

REVIEW OF APPLICATION FOR CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE WEST DELAWARE TUNNEL OUTLET FACILITY

Prepared by Patricia McIlvaine

June 4, 2019

I. INTRODUCTION

This report summarizes the review findings of the application submitted by West Delaware Hydropower Associates LP (WDHA or Applicant), a subsidiary of Brookfield Renewable Energy Group to the Low Impact Hydropower Institute (LIHI) for certification of the West Delaware Tunnel Outlet Project (WDTO or Project). The Project received a Qualified Conduit Exemption from the Federal Energy Regulatory Commission (FERC) as P-9159-NY, in 1986.

II. PROJECT'S GEOGRAPHIC LOCATION

The West Delaware Tunnel Outlet Project is located near Grahamsville, in Sullivan County, New York, on land owned by the New York City Department of Environmental Protection (NYCDEP) as part of their West Delaware Aqueduct (Aqueduct) which supplies drinking water to New York City.

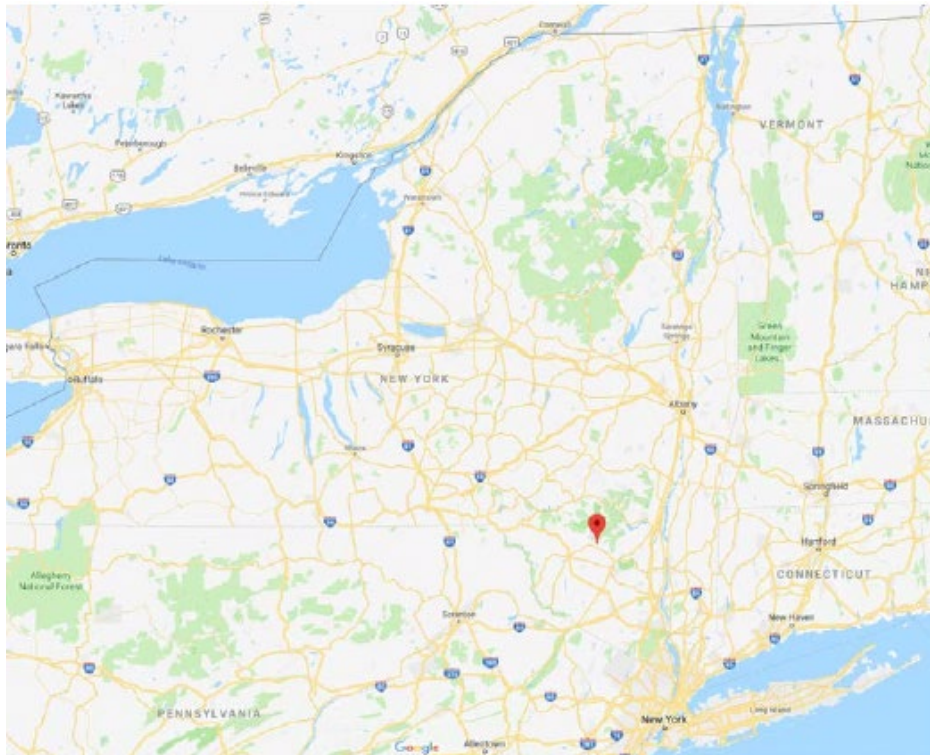


Figure 1 – General Location of the Project

III. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The WDTO is situated on the West Delaware Aqueduct, a water conveyance tunnel that connects the Cannonsville (upper) and Rondout (lower) Reservoirs. The Aqueduct is estimated at 45 miles in length and is managed by the NYCDEP, as illustrated below. The powerhouse was constructed in 1987. There have been no major equipment upgrades since the unit went operational. The NYCDEP website indicates that the Rondout and Cannonsville Reservoirs were constructed in 1950 and 1964, respectively.



Figure 2 – Water System Map showing Location of the Project

The Project consists of a powerhouse and a 60-foot-long, 66-inch-diameter, penstock. Water is diverted from the West Delaware Aqueduct through a main valve, a bypass valve and enters the Project's buried penstock, which brings the water to the powerhouse turbine. Once the water exits the turbine, it travels underground into the NYCDEP's facility and into a stilling pool. It then passes under the road and into the Rondout Reservoir at the Aqueduct's discharge works. WDHA has an easement for the use of the property. There is one unit, a vertical Francis turbine with a nameplate capacity of 7.5 MW. The average annual generation is 26,400 MWh. The station is located within a fenced property with an area of approximately 4,000 square yards, as shown on Figure 3.



Figure 3 – Aerial of Project including Approximate Project Boundaries

On a weekly basis, the NYCDEP sends a weekly water allotment based upon NY City's water supply needs. NYCDEP's system determines the weekly water allotment based upon a number of factors including reservoir levels, inflow forecasts, climatology, and water quality. WDTO is dispatched by the NYCDEP based on their need to transfer water from the Cannonsville to the Rondout Reservoir and provide water to New York City. WDHA determines the flow rate and timing schedule to deliver the requested allotment over the period specified. Typically, WDHA runs the turbine at best efficiency to maximize power for a peaking schedule.

IV. ZONES OF EFFECT AND STANDARDS SELECTED

As a conduit project, only one Zone of Effect (ZOE) was designated by the Applicant. This ZOE starts at where the Project penstock joins with the West Delaware Aqueduct and re-enters the NYCDEP's system at the Aqueduct's discharge works.

The **Not Applicable/De Minimis Effect** Standard was selected for each criterion. The Reviewer believes that these standards are appropriate and that sufficient supporting data was provided which demonstrated compliance with all criteria. Details of compliance with the criteria are presented in Section VIII.

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regimes	X				
B	Water Quality	X				
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources	X				

V. REGULATORY AND COMPLIANCE STATUS

The FERC issued the project a Qualified Conduit Exemption on December 18, 1986. It only contains the standard articles, including Article 2, which states the Project must implement any measures required by the United States Fish and Wildlife Service (USFWS) or applicable state agencies for the protection of fish and wildlife. None have been requested to date. Likewise, no exemption amendments have been issued to date. A Water Quality Certification was not required for the Project.

No compliance issues were identified in FERC's eLibrary or public comments.

VI. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

The deadline for submission of comments on the LIHI certification application was June 1, 2019. No comments were received directly by LIHI.

Because of the limited impact nature of this conduit project, that no stakeholder submitted comments to LIHI, and letters from two key state agencies were submitted as part of or following the application submission, I determined that no additional agency outreach was needed.

VII. DETAILED CRITERIA REVIEW

A. ECOLOGICAL FLOW REGIMES

Goal: The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

Assessment of Criterion Passage

The Applicant appropriately selected **Standard A-1, Not Applicable/De Minimis Effect**: The Project utilizes re-directed flow from the West Delaware Aqueduct, which is an existing water

supply conduit, and project discharge re-enters the NYCDEP's system at the Aqueduct discharge works. The NYCDEP's discharge then goes to Rondout Reservoir along with the other flow from the Aqueduct. As previously mentioned, NYCDEP determines what the weekly water allotment will be and WDHA determines the flow rate and timing schedule.

Based on my review, I believe the Project satisfies this criterion.

This Project Passes Criterion A – Ecological Flow Regimes

B. WATER QUALITY

Goal: Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.

Assessment of Criterion Passage

Standard A-1, Not Applicable/De Minimis Effect was appropriately selected. The Project utilizes water from the New York City water system West Tunnel Aqueduct and discharges back to NYCDEP's Aqueduct system after passing the turbines.

The New York state List of Integrated Report (IR) Category 4a/b/c Waters indicates that the Cannonsville (upper) and Rondout (lower) Reservoirs are both impaired for mercury caused by atmospheric deposition. The Cannonsville Reservoir is also listed for phosphorus from agricultural and municipal sources.

It does not appear that the quality of the water is impacted as it passes the WDHA unit. Therefore, it appears this criterion has been satisfied.

This Project Passes Criterion B – Water Quality

C. UPSTREAM FISH PASSAGE

Goal: The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy, sustainable fish and wildlife resources in areas affected by the facility.

Assessment of Criterion Passage

The Applicant has appropriately selected **Standard C-1, Not Applicable/De Minimis Effect**.

Both reservoirs are annually stocked with brown, lake and rainbow trout. The Cannonsville Reservoir is fed by the West Branch of the Delaware River while the Rondout Reservoir is fed by Rondout Creek and inflow from the Aqueduct. Information provided by the Applicant noted that these tributaries also provide sources for natural populations of these species as well as alewife and smelt. However, the Project is on a water supply conduit which is a manmade structure, not on a river, and does not create a barrier to upstream passage, nor are there any migratory fish be

affected by use of the water flowing through the conduit. Therefore, this criterion has been met.

This Project Passes Criterion C – Upstream Fish Passage

D. DOWNSTREAM FISH PASSAGE AND PROTECTION

Goal: The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and upstream river reaches affected by Facility operations. All migratory species are able to successfully complete their life cycles and to maintain healthy, sustainable fish and wildlife resources in the areas affected by the Facility.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard D-1, Not Applicable/De Minimis Effect**.

The penstock supplying the turbine is a spur off a water supply aqueduct that does not create a barrier to downstream fish passage, nor are there any migratory or riverine fish expected to be impacted by use of the water flowing in the Aqueduct. The Application noted that screening, designed primarily for preventing debris from entering the Aqueduct, is located at its entrance where it receives water from the Cannonsville reservoir. Such screening likely minimizes at least some passage of larger fish from the reservoir.

Based on the above information, I believe the Project passes this criterion.

The Project Passes Criterion D – Downstream Fish Passage and Protection

E. SHORELINE AND WATERSHED PROTECTION

Goal: The Facility has demonstrated that sufficient action has been taken to protect, mitigate and enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard E-1, Not Applicable/De Minimis Effect**. The station is located within a fenced property

with an area of approximately 4,000 square yards. The Applicant holds an easement from the NYCDEP for use of the land. The entire fenced area either has a structure or is landscaped. There are no lands associated with the Project that have significant ecological value for protecting water



quality, aesthetics, or low-impact recreation, The FERC Conduit Exemption did not require and shoreline management measures. Therefore, I believe this criterion has been satisfied.

The Project Passes Criterion E – Shoreline and Watershed Protection

F. THREATENED AND ENDANGERED SPECIES PROTECTION

Goal: The Facility does not negatively impact listed species.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard F-1, Not Applicable/De Minimis Effect** to pass this criterion.

The Application noted the presence of a bald eagle nest about 500 feet from the site boundary. During application to FERC for the license exemption, USFWS only identified concern with design of any transmission lines to avoid electrocution hazards that may be associated with the Project. Such lines are not part of the Project owned by WDHA. A letter dated March 28, 2019 from the NY Department of Environmental Conservation indicated that existing records for state protected species only identified bald eagle in or near the Project. That letter is included in Appendix A.

Thus, it does not appear that the Project has a negative impact on protected species and satisfies this criterion.

The Project Passes Criterion F – Threatened and Endangered Species Protection

G. CULTURAL AND HISTORIC RESOURCE PROTECTION

Goal: The Facility does not inappropriately impact cultural or historic resources that are associated with the Facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard G-1, Not Applicable/De Minimis Effect**, to pass the Cultural and Historic Protection criterion. In response to a letter of consultation issued by the Applicant on December 19, 2018, the NY State Division for Historic Preservation (SHPO) responded by letter dated January 28, 2019 indicating that there are no historic properties affected by the operation of the WDTO Project. A copy of that letter is contained in Appendix A. Thus, the Project satisfies this criterion.

The Project Passes Criterion G - Cultural and Historic Resource Protection

H. RECREATIONAL RESOURCES

Goal: The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard H-1, Not Applicable/De Minimis Effect** to pass this criterion. The FERC Conduit Exemption did not contain any recreational facility requirements. The powerhouse facility is a secure, fenced area, with no opportunities for public access. Recreation on the nearby Rondout Reservoir is very strictly controlled and managed by the NYCDEP as it is used for drinking water supply. Therefore, this criterion has been satisfied.

The Project Passes Criterion H – Recreational Resources

VIII. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review, I believe that this Project meets the requirements of a Very Low Impact facility and recommend it be LIHI Certified for a ten-year period.

**THE WEST DELAWARE TUNNEL PROJECT
MEETS THE LIHI CRITERIA FOR
CERTIFICATION AS A VERY LOW IMPACT
FACILITY**

Appendix A

Agency Correspondence



ANDREW M. CUOMO
Governor

Parks, Recreation, and Historic Preservation

ROSE HARVEY
Commissioner

January 28, 2019

Mrs. Kathleen Lester
Compliance Manager
Brookfield Renewable
126 Lambertson Lane
Hawley, PA 18428

Re: FERC
West Delaware Tunnel Hydro Station
1324 Route 55A, Town of Neversink, Sullivan County, NY
19PR00495

Dear Mrs. Lester:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the New York SHPO has determined that no historic properties will be affected by this undertaking.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA
Director, Division for Historic Preservation

Division for Historic Preservation

P.O. Box 189, Waterford, New York 12185-0189 • (518) 237-8643 • www.nystateparks.com

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1620
P: (845) 256-3054 | F: (845) 255-4659
www.dec.ny.gov



Department of
Environmental
Conservation

March 28, 2019

Ms. Katie Lester
Brookfield Renewable
126 Lamberton Lane
Hawley, PA 18428

RE: West Delaware Tunnel Project, 1324 Route 55A
Town of Neversink, Sullivan County
CH#: 8130

Dear Ms. Lester:

Based upon our review of your inquiry received by this office on March 13, 2019, regarding an application for consideration of Low Impact Hydropower Institute (LIHI) certification. No ground disturbance is proposed. The New York State Department of Environmental Conservation (DEC) offers the following comments:

PROTECTION OF WATERS

The following stream/pond/waterbody is located within or near the site indicated:

Name	Class	DEC Water Index Number	Status
Rondout Reservoir	A(TS)	H-139-14-P 815a	Protected, Navigable

A Protection of Waters permit is required to physically disturb the bed or banks (up to 50 feet from stream) of any streams identified above as "protected." A Protection of Waters permit is required for any excavation or filling below the mean high-water line of any waterbodies and contiguous wetlands identified above as "navigable." A time restriction may be required for protection of cold-water trout fisheries (waters classified under Article 15 of the Environmental Conservation Law (ECL) with a "T" or "TS" designation), beginning October 1 and ending April 30.

If a permit is not required, please note, the project sponsor is still responsible for ensuring that work shall not pollute any stream or waterbody. Care shall be taken to stabilize any disturbed areas promptly after construction, and all necessary precautions shall be taken to prevent contamination of the stream or waterbody by silt, sediment, fuels, solvents, lubricants, or any other pollutant associated with the project.



FRESHWATER WETLANDS

The project/site is not within a New York State protected Freshwater Wetland. An Army Corps of Engineers permit may be required pursuant to Section 404 of the Clean Water Act. If a Section 404 permit is required, you will also require a Water Quality Certification pursuant to Section 401 of the Clean Water Act. Issuance of these certifications in NYS has been delegated to the DEC. Please contact the Army Corps of Engineers in New York City, at 917-790-8411, for any permitting they might require.

STATE-LISTED SPECIES

DEC has reviewed the State's Natural Heritage records. We have determined that the site is located within or near record(s) of the following state-listed species:

<u>Name</u>	<u>Status</u>
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Threatened

A permit is required for the incidental taking of any species identified as "endangered" or "threatened," which can include the removal of habitat. Additional information may be required to make a determination of impacts to this species.

Please note that a project sponsor may not commence site preparation, including tree clearing, until the provisions of SEQR are complied with and all necessary permits are issued for the proposed project.

The absence of data does not necessarily mean that rare or state-listed species, natural communities or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

CULTURAL RESOURCES

We have reviewed the statewide inventory of archaeological resources maintained by the New York State Museum and the New York State Office of Parks, Recreation, and Historic Preservation. These records indicate that the project is located within an area considered to be sensitive with regard to archaeological resources. For more information, please visit the New York State Office of Historic Preservation website at <http://www.nysparks.com/shpo/>.

FEMA FLOODPLAIN

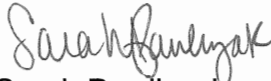
The project site is located within a Federal Emergency Management Agency (FEMA) Floodplain. The project sponsor should contact the Town of Neversink to determine if any additional jurisdictions are applicable to the proposal.

OTHER

Other permits from this Department or other agencies may be required for projects conducted on this property now or in the future. Also, regulations applicable to the location subject to this determination occasionally are revised and the project sponsor should, therefore, verify the need for permits if the project is delayed or postponed. This determination regarding the need for permits will remain effective for a maximum of one year. Applications may be downloaded from our website at www.dec.ny.gov under "Programs" then "Division of Environmental Permits."

Please contact this office if you have questions regarding the above information. Thank you.

Sincerely,



Sarah Pawliczak

Division of Environmental Permits
Region 3, Telephone No. 845-256-3050

cc: Lisa Masi, NYSDEC Bureau of Wildlife
Town of Neversink Town Clerk

NOTE: Regarding erosion/sedimentation control requirements:

Stormwater discharges require a State Pollutant Discharge Elimination System (SPDES) Stormwater permit from this Department if they either:

- occur at industrial facilities and contain either toxic contaminants or priority pollutants OR
- result from construction projects involving the disturbance of 5,000 square feet or more of land within the NYC Department of Environmental Protection East of Hudson Watershed or for proposed disturbance of 1 acre or more of land outside the NYC DEP Watershed

Your project may be covered by one of two Statewide General Permits or may require an individual permit. For information on stormwater and the general permits, see the DEC website at <http://www.dec.ny.gov/chemical/8468.html>.

For construction permits, if this site is within an MS4 area (Municipal Separate Storm Sewer System), the stormwater plan must be reviewed and accepted by the municipality and the MS-4 Acceptance Form must be submitted to the Department. If the site is not within an MS4 area and other DEC permits are required, please contact the regional Division of Environmental Permits.