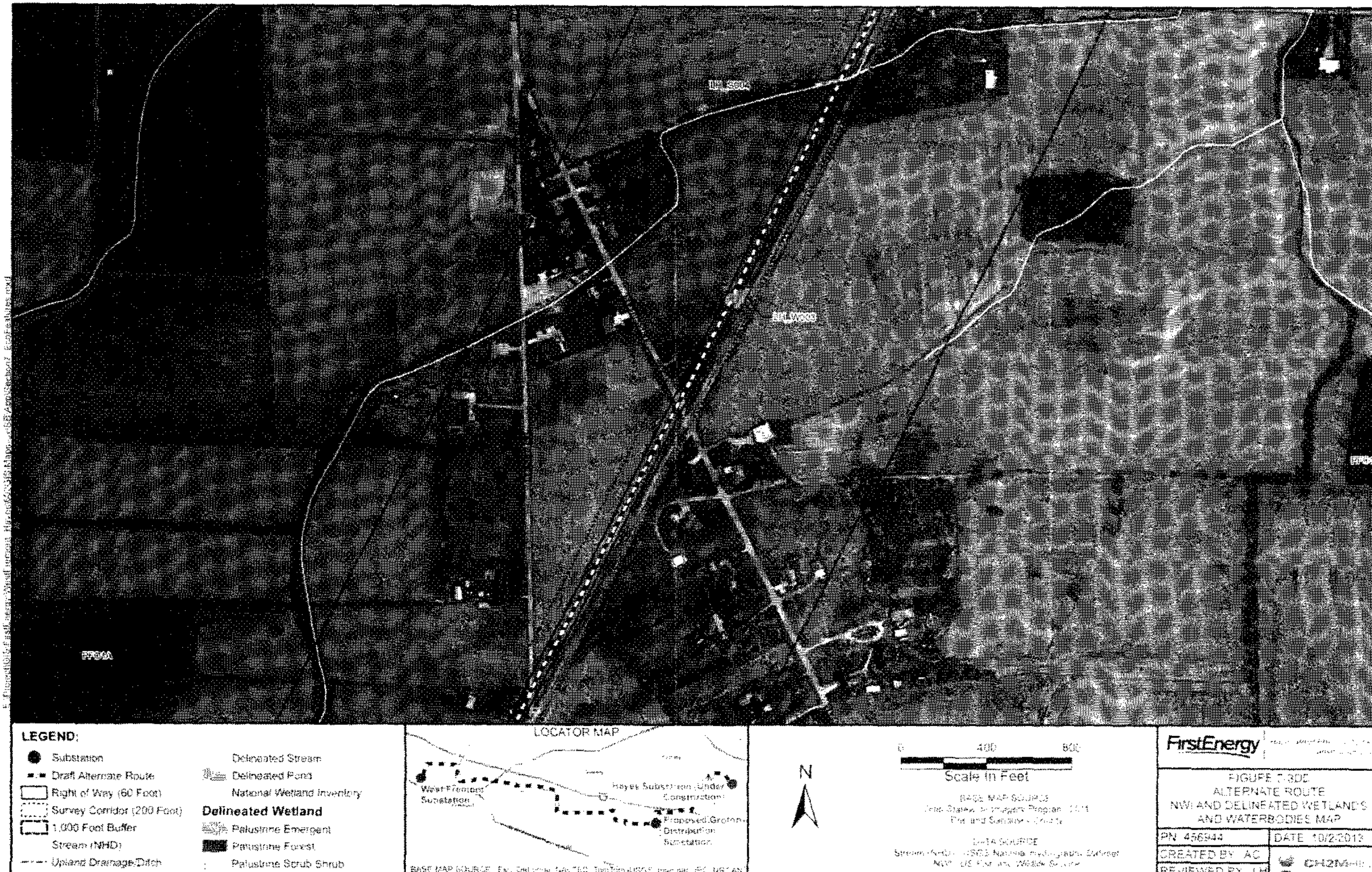


FIGURE 7-30C
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS AND WATERBODIES MAP

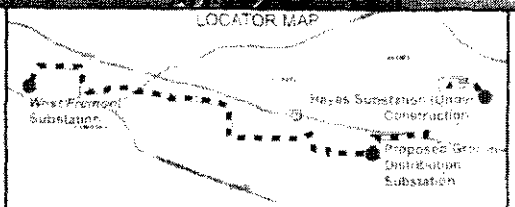
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, NRCAN,

N

0 400 800

Scale In Feet

BASE MAP SOURCE:
Ohio Statewide Imagery Program, 2010
Erie and Sandusky County

DATA SOURCE:
Ohio EPA, USGS National Hydrography Dataset
NWI, US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3EE
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN 456944	DATE 10/2/2013
CREATED BY AC	CH2MHILL
REVIEWED BY LH	

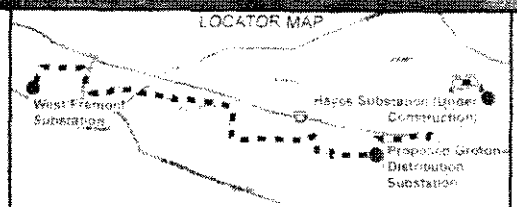
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



BASE MAP SOURCE: Esri, DigitalGlobe, NAVTEQ, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

N

0 400 800

Scale in Feet

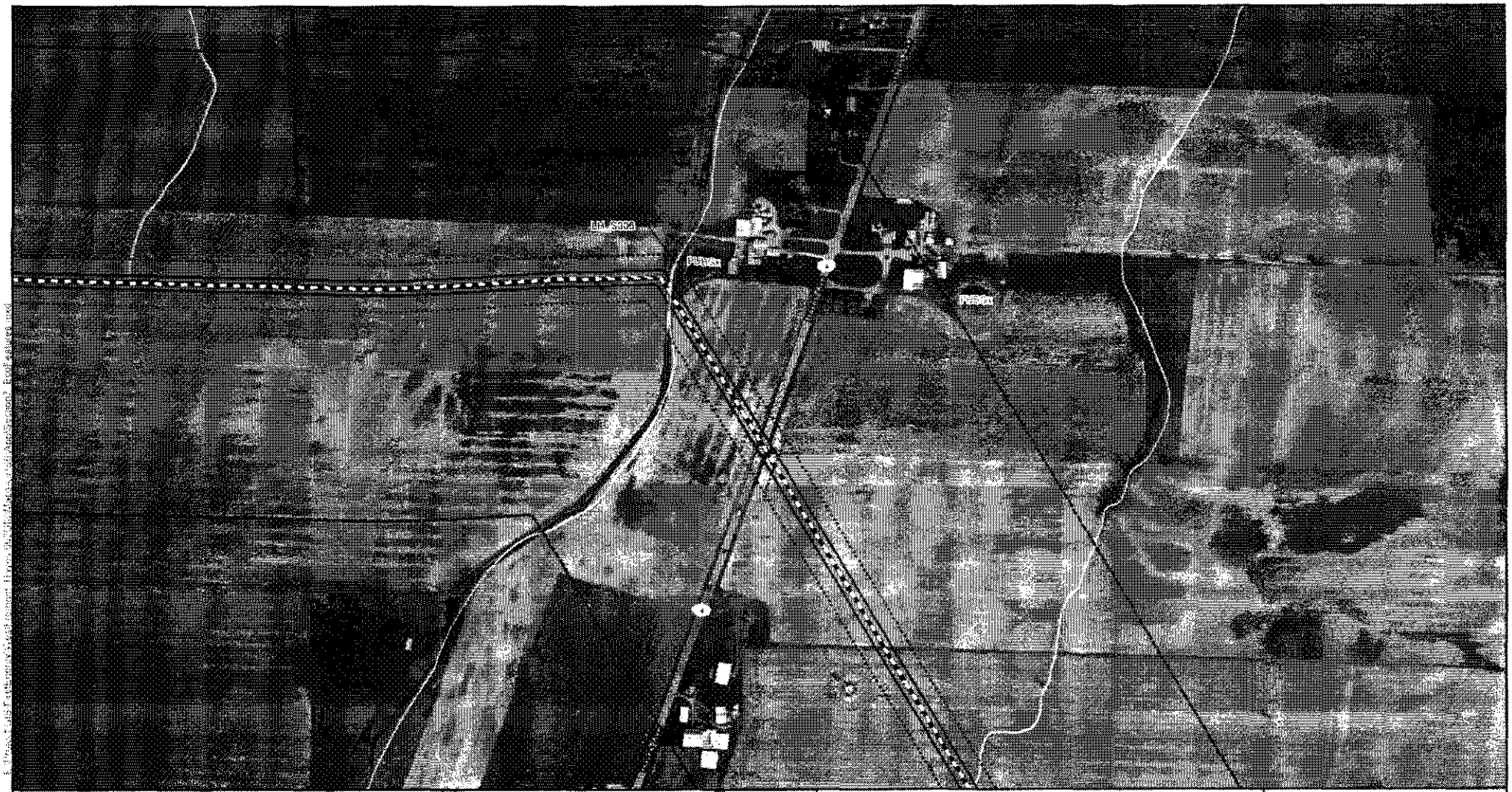
BASE MAP SOURCE:
2011 Statewide Imagery Program 2011
Erie and Sandusky County

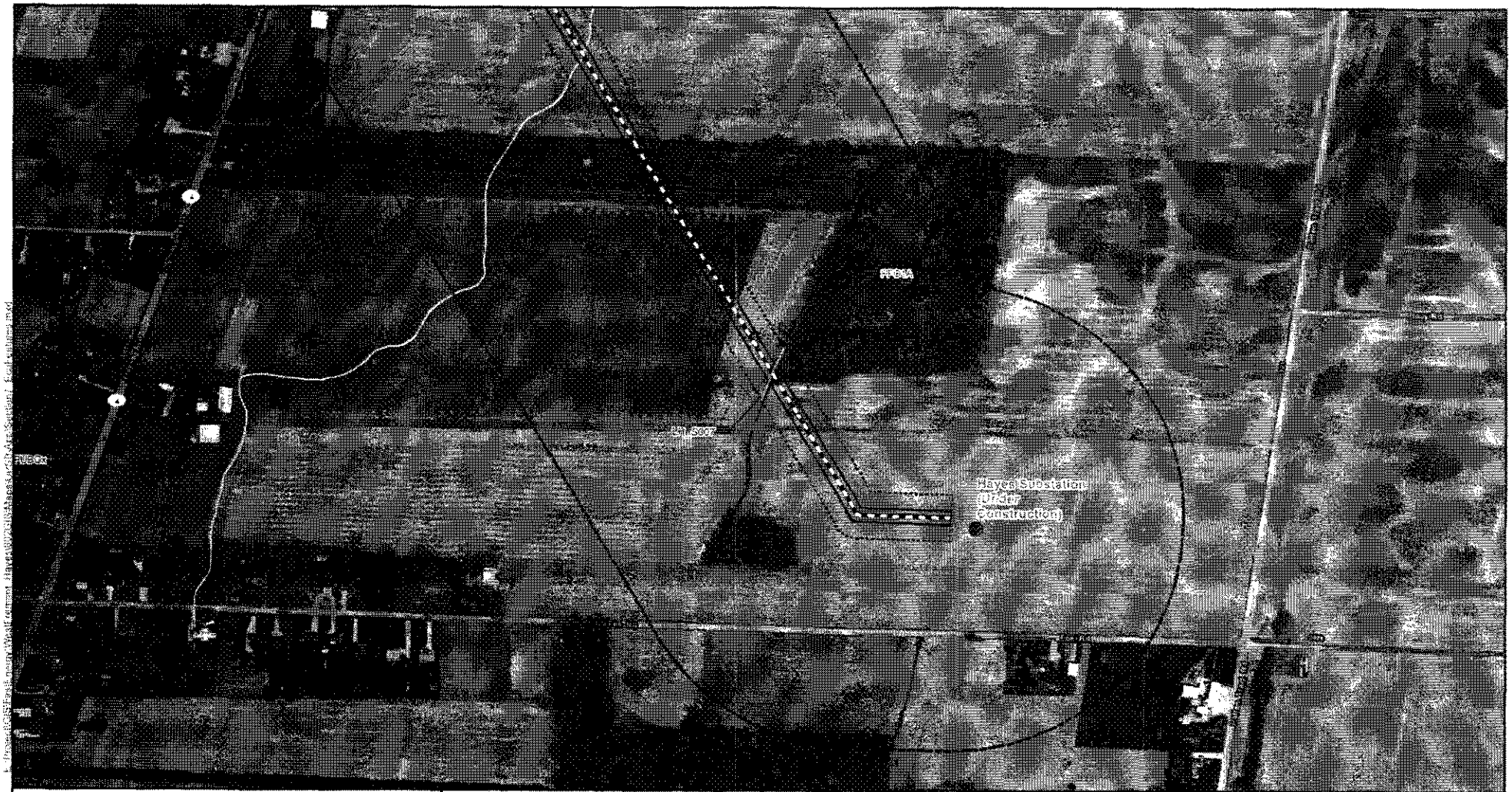
DATA SOURCE:
Stream (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3FF
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN: 456944	DATE: 10/2/2013
CREATED BY: AC	CH2MHILL
REVIEWED BY: LH	


LEGEND:
Substation
Draft Alternate Route
Right of Way (60 Foot)
Survey Corridor (200 Foot)
1,000 Foot Buffer
Stream (NHD)
Upland Drainage/Ditch
Delineated Stream
Delineated Pond
National Wetland Inventory
Delineated Wetland
Palustrine Emergent
Palustrine Forest
Palustrine Scrub Shrub
LOCATOR MAP
West Fremont Substation
Proposed Groton Distribution Substation
N
0
400
800
Scale In Feet
BASE MAP SOURCE:
Ohio Statewide Imagery Program, Ohio Lake and Sandusky Counties
DATA SOURCE:
Streams (NHD): USGS National Hydrography Dataset
NWI: US Fish and Wildlife Service
FirstEnergy
FIGURE 7-3GG
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP
PN 456944
DATE 10/2/2013
CREATED BY AC
REVIEWED BY LH



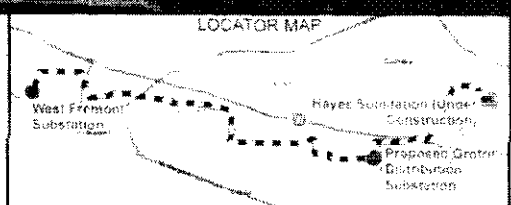
LEGEND:

- Substation
- Draft Alternate Route
- Right of Way (60 Foot)
- Survey Corridor (200 Foot)
- 1,000 Foot Buffer
- Stream (NHD)
- Upland Drainage/Ditch
- Delineated Stream
- Delineated Pond
- National Wetland Inventory

Delineated Wetland

- Palustrine Emergent
- Palustrine Forest
- Palustrine Scrub Shrub

LOCATOR MAP



0 400 800

Scale in Feet

BASE MAP SOURCE:
Ohio Statewide Imagery Program, 2011
Erie and Sandusky County

DATA SOURCE:
Streams: NHD - USGS National Hydrography Dataset
NWI - US Fish and Wildlife Service

FirstEnergy

FIGURE 7-3RH
ALTERNATE ROUTE
NWI AND DELINEATED WETLANDS
AND WATERBODIES MAP

PN. 45594-4	DATE 10/2/2013
CREATED BY AC	
REVIEWED BY LH	

ORIGINAL