SECTION P: FLOODPLAIN MANAGEMENT ANALYSIS WITH CONSISTENCY LETTER

Floodplain Management Analysis and Approval Letter

25 Pa. Code §105.13 requires an analysis of the Project's impacts on the floodway delineation and surface water profiles for impacts located within a FEMA mapped floodway. The Erie Converter Station site is not within the floodway of any stream. The cable route does cross through the floodway of several streams. At each of these crossings, the ground surface and stream channel cross sections will be either undisturbed or restored to existing conditions. Except possibly for small marker signs, there will be no above ground structures within any floodplain area. As such, the floodway cross section will not be altered at any of the stream crossings. For these reasons there will therefore be no impacts to floodplains.

Copies of the floodplain consistency letter requests sent to Conneaut Township, Girard Township, and Springfield Township are attached. The only municipality to return a response was Conneaut Township, a copy of which is attached. On January 2, 2016 Conneaut Township concurred that the Project will not impact floodway delineations or water surface profiles, and that the Project is consistent with the Township's floodplain management regulations.

Deiss & Halmi Engineering, Inc.
ENVIRONMENTAL AND CIVIL ENGINEERING

105 Meadville Street, Edinboro PA 16412 Ph. 814.734.3640 Fax 814.734.3643

CERTIFIED MAIL NO. 7015 1520 0000 8026 8335
RETURN RECEIPT REQUESTED

November 23, 2015

Springfield Township Supervisors
1330 Ridge Road
West Springfield, PA 16443

Re: ITC Lake Erie Connector LLC, Lake Erie Connector Project
Floodplain Management Analysis and Request for Floodplain Consistency Letter

Dear Supervisors:

As we had previously informed you, ITC Lake Erie Connector LLC ("ITC") intends to submit to the Pennsylvania Department of Environmental Protection ("DEP") a Joint Permit Application for a Water Obstructions and Encroachments Permit for the Lake Erie Connector project. As part of that application, because portions of the project cross floodways delineated on FEMA maps, ITC must provide DEP a Floodplain Management Analysis describing the project's impact on the floodway delineation and water surface profiles. The purpose of this letter is to present the Floodplain Management Analysis and to request Girard Township to review this analysis and provide a letter of review for ITC to include with the Joint Permit Application.

At each of the crossings, two high-voltage direct current (HVDC) cables and one fiber optic communication cable will be constructed. A map showing the project location relative to FEMA mapped flood hazard areas is attached. In Girard Township, the project crosses the FEMA delineated floodplain at the following locations (stream names are as labeled on the FEMA maps):

- Crooked Creek Tributary 4 at Lexington Road.
- Crooked Creek Tributary 4 just south of Route 20.
- Crooked Creek Tributary 2 at Townline Road.

The cables will be underground. At each of these crossings, the ground surface will be either undisturbed or restored to existing conditions. Except possibly for small marker signs, there will be no above ground structures within any floodplain area. As such, the floodway cross section will not be altered at any of the crossings. Furthermore, the project at Lexington Road and Townline Road will cross under existing culverts, and these culverts will be either undisturbed or restored to current conditions. For these reasons there will therefore be no impacts to the floodway delineation or to water surface profiles.

Please provide a letter of review indicating that the project is consistent with the Township's floodplain management regulations. A sample letter is provided for your convenience. If you need any additional information or if you have any questions, please do not hesitate to contact me at (814)734-3640 and/or shalmi@deisshalmi.com.

Very truly yours,
DEISS & HALMI ENGINEERING, INC.

Steven R. Halmi, P.E.

Enclosures: Project Location Map
Sample Consistency Letter

cc: Andrew Jamieson, ITC (by email w/ encl.)
Gretchen Railling, ITC (by email w/ encl.)
Peter Browne, HDR (by email w/ encl.)
R. Timothy Weston, K&L Gates LLP (by email w/ encl.)

Date

Ms. Gretchen L. Railling, P.E.
Permit Policy Specialist
ITC
27175 Energy Way
Novi, MI 48377

Re: Lake Erie Connector Project
Floodplain Consistency Letter

Dear Ms. Railling:

Springfield Township has reviewed the Floodplain Management Analysis letter from Deiss & Halmi Engineering, Inc. dated November 23, 2015. Although the project crosses flood hazard areas as delineated on FEMA maps, it is our understanding that the ground surface will be either undisturbed or restored to existing conditions at these crossings, and that there will be no above ground structures placed within any floodplain area. We further understand that where the project crosses existing conveyance structures such as culverts, the culverts will be either undisturbed or restored to current conditions. We therefore agree that the project will not impact floodway delineations or water surface profiles. As such, Springfield Township finds that the proposed Lake Erie Connector Project is consistent with the Township's floodplain management regulations.

Sincerely,
SPRINGFIELD TOWNSHIP SUPERVISORS

_____
Signature

_____
Printed name and title

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

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1330 Ridge Road
West Springfield, PA 16443

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Sent To: Springfield Township Supervisors
Street and Apt. No., or PO Box No.: 1330 Ridge Road
City, State, ZIP+4®: West Springfield, PA 16443

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Deiss & Halmi Engineering, Inc.
ENVIRONMENTAL AND CIVIL ENGINEERING

105 Meadville Street, Edinboro PA 16412 Ph. 814.734.3640 Fax 814.734.3643

CERTIFIED MAIL NO. 7015 1520 0000 8026 8328
RETURN RECEIPT REQUESTED

November 23, 2015

Girard Township Supervisors
10140 Ridge Road
Girard, PA 16417

Re: ITC Lake Erie Connector LLC, Lake Erie Connector Project
Floodplain Management Analysis and Request for Floodplain Consistency Letter

Dear Supervisors:

As we had previously informed you, ITC Lake Erie Connector LLC ("ITC") intends to submit to the Pennsylvania Department of Environmental Protection ("DEP") a Joint Permit Application for a Water Obstructions and Encroachments Permit for the Lake Erie Connector project. As part of that application, because portions of the project cross floodways delineated on FEMA maps, ITC must provide DEP a Floodplain Management Analysis describing the project's impact on the floodway delineation and water surface profiles. The purpose of this letter is to present the Floodplain Management Analysis and to request Girard Township to review this analysis and provide a letter of review for ITC to include with the Joint Permit Application.

At each of the crossings, two high-voltage direct current (HVDC) cables and one fiber optic communication cable will be constructed. A map showing the project location relative to FEMA mapped flood hazard areas is attached. In Girard Township, the project crosses the FEMA delineated floodplain at the following locations (stream names are as labeled on the FEMA maps):

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- Crooked Creek Tributary 4 just south of Route 20.
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Please provide a letter of review indicating that the project is consistent with the Township's floodplain management regulations. A sample letter is provided for your convenience. If you need any additional information or if you have any questions, please do not hesitate to contact me at (814)734-3640 and/or shalmi@deisshalmi.com.

Very truly yours,
DEISS & HALMI ENGINEERING, INC.

Steven R. Halmi, P.E.

Enclosures: Project Location Map
Sample Consistency Letter

cc: Andrew Jamieson, ITC (by email w/ encl.)
Gretchen Railling, ITC (by email w/ encl.)
Peter Browne, HDR (by email w/ encl.)
R. Timothy Weston, K&L Gates LLP (by email w/ encl.)

Date

Ms. Gretchen L. Railling, P.E.
Permit Policy Specialist
ITC
27175 Energy Way
Novi, MI 48377

Re: Lake Erie Connector Project
Floodplain Consistency Letter

Dear Ms. Railling:

Girard Township has reviewed the Floodplain Management Analysis letter from Deiss & Halmi Engineering, Inc. dated November 23, 2015. Although the project crosses flood hazard areas as delineated on FEMA maps, it is our understanding that the ground surface will be either undisturbed or restored to existing conditions at these crossings, and that there will be no above ground structures placed within any floodplain area. We further understand that where the project crosses existing conveyance structures such as culverts, the culverts will be either undisturbed or restored to current conditions. We therefore agree that the project will not impact floodway delineations or water surface profiles. As such, Girard Township finds that the proposed Lake Erie Connector Project is consistent with the Township's floodplain management regulations.

Sincerely,
GIRARD TOWNSHIP SUPERVISORS

_____
Signature

_____
Printed name and title

SENDER: COMPLETE THIS SECTION

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Girard Township Supervisors
10140 Ridge Road
Girard, PA 16417

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X Rebecca HoSack ☑ Agent ☐ Addressee

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Street and Apt. No., or PO Box No.: 10140 Ridge Road
City, State, ZIP+4®: Girard, PA 16417

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Deiss & Halmi Engineering, Inc.
ENVIRONMENTAL AND CIVIL ENGINEERING

105 Meadville Street, Edinboro PA 16412 Ph. 814.734.3640 Fax 814.734.3643

CERTIFIED MAIL NO. 7015 1520 0000 8026 8304
RETURN RECEIPT REQUESTED

November 23, 2015

Conneaut Township Supervisors
12500 U.S. Rt. 6N
Albion, PA 16401

Re: ITC Lake Erie Connector LLC, Lake Erie Connector Project
Floodplain Management Analysis and Request for Floodplain Consistency Letter

Dear Supervisors:

As we had previously informed you, ITC Lake Erie Connector LLC ("ITC") intends to submit to the Pennsylvania Department of Environmental Protection ("DEP") a Joint Permit Application for a Water Obstructions and Encroachments Permit for the Lake Erie Connector project. As part of that application, because portions of the project cross floodways delineated on FEMA maps, ITC must provide DEP a Floodplain Management Analysis describing the project's impact on the floodway delineation and water surface profiles. The purpose of this letter is to present the Floodplain Management Analysis and to request Girard Township to review this analysis and provide a letter of review for ITC to include with the Joint Permit Application.

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Please provide a letter of review indicating that the project is consistent with the Township's floodplain management regulations. A sample letter is provided for your convenience. If you need any additional information or if you have any questions, please do not hesitate to contact me at (814)734-3640 and/or shalmi@deisshalmi.com.

Very truly yours,
DEISS & HALMI ENGINEERING, INC.

Steven R. Halmi, P.E.

Enclosures: Project Location Map
Sample Consistency Letter

cc: Andrew Jamieson, ITC (by email w/ encl.)
Gretchen Railling, ITC (by email w/ encl.)
Peter Browne, HDR (by email w/ encl.)
R. Timothy Weston, K&L Gates LLP (by email w/ encl.)

Date

Ms. Gretchen L. Railling, P.E.
Permit Policy Specialist
ITC
27175 Energy Way
Novi, MI 48377

Re: Lake Erie Connector Project
Floodplain Consistency Letter

Dear Ms. Railling:

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Sincerely,
CONNEAUT TOWNSHIP SUPERVISORS

_____
Signature

_____
Printed name and title

SENDER: COMPLETE THIS SECTION

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1. Article Addressed to:

Conneaut Township Supervisors
12500 US Rt. 6N
Albion, PA 16401

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2. Article Number *(Transfer from service label)*

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A. Signature

X Denise M. Shumake ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* DENISE M. SHUMAKE

C. Date of Delivery 11-27-15

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☐ Adult Signature Restricted Delivery	$
Postage	$ 1.64
Total Postage and Fees	$ 7.89
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City, State, ZIP+4®	Albion, PA 16401

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Date

Ms. Gretchen L. Railling, P.E.
Permit Policy Specialist
ITC
27175 Energy Way
Novi, MI 48377

Re: Lake Erie Connector Project
Floodplain Consistency Letter

Dear Ms. Railling:

Conneaut Township has reviewed the Floodplain Management Analysis letter from Deiss & Halmi Engineering, Inc. dated November 23, 2015. Although the project crosses flood hazard areas as delineated on FEMA maps, it is our understanding that the ground surface will be either undisturbed or restored to existing conditions at these crossings, and that there will be no above ground structures placed within any floodplain area. We further understand that where the project crosses existing conveyance structures such as culverts, the culverts will be either undisturbed or restored to current conditions. We therefore agree that the project will not impact floodway delineations or water surface profiles. As such, Conneaut Township finds that the proposed Lake Erie Connector Project is consistent with the Township's floodplain management regulations.

Sincerely,
CONNEAUT TOWNSHIP SUPERVISORS

Richard E. Huston
Signature

RICHARD E HUSTON / SUPERVISOR
Printed name and title

SECTION Q: RISK ASSESSMENT

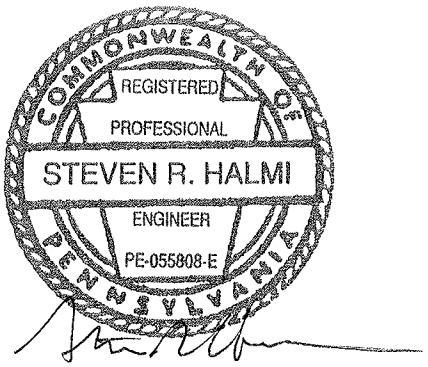
Risk Assessment

No increase in peak runoff rates or measurable impact on flood elevations is anticipated as a result of this Project. The site conditions will be restored to existing grade and contours following construction, as detailed in the Post Construction Stormwater Management Plan (for the Erie Converter Station) and Site Restoration Plan (for the cable route) which the Applicant has submitted to the Erie County Conservation District. Permanent facilities associated with the Project are located outside of floodplain areas. Therefore, no impact is anticipated that would risk life, property, or the environment and no risk assessment is included in this application.

SECTION R: PROFESSIONAL ENGINEER'S SEAL AND CERTIFICATION

Professional Engineer's Seal and Certification

I, Steven R. Halmi, P.E., do hereby certify pursuant to the penalties of 18 PA. C.S.A., Section 4904 to the best of my knowledge, information, and belief, that the information contained in the accompanying plans, specifications, and reports has been prepared in accordance with accepted engineering practice, is true and correct, and is in conformance with Chapter 105 of the rules and regulations of the Department of Environmental Protection.



SECTION S: ALTERNATIVES ANALYSIS, 25 PA. CODE §105.16 ANALSYIS, AND COMPLIANCE WITH §404(B)(1) GUIDELINES

ALTERNATIVES ANALYSIS

The purpose of the Project is to develop a controllable HVDC submarine and underground bi-directional merchant transmission facility that will interconnect the Independent Electricity System Operator (IESO) market in Ontario to the PJM market in the U.S. to facilitate the transfer of electricity, improve availability, and diversify electric energy supply portfolios for both markets. The Project provides a new pathway for power transfers between the IESO and PJM grids.

Considering the above-described purpose of the Project, a detailed alternatives analysis has been prepared and appears in Section 3 of the Environmental Assessment (EA) report (Attachment 3). Below is the Table of Contents for the Alternatives Analysis. The EA and Alternatives Analysis were developed to address both the 40 CFR Part 230 §404(b)(1) guidelines and 25 Pa. Code Chapter 105 requirements.

The Applicant evaluated several route, converter station, and landfall alternatives in relation to the Project's purpose, need, and geographic requirements, as well as the practicability and environmental consequences of each alternative. Figure 3.2.-1 of the EA presents the existing substations (POIs), converter station locations, and initial routes and landfall options that were evaluated. Figure 3.2-2 of the EA shows the alternative routes considered within the Lake Segment. Figure 3.2-3 of the EA is an overview of the underground alternatives. The screening and analysis of alternatives occurred sequentially in three phases:

1) Initial screening for alternatives;
2) Desktop analysis; and
3) Field investigations and environmental analysis.

The initial screening process involved the review and evaluation of various potential route alignments, taking into consideration the principal factors and constraints described in greater detail in Section 3 of the EA.

COMPARISON OF PROJECT BENEFITS AND IMPACTS (25 PA. CODE § 105.16 ANALYSIS)

PADEP regulations, 25 Pa. Code §105.16, require that under circumstances where PADEP determines a project will have an adverse impact on the environment or public health, a balancing consideration be provided that public benefits of the proposed project outweigh the harm to the environment and public natural resources. Section 105.16(b) defines "public benefits" to include, but not be limited to:

1) Correction and prevention of pollution.
2) Protection of public health and safety.
3) Reduction of flood damages.
4) Development of energy resources.
5) Creation or preservation of significant employment.
6) Provision of public utility services.
7) Other essential social and economic development which benefits a substantial portion of the public.

The Project, as proposed, does not pose significant adverse impact to either the environment or public natural resources. Impacts to both wetlands and streams have been avoided to the extent feasible. Where impacts cannot be avoided, temporary impacts may be minimized by use of HDD or other methods, and disturbed areas will generally be restored under a PADEP and USACE approved mitigation plan. A summary of the project benefits and balancing of impacts and benefits is provided below.

The Project provides substantial public benefits under several of the categories above, while enhancing power system reliability, providing improved access to markets and could be utilized to support energy and environmental policy goals. Project benefits are discussed above in the Project Purpose and Need. In summary, the Project will provide the following public benefits (25 Pa.Code §105.16):

1. Development of Energy Resources: The development of this Project provides the ability to tap into clean energy generation in Canada to help support electric demand in PJM and

makeup for capacity lost as a result of coal and other fossil fuel plan retirements in the U.S. and to make an important contribution to the States carbon reduction under the Clean Power Plan.[11]

2. Provision of Public Utility Services: This Project will improve the reliability of the electric grid (PJM and IESO). By increasing transfer capability between Ontario and PJM and establishing a direct controlled intertie between the IESO and PJM wholesale electricity markets, the Project will augment power system availability in the Eastern Interconnection. The Project will provide a source of energy supply during all hours of operation. This new access to energy supplies could help system operators at PJM and IESO avoid emergency control actions (e.g., voltage adjustments, shedding load) that would otherwise be needed to maintain the stability of their respective power systems when the systems are stressed and/or under very tight supply.

3. Creation or Preservation of Employment: Construction jobs that would be generated would be primarily related to the construction industry. The Project will create a number of temporary and permanent jobs. For example, construction of the Erie Converter Station will result in 125 temporary construction jobs during peak construction activities, and an additional 185 non-construction related temporary jobs. Additional temporary jobs will be created for construction of the underground and underwater cables. Because the underground route is primarily located within the road ROW, additional workers outside of the construction industry, such as police details, may be required during construction of the Project and would likely be available from the existing local workforce. Full time permanent jobs created for operating the Erie Converter Station would be 10 full time jobs. Additionally, local contractors could be hired to provide periodic maintenance services and vegetation management along the transmission line ROW.

4. Social and Economic Development which Benefits the Public: As discussed in bullet 3, the Project will provide for full time and temporary jobs during construction and operation. In addition, the Project will provide economic benefits in Pennsylvania including tax revenues over the course of the Project's lifetime; specifically, contributing to a local increase in taxes and revenues as a result of real estate transfers, property taxes, and fees for property easements.

5. Protection of Public Health and Safety: This Project will help to maintain the scheduled flow of energy independent of conditions on the connecting power systems. By facilitating the exchange of energy between the power systems, the Project will provide operational and planning flexibility. From an operational perspective, having adequate reactive capability in appropriate locations on the grid is essential to mitigating potential for voltage concerns, including voltage collapse that can lead to a regional or system-wide blackout thereby contributing to public health and safety.

Environmental and social impacts of the Project and how they have been minimized are discussed in the Environmental Assessment (Attachment 3) and briefly summarized below.

[11] *See* the March 2, 2015 "PJM Economic Analysis of the USEPA Clean Power Plan" for a discussion of capacity at risk of retirement.

- Water Use and Land Use: Due to the relatively small footprint and short duration of project construction, effects on the recreational and fishing uses of and navigation in Lake Erie are expected to be localized, temporary, and negligible. During operation of the Project, the magnetic field from the cable will be negligible and not impact navigation or cause compass deflection in the main shipping channels. Compass deflection could occur in the segment of the route that is near the shore of the lake where it is unlikely that a compass would be needed for navigational purposes. During construction, the presence of construction vessels and equipment in and on the lake and at the shoreline HDD area will not significantly contribute to regional impacts on current water uses on the lake or preclude other water-based activities from taking place concurrently. The Applicant will coordinate with other water-based users to proactively communicate its construction schedule in order to avoid any potential conflicts or temporary cumulative impacts with other users.

  On land, there will be temporary impacts on existing land use associated with the installation of the Underground Segment cable within the existing road corridor. Construction vehicles and equipment will temporarily disrupt existing vehicle traffic flow and impact some adjacent landowners. For the Underground Segment, the Applicant will avoid or minimize traffic disturbances by using traffic details, construction signs and barriers, and notifying the local community in advance of any known road closures and detours. In addition, effects to roads and rail crossings will be minimized by using Jack & Bore techniques, thus avoiding most crossings by open trenching. No impacts to recreation opportunities are anticipated from the construction or operation of the proposed Project.

- Geology and Soils: Sediment disturbance in the lake and soil disturbance on land will result from Project construction. Total disturbance of all in-water activities would result in a temporary only disturbance of approximately 12.7 acres, and a permanent disturbance of 2.0 acres, consisting primarily of the areas excavated for the three HDD sump pits, the cable trench in the bedrock, and the associated sidecast rock.

  The landside elements of the Project involve disturbance temporary and permanent impacts to wetlands and streams as described in Section 5.3.2 of the EA. The disturbance on land includes temporary work spaces such as laydown yards (13.4 acres), Erie Converter Station property (21.4 acres), and work spaces required for construction ROW (41.3 acres). On-land disturbance components include temporary (only) impacts to wetlands (0.8 acres), permanent impacts to wetlands (1.0 acres), temporary impacts to streams (0.2 acres), permanent impacts to stream (less than 0.01 acres), and temporary impacts to floodplains (4.3 acres).

- Water Resources and Quality: Effects on water resources and quality would be limited to construction and maintenance activities, and these effects are discussed in Section 5.1 of the EA. Wetland resources have been identified within the proposed underground cable route and Erie Converter Station property. Wetlands in the proposed project have been substantially influenced by adjacent roadways, fields, and other developed features. Temporary impacts to wetlands are expected to occur during the construction and

maintenance activities associated with the proposed Project. The cable route is proposed to occur primarily in existing public roadway ROWs and existing driveways, thus minimizing effects to wetlands. The temporary and permanent limit of disturbance to wetlands is estimated to be 0.8 and 1.0 acres, respectively. Temporary impacts may occur as part of repair or vegetation maintenance activities, but impacts would be localized and the affected area would be restored. Most of the wetlands located within the regularly maintained corridor would be restored. Where encroachments cannot be avoided, temporary impacts may be minimized by use of HDD or other methods, and in any event, disturbed areas will generally be restored under a PADEP- and USACE-approved mitigation plan.

The majority of the proposed transmission cable route follows existing roadway ROWs in order to minimize impacts to surface waters and other resources. The impacted waterbodies are shown on the resource maps in Part I of the JPA. Ground disturbance would occur during cable installation from clearing and waterbody crossing methods. The use of HDD crossing methods will be implemented for waterbodies and wetlands located in the high-quality watershed. Open trenching, cofferdams, or flume and pump around systems will be utilized for other waterbody and wetland crossings. Erosion and Sedimentation Control Plans will be developed and BMPs will be used to avoid impacts. The USACE and PADEP will approve the crossing techniques through approval of permits pursuant to this Joint Permit Application. Waterbody and wetland crossings will be designed to minimize potential impacts.

A number of vessels will be involved with the Project construction. A Spill Prevention Plan designed specifically to prevent spills during lake operations will be developed and implemented. Cable installation in Lake Erie will be conducted using a jet plow or by water jetting in the deepest portion of the lake. Burial of the cable may affect water quality by temporarily resuspending sediment and potentially causing localized migration of heavy metals in the basin or water column. The Applicant conducted water quality modeling to evaluate the potential mixing and dispersion of sediment and other constituents resuspended during the cable installation process for the proposed jet plow or water jetting installation method. Low concentrations of trace metals and organic chemicals are present in Lake Erie sediments; and the eastern basin of Lake Erie (where the Project is located) has the lowest level of contamination in sediments in the Lake Erie Basin. The results of the water quality modeling effort are contained in Appendix E of the EA (Attachment 3) and show that minimal water quality impacts are associated with the cable installation in Lake Erie, specifically those associated with total and dissolved phosphorous, total suspended solids and heavy metals. Any temporary impacts to the lake water quality would only occur locally within a four hour timeframe when cable installation is occurring.

During the construction and installation process, use of HDD will occur at the Lake Erie landfall location. HDD operations have the potential to release drilling fluids to the surface through inadvertent returns. Because drilling fluids consist largely of a bentonite clay-water mixture, they are generally considered non-toxic. To prevent or minimize this potential effect, prior to HDD operations, a sump pit will be constructed in the bedrock at

each exit point of shore to lake transition. The purpose of the exit point sump pit is to contain suspended sediments to the interior footprint of the sump pit during the exit point excavation, contain drilling fluids at the lower end of the excavation for recovery (as described in the next paragraph), and disposal at an approved upland facility.

An Inadvertent Fluid Release Prevention, Monitoring, and Contingency Plan would be implemented that would allow for timely identification and cleanup of any drilling fluid leaks that might occur and minimize impacts on the environment.

- Aquatic Resources: Habitat containing large/rocky substrates off the shores of Pennsylvania offer spawning and nursery habitat for such species as lake whitefish, rainbow smelt, emerald shiner, spottail shiner, fathead minnow, channel catfish, stonecat, trout-perch, white bass, smallmouth bass, rainbow darter, johnny darter, yellow perch, walleye, and freshwater drum (Goodyear et al. 1982). As fish are mobile and in-water construction activities will take place in a small portion of Lake Erie, helping to minimize project effects to aquatic resources. Additionally, the proposed Project will use HDD methods near shore and would avoid disturbance of the nearshore area where spawning, feeding, and rearing are most common among a variety of species.

  Due to the frequent high-energy wave action and the presence of exposed bedrock along the nearshore area of Lake Erie, aquatic vegetation is scarce to non-existent (Rathke 1984), and, therefore, construction activities from the proposed Project are not expected to result in any impacts to aquatic vegetation. Lakebed disturbance from construction activities could result in a direct impact of the benthic or epifauna community; crushing or injuring benthic invertebrates, including mussels in the path of the jet plow, in areas of bedrock trenching, and in the footprint of the HDD exit sump pits. HDD, trench excavation, and jet plowing would disturb bottom sediments which could become resuspended, especially during jet plow or water jetting operations. The amount of explosives and blasting technique required for bedrock trenching will be limited to the extent possible to avoid noise and vibration impacts on fish, and impacts will be minimized by utilizing a boring/stemmed charge method. Some displacement of fishes from the active construction footprint of the Project will occur, but will be limited in spatial extent at any given time. Overall, the impacted area is expected to fill in and recolonize from recruitment from nearby, unaffected areas of the lake. Recovery for benthic communities varies, ranging from several months to several years, depending on the type of community and type of disturbance (DOE 2013).

- Terrestrial Resources: The construction of the Project will disturb habitat along the Project ROW. Vegetation removal and the direct reduction of some wildlife habitat could result in the direct displacement of species, including birds, mammals, reptiles, and amphibians; however, the acreage of permanent forest disturbance associated with the Project is very small. Because the project is primarily constructed along existing roads, these effects will be minimized.

- Protected and Sensitive Species: Threatened and endangered species that may be within the Project area include Indiana bat, northern long-eared bat, and bald eagle. However,

no significant impacts are expected during construction, operation, or maintenance of the Project. The Project is not expected to affect cisco, eastern sand darter, or lake sturgeon, the three species of concern identified by the PFBC, or bank swallows, a species of concern identified by the USFWS. Rare plant surveys along the proposed Underground Segment were performed in spring and summer 2015 to identify any occurrence of state-listed species. The survey indicated that no species listed by the PADCNR were identified, and on December 4, 2015the PADCNR provided PNDI clearance, along with recommendations to prevent the spread of invasive species that will be followed.

- Cultural Resources: The Applicant recognizes that the formal National Historic Preservation Act Section 106 process has not been initiated. However, in advance of the process, the Applicant has initiated studies to identify historic properties along the Project's alignment. The Applicant conducted a Phase IA Study of the proposed transmission cable route in 2014 and a Phase IB in 2015. During the Phase IB, additional archeological sites were found along the centerline and at potential staging areas. Engineering options will be evaluated, in consultation with PHMC, to avoid effects to these sites.

  The Phase 1A study also evaluated the in-lake elements of the Project. All previously confirmed shipwrecks have been avoided by at least 100 meters. Further, the Applicant performed a Marine Route Survey in 2015 to identify bottom conditions, shipwrecks, existing utilities, and other features along the proposed marine route. The marine route survey included a combination of equipment and approaches including side-scan sonar, single-beam bathymetry, and magnetometer surveys to facilitate identification of potential shipwrecks. The results of the marine route survey were reviewed by a marine archaeologist to identify anomalies or potential shipwrecks along the Project's marine route. No potential shipwrecks or other archaeological resources were identified along the Project's marine route.

- Aesthetic and Visual Resources: During construction of the proposed Project, there would be temporary impacts to the visual character of the viewshed. Because the transmission line will be installed in the lakebed and underground, there will be no permanent visual impacts expected from the operation of the proposed Project other than from the presence of the Erie Converter Station. A visual simulation of what the Erie Converter Station would look like is provided in Section 5.8.

- Climate, Air Quality, and Noise: The Project will not significantly affect climate or air quality. An air quality permit application to the PADEP will be required for the emergency generator on site. Construction of the Project will result in elevated noise levels during construction of the Project. These effects will be temporary, lasting only during construction. The Applicant conducted a study of the sound propagation and impacts associated with the operation of the proposed Erie Converter Station. A model of noise produced by equipment at the Erie Converter Station during normal operations would not adversely affect the sensitive receptors located closest to the facility.

- Public Health and Safety, Hazardous Materials and Waste, and Socioeconomics: The Project will not affect public health and safety, hazardous materials and waste, or socioeconomics.

- Infrastructure: During construction of the Underground Segment of the Project, local infrastructure will temporarily be affected. These effects would primarily be temporary impacts to traffic. Disturbances during construction may include limitations on property access due to road detours and construction equipment/activities. No other local infrastructure would be adversely affected by the construction or operation of the Project.

- Land Use and Traffic: Construction of the underground route of the proposed Project would result in temporary impacts to existing land uses and traffic along the proposed Underground Segment. Disturbances to land use during construction may include limitations on property access due to road detours and construction equipment/activities. However, these disturbances would be limited to the duration of construction in that immediate area and are anticipated to be short (i.e., less than a week in each area). Because the transmission line along the underground route will primarily be buried within the road ROW, disturbances to local traffic may occur during construction. The Applicant will avoid or minimize traffic disturbances by using traffic details, construction signs, and barriers and notifying the local community in advance of any known road closures.

  No formal recreation sites are located within the underground route of the proposed Project, and, therefore, no impacts to recreation opportunities are anticipated from the construction or operation of the proposed Project. Likewise, there will be no impacts to public access or recreational opportunities at nearby Erie Bluffs State Park. Permanent land use impacts will occur in areas where the transmission line route requires easements, restricting future land development within the easement area. However, since the transmission line has been located substantially within road ROWs, the impact on future land development is expected to be minimal. There is no zoning in Conneaut Township, where the Erie Converter Station location is located. Construction and operation of the proposed Project is expected to be consistent with relevant land use comprehensive plans for the Erie County and Springfield, Girard, and Conneaut Townships.

- Environmental Justice: No Environmental Justice communities or populations are located within the proposed Project area and area of concern as defined by the PADEP Environmental Justice Public Participation Policy. Construction of the Underground Segment of the proposed Project would be relatively short in duration (i.e., less than 6 months); therefore, no lasting or significant effects on the population in general, including minority or low-income communities, are anticipated from construction activities.

Comparison of Project Benefits to Environmental and Social Costs

The benefits of the Project as summarized above and in Section J include the development of energy resources, protection of public health and safety, creation and preservation of jobs as well as providing social and economic developments for the public and providing reliable utility

services to the region. The Lake Erie Connector Project will deliver these benefits, while also avoiding, mitigating, or reducing potential impacts. Any resultant residual environmental or other impacts are minimal, and will be mitigated by measures being implemented as part of the Project and a conceptual mitigation plan is provided in Section T. For the foregoing reasons, based on all currently available information, while there are environmental and social costs associated with this Project – as there are with any major project – on balance, the combination of the Project's benefits with the Applicant's commitment to manage and mitigate those impacts results in net benefits that significantly outweigh the environmental impacts and social costs resulting from the Project's location, construction and operation.

COMPLIANCE WITH §404(B)(1) GUIDELINES

Due to the overall scale of the Project and Project-related operational considerations, it has been determined that no practicable alternative exists that would satisfy the Project's purpose and need while completely avoiding impacts to any unique or protected aquatic resource site. As the Project would result in impacts to waters of the U.S., including wetlands, the Project is subject to Section 404 of the Clean Water Act and requires a permit from the U.S. Army Corps of Engineers (USACE). In order to issue a permit, the USACE Pittsburgh District must determine that the Project complies with the U.S. Environmental Protection Agency's (USEPA) Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material in 40 CFR Part 230 (Guidelines), including a determination that the Project is the least environmentally damaging practicable alternative, that it would not result in significant degradation of waters of the U.S., and that provisions have been made for all appropriate and practicable mitigation.

The discussion below summarizes the Project's compliance with Clean Water Act §404(b)(1) guidelines codified at 40 C.F.R. Part 230. In addition, the Alternatives Analysis provided in the EA evaluates discharges of dredged or fill material based on four tests of compliance, contained in Subpart B of the Guidelines:

1) *Is there a practicable alternative that would have less impact on the aquatic ecosystem and no other significant adverse environmental consequences? [Subpart B § 230.10 (a)]*

   Under the guidelines, an alternative is practicable if it is available and capable of being implemented after taking into consideration cost, existing technology, and logistics in light of the overall project purpose (40 C.F.R. §230.10(a)(2)). The Environmental Assessment (Attachment 3) discusses alternative routes, converter station properties and points of interconnection and demonstrates that none of the alternatives considered are practicable, and that the selected site and design represents selected alternatives that are the least environmentally damaging practicable alternatives (LEDPA) that meet the basic project purpose.

2) *Would the proposed discharge of dredged or fill material violate any applicable state water quality standard, toxic effluent standard or prohibition under Section 307 of the Clean Water Act, or jeopardize the continued existence of species listed as endangered or threatened or adversely affect critical habitat under the Endangered Species Act of 1973? [Subpart B § 230.10 (b)]*

As summarized in Sections 2 and 5 of the Environmental Assessment (Attachment 3), the Project will not cause or contribute to a violation of any state water quality standard. National Pollutant Discharge Elimination System (NPDES) stormwater permit coverage for construction and operation of the proposed facility will be obtained. As part of the NPDES permitting, an erosion and sedimentation control plan and stormwater management plan will be implemented that includes Best Management Practices (BMPs) to reduce pollutants and sediments in stormwater runoff and water quality requirements. All stormwater runoff generated on-site during construction and from the Project when in operation will be managed in accordance with the Erosion and Sedimentation Control Plans, Post-Construction Stormwater Management Plan, and Site Restoration Plan approved with the issuance by PaDEP of the NPDES Permit for Stormwater Discharges associated with Construction Activities.

The Project will not violate applicable state water quality standards, toxic effluent standard or prohibition under Section 307 of the Clean Water Act. The Applicant has assessed potential impacts to water quality for constructing the Underwater Segment using a water quality model. The model shows that that minimal water quality impacts would be associated with the cable installation in Lake Erie and they are limited to temporary impacts that would occur locally within a four-hour timeframe after jet plowing occurs. Additional information on water quality impacts can be found in Section 5.3.1 and Appendix E in the EA.

The Project would comply with requirements of the Endangered Species Act of 1973, as amended and a review of the Pennsylvania Natural Diversity Inventory (PNDI) database was conducted. A summary of agency coordination is provided below as well as included in Section 4.6 of the EA. Discussions with the Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Game Commission (PGC), Pennsylvania Department of Conservation and Natural Resources (PADCNR), and U.S. Fish and Wildlife Service (USFWS) regarding the potential impact of the proposed Project on federally and state-protected species and their occupied habitats have been ongoing since May 2014. The Applicant has been consulting with these agencies to obtain information about protected species and develop measures to avoid or minimize impacts. No adverse effects to threatened or endangered species are expected during construction, operation, or maintenance of the Project.

In a letter dated September 16, 2014, the PFBC noted the following species of concern with regard to the Project: cisco, eastern sand darter, and lake sturgeon, all of which are state-listed endangered species. Via an email dated March 24, 2015, the PFBC requested additional information regarding the impact of HVDC electromagnetic fields on salmonid (steelhead) migration. The PFBC also asked if the HDVC technology interferes with hydro acoustic telemetry tags and receivers. The PFBC requested that this information be provided as a part of the application. The Applicant's consultant provided this information to PFBC on June 4, 2015 in the Project Environmental Report, which was submitted to the U.S. Department of Energy on May 29, 2015, as part of the Presidential Permit Application. This information is also included in the Project EA (Attachment 3).

During a conference call between the Applicant, its consultants, and PFBC representatives on August 28, 2015, PFBC staff stated that they were not concerned about Project construction effects on lake sturgeon and cisco, given PFBC's review of additional information received regarding Project construction activities. However, PFBC asked if in-lake project construction on the U.S. side in water depths less than 20 m could be conducted outside of June and July to protect potentially spawning eastern sand darter. The Applicant explained that it needed to conduct construction during those months because construction will take about six months during each of two years, that such construction work needs to occur during good weather months on the Lake, and that given Lake weather patterns, June and July were critical parts of the period when suitable construction conditions were available. In response, PFBC indicated that if construction activities need to occur in waters less than 20 m deep in June and July, then the Applicant should develop and submit a Biological Assessment. The assessment would investigate steps to avoid adverse effects, minimize damage, and then mitigate effects to potential eastern sand darter habitat and individuals. The assessment would use the best available science to estimate the potential area of impact and numbers of darters that that might be lethally taken. After review of such an assessment, PFBC would then issue a special take permit with respect to the eastern sand darter. HDR, on behalf of the Applicant, developed a biological assessment for eastern sand darter, which was submitted to PFBC on December 30, 2015. It is provided in Appendix J of the Environmental Assessment (Attachment 3 to the application package).

In a letter dated March 23, 2015, the PGC screened the Project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only. The PGC records indicate that no known occurrences of species or resources of concern under PGC jurisdiction occur in the vicinity of the Project.

PADCNR requested surveys for 22 rare, threatened, or endangered plant species that could potentially occur in the Project impact area. Plant surveys along the proposed Underground Segment by a qualified botanist were performed in spring and summer 2015 to identify any occurrence of state-listed species. The survey indicated that no species listed by the PADCNR were identified. The results of these surveys were provided to the PADCNR. The Pennsylvania Department of Environmental Protection (PADEP) and the USACE have also been sent the DCNR plant survey results. On December 4, 2015the PADCNR provided PNDI clearance, along with recommendations to prevent the spread of invasive species that will be followed.

The USFWS identified the Indiana bat, northern long-eared bat, bank swallows, and migratory birds as protected species that could potentially be impacted by the Project. On March 26, 2015, the Applicant and its consultant met with the USFWS to discuss the ways in which the Project development has incorporated construction details to minimize and avoid impacts to migratory birds. Through the use of HDD and work space location and design, the Applicant has satisfied the USFWS requirements to avoid impacts to the bluffs and consequently, nesting bank swallows. The USFWS does not believe a seasonal restriction on Project activities is necessary, and the USFWS does not believe the anticipated Project impacts are high enough to warrant the development of a habitat

restoration plan for birds. Consultation with the USFWS, PFBC, PGC, and PADCNR is summarized in Section 5.6 of the EA. The Applicant is continuing to coordinate with these agencies regarding federally and state-protected species through the permitting process.

3) *Would the proposed discharge of dredged or fill material cause or contribute to significant degradation of the waters of the U.S.? [Subpart B § 230.10 (c)]*

The Project would not cause or contribute to significant degradation of the waters of the U.S. Based on the evaluation presented in the EA, the Project would not:

- Cause or contribute to a significant adverse effect on human health and welfare;
- Significantly affect aquatic life or other wildlife in the Project area;
- Significantly affect aquatic ecosystem features in the Project area; or
- Cause or contribute to a significant adverse effect on water-based recreation, existing aesthetic values, or economic values.

The Project has been sited to avoid to the maximum extent possible, and where unavoidable, to minimize and mitigate both temporary impacts to wetlands and streams. Sections 5.3.2.1 and 5.3.2.2 summarize potential impacts to wetlands and waterbodies. The avoidance incorporated with BMPs of the project prevents significant degradation that may be associated with development of the project. Further, the compensatory mitigation proposed with this application, Section T, will provide wetland habitat.

Stormwater and process water associated with construction and operation of the facility will be controlled and managed to prevent any adverse impacts to waters of the U.S. NPDES permit coverage for discharges of both stormwater and process water associated with construction and operation of the proposed facility will be obtained. The NPDES permit application specifies BMPs to reduce pollutants in stormwater runoff and meet water quality requirements for Section 401 Water Quality Certification. The NPDES permits for both construction and operation will implement requirements protective of waters of the U.S.

4) *Have appropriate and practicable steps been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem? [Subpart B § 230.10 (d)]*

The Applicant has developed appropriate and practical measures to minimize potential adverse impacts related to the Project. Specifically, the Applicant minimized unavoidable impacts to aquatic resources through several best management practices (BMPs); for example, in order to minimize impacts, waterbody crossings along the ROW will typically be constructed using HDD. Sections 3 and 5.3 of the Environmental Assessment detail the Project's efforts made to minimize impacts to aquatic ecosystems through the consideration of alternative designs and layouts.

In addition, the route has been sited to take advantage of previously disturbed areas. The majority of the proposed transmission cable route follows existing roadway ROWs in

order to minimize impacts to surface waters and other resources. Although the proposed Project would involve soil disturbances within or near a high quality watershed, the construction activities will be managed with enhanced BMPs as described in the Erosion and Sedimentation Control Plan (E&SC Plan) in Section M of the Joint Permit Application. The E&SC Plan follows PADEP Erosion and Sediment Pollution Control Program Manual (PADEP 2012), which specifies BMPs for addressing erosion and sedimentation control, and would be approved by PADEP.

The Applicant is taking a number of steps to minimize potential sediment disturbance and related effects of sedimentation associated with Project construction activities in Lake Erie. These measures include the following:

- Use of jet plowing or water jetting for deployment of the cable in soft sediment;
- Use of a dynamically positioned vessel to install the cables;
- Implementing measures to minimize sedimentation during blasting associated with bedrock trenching;
- Use of HDD in the nearshore area and the transition to land-based installation; and
- Other protective measures.

In areas of soft sediment, which extend along a majority of the route (from the U.S./Canada border in the middle of the lake to the area nearshore where the lake bed becomes bedrock), installation of the transmission cables will be conducted by the use of a jet plow or water jetting. Water jetting tools or ROVs are neutrally buoyant and often self-propelled, moving just above the lake bed and pre-laid cable. Unlike the jet-plow, there is no mechanical force used to pull the plow through the sediment and water jetting relies solely on the weight of the cable to sink through the fluidized sediment to the desired burial depth. The benefits of jet plowing and water jetting which help to minimize water quality impacts include:

- No pre-trench or separate excavation is required;
- Simultaneously trenches and buries the cable;
- Water pressure and volume can be controlled and adjusted; and
- Adjustable plow speed.

Use of a dynamically positioned vessel for cable deployment allows maintaining the cable deployment vessel's position with the use of thrusters instead of anchors. This reduces the amount of anchoring required for cable installation, thereby minimizing lake bed disturbance. It also allows for more efficient, quicker installation than if an anchored vessel were used[12].

In Lake Erie, limited blasting is required to bury the cable within an approximately one-mile segment of the lake bed. The amount of explosives and blasting technique required

[12] Anchors may be used during jointing and landing operations.

for bedrock trenching will be limited to the extent possible to avoid noise and vibration impacts on fish. Some displacement of fishes from the active construction footprint of the Project will occur, but will be limited in spatial extent at any given time.

The use of HDD construction methods would avoid disturbance of the near shore area where spawning, feeding, and rearing is most common among a variety of species.

The Applicant will develop and implement the following plans to minimize and mitigate in-lake sedimentation during cable installation:

- Blasting Plan;
- Inadvertent Fluid Release Prevention, Monitoring, and Contingency Plan;
- Drilling Fluid Management Plan; and
- Preparedness Prevention Contingency Plan.

The evaluation presented herein demonstrates conclusively that the proposed Project complies with the 404(b)(1) Guidelines, and that the Project's purpose and need cannot be fulfilled without resulting in impacts to waters of the U.S.. The Applicant is committed to implementing measures to effectively minimize the unavoidable impacts of the proposed Project. The Project would meet all state and federal standards with respect to water quality and endangered species and would not cause significant degradation to waters of the U.S.