

Peter Drown
Cleantech Analytics LLC
6717 Cub Run Court
Centreville, VA 20121

April 7, 2018

Maryalice Fischer
Certification Program Director
Low Impact Hydropower Institute

Subject: Recertification Recommendation for the Oswego River Hydroelectric Facility (FERC #2474, LIHI #35B)

Ms. Fischer:

This letter contains my recommendation for Recertification of the Oswego River Hydroelectric Facility (the "Facility"). I completed a thorough review of the application materials and the public record for this Facility, and consulted with NYDEC and USFWS, and am pleased to recommend Recertification of the Oswego River Hydroelectric Facility to one new, five-year term. I also recommend the LIHI condition that was issued in the previous re-certification continue to remain in effect, and the Owner should provide documentation of meeting minutes or other action items taken during consultation with upstream Phoenix facility and appropriate state and federal agencies that have responsibilities for flow requirements, in an ongoing effort to reduce flow excursions at the Facility.

Please contact me if you have any questions.

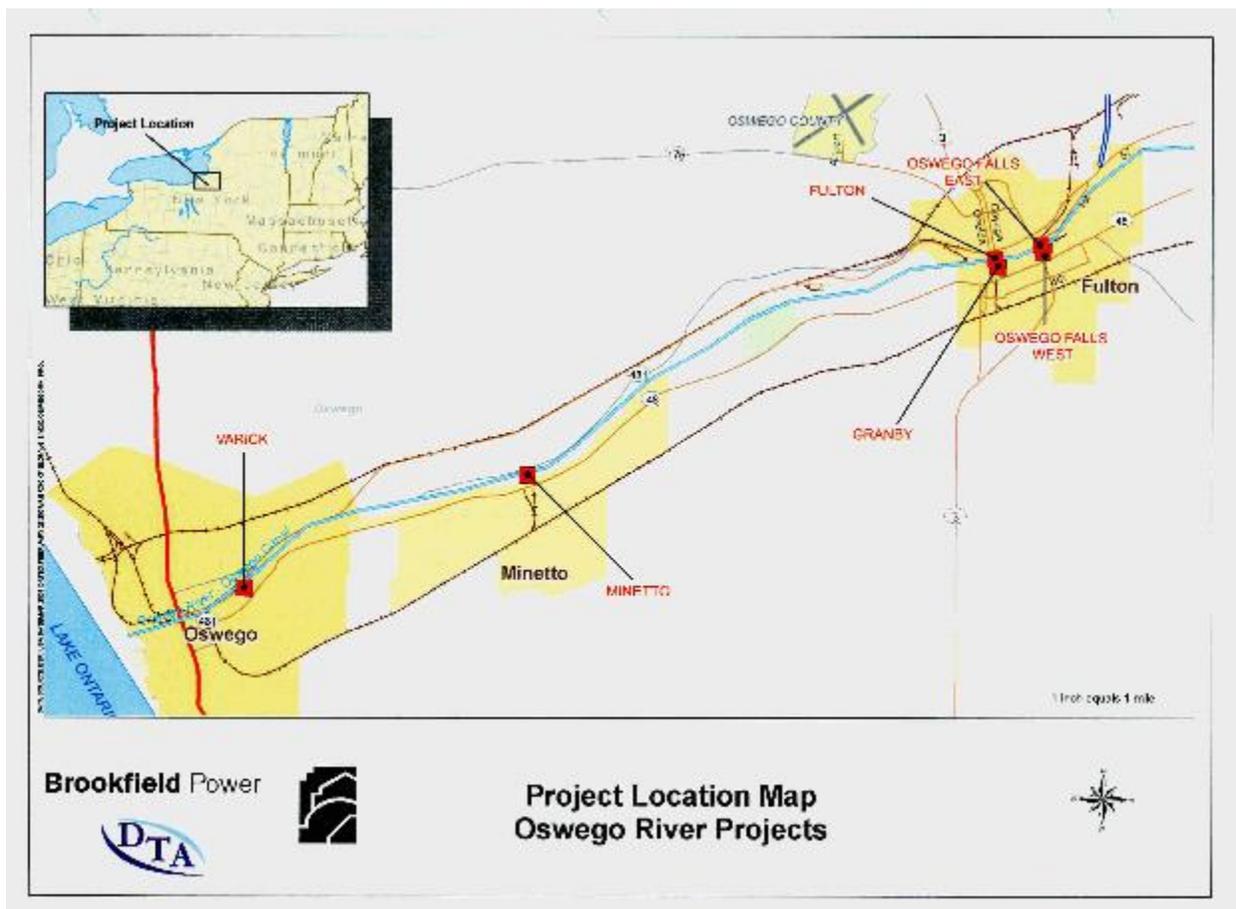
Sincerely,

A handwritten signature in black ink, appearing to read "Peter Drown", written in a cursive style.

Peter Drown, President
Cleantech Analytics LLC

I. Background:

The 18.05 MW Oswego River Hydroelectric Facility (“Facility”) consists of three distinct hydroelectric developments between RM 1.4 and RM 11.5 on the Oswego River, near the confluence with Lake Erie in Oswego County, New York. Project works include three dams, three powerhouses and eleven turbines with a total installed capacity of 18.05 MW. A detailed description of project works can be located in the LIHI application and the project website¹. The developments each operate in a modified run-of-river mode with some daily impoundment fluctuations, and together generate approximately 62,191 MWh annually. There are bypassed reaches at each of the developments, bounded by the powerhouses and intake structures (see Figures 2-3.) The Fulton development is furthest upstream and is located approximately 0.7 miles downstream of the Oswego Falls Project (FERC #5984)² and the Varick development is the last hydroelectric facility on the Oswego River prior to its confluence with Lake Erie. The Facility was initially constructed in the early 1900s, and currently operates under the terms and conditions in a FERC License issued November 2004 and the Oswego River and Oswego Falls Offer of Settlement issued in February 2004. Erie Boulevard Hydropower, LP (“Owner”) owns and operates the Facility. On March 7, 2018, the Owner submitted a timely and complete application for Recertification. This application review for recertification was conducted using the new, 2nd Edition Handbook that was published in March 2016.



¹ <http://lowimpacthydro.org/lihi-certificate-35b-oswego-river-project-new-york-2/>

² See separate LIHI recertification report for the Oswego Falls Hydroelectric Facility

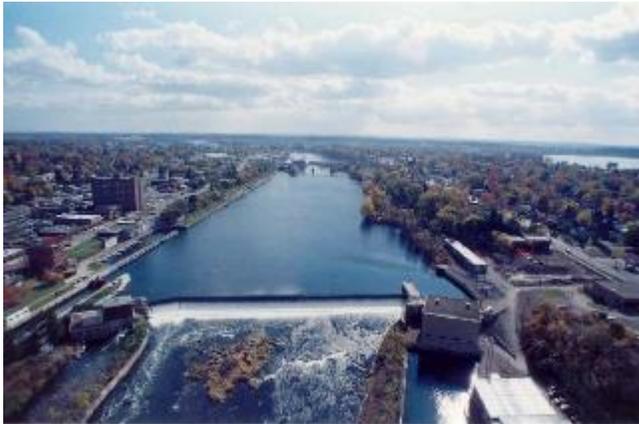


Figure 1 - Gransby & Fulton



Figure 2 - Varick

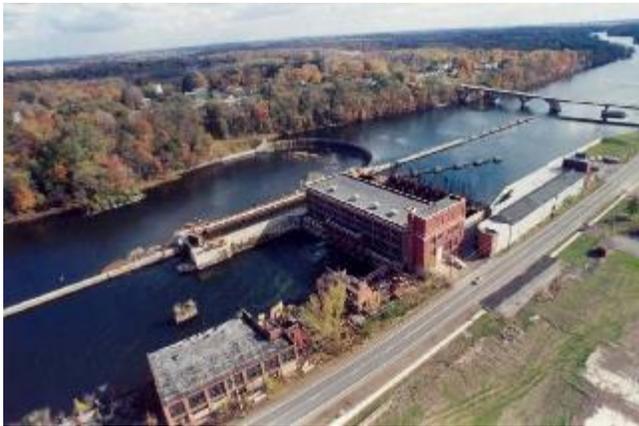


Figure 3 - Minetto

II. Recertification Standards

On October 06, 2017, LIHI received a Stage I Application (Intake Application) from the Owner requesting recertification of the Facility. Under the 2nd Edition LIHI Handbook, including the new two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

- (1) Is there any missing information from the application?
- (2) Has there been a material change at the certified facility since the previous certificate term?
- (3) Has there been a change in LIHI criteria since the certificate was issued?

If the answer to any question is “Yes,” the Application must proceed through a second phase, which consists of a more thorough review of the application using the LIHI criteria in effect at the time of the recertification application. Because the new Handbook involves new criteria and a new process, the answer to question two for all projects scheduled to renew in 2016 and beyond until the end of the next Certificate term will be an automatic ‘YES.’ Therefore, all certificates applying for renewal post-2016 through at least 2021 will be required to proceed through both phase one and phase two of the recertification application reviews.

III. Adequacy of the Recertification Package

I completed the Stage I Review of the Recertification Application on November 10, 2017, and noted several minor deficiencies for the applicant to resolve in the Stage II Application. The Applicant provided an updated Recertification Application on March 9, 2018, which included additional supporting information and stated there have been no material changes to the Facility design and operation, or environmental conditions in the project vicinity since the most recent LIHI review. To verify this, I have reviewed the application package, supporting comments and documentation and public records on FERC e-library posted since the original certification report (Franc, 2014). I also independently verified the submitted criteria were appropriate given the changes in the 2nd edition LIHI handbook.

The application was public noticed on January 2, 2018 with the 60-day public comment period ending on March 3, 2018. In the interim, the Owner provided additional information requested to support this review. No comments were received.

IV. There have not been any “material changes” at the facility that would affect recertification

In accordance with the Recertification Standards, "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. Based on my review of materials provided, review of FERC's public records, and consultation with the noted individuals, I found that there are no areas of noncompliance or new or renewed issues of concern. The previous LIHI certificate has the following condition:

“Owner shall report to LIHI within 120 days after recertification on specific actions they have taken internally to reduce and eliminate violations of flow requirements below their facilities, with attention to monitoring and control of operations during emergency situations and to coordination with the upstream Phoenix facility. This report shall also document recent consultations with appropriate state and federal agencies that have responsibilities for flow requirements, including the USFWS. After this initial report, Owner shall provide an annual summary report along with its annual compliance letter to LIHI, describing operational experience with river flows and reservoir levels over the past year, any significant flow events that occurred leading to any violations of flow requirements, and corrective actions taken. This condition will be complete after three consecutive years without any operational flow events. (NOTE: the annual summary report identified here may be combined with the similar report associated with the Oswego Falls certification, LIHI #35A)”

The Owner provided annual compliance statements for 2016 and 2017 which stated the flow deviations that occurred during those years, and meeting dates for ongoing consultation with the owner of the upstream Phoenix facility and the New York State Canal Corporation. However, no notes or other records of corrective actions taken were stated in these reports, with the exception of a modification to the method of releasing minimum flows at the Varick Station. Given that flow events continue to occur, this condition is not complete and should remain in effect.

V. LIHI certification criteria are satisfied in all Zones

The Owner selected nine Zones of effect, each comprised of a reservoir, bypassed reach and tailrace. The Facility's impacts stretch from the tailrace of the Oswego Falls Hydroelectric Project (see re-certification report by this same reviewer,) to approximately one mile above the confluence with Lake Ontario. The remaining section of the Oswego River is highly urbanized, running through the city of Oswego and significant industrial activity prior to the confluence.

Given the number of Zones at this project, the following review does not restate each of the specific regulatory requirements impacting each Zone, but instead focuses on how the LIHI standard is met for the entire Facility

pertaining to that Standard. For purposes of documentation, I have enclosed each individual requirement and the applicable LIHI Standard in Attachment 2.

A. *Ecological Flow Regimes*

The Owner properly selected Standard 1, Not Applicable, De Minimis for each reservoir, due to the LIHI exception that all impoundment Zones can apply this Standard. The Owner monitors reservoir elevation with remote gaging equipment to comply with the Stream Flow and Water Level Monitoring Plan issued pursuant to Article 401. This Plan was approved by FERC on January 12, 2015, and includes detailed description of the equipment used to monitor base flows, bypass flows and impoundment levels. USFWS concurred with the draft Plan on July 7, 2014³, and no comments were received by the NYDEC. Given the detail and agency's approval of this plan, I find it is adequate to meet the monitoring requirements in the LIHI Standard⁴. The Owner also selected Standard 1 for the farthest downstream Zone (the tailrace of Varick, one mile from the confluence with Lake Ontario.) I disagree that this is the proper selection, because the project clearly impacts flows in this stretch. Standard 2, Agency Recommendation is a better selection, because the agencies determined that the bypass flow requirement for Varick provides adequate flows to this stretch. Therefore, the same requirement for the Varick bypass Zone would apply here. In this case, the bypassed reach requires seasonal bypass flows from 200 cfs – 800 cfs to protect riffle habitat for reproduction of macroinvertebrates, minnows, and darters, supporting the sport fishery in this area. These flows were determined following the results of an IFIM study in this Zone. The Owner properly selected Standard A4, Site-Specific Study for this Zone.

The Owner properly selected Standard 2, Agency Recommendation for all other Zones. Flow requirements are diverse in these Zones, and include license Articles 401 and 404 – 407. These Articles require bypass flows into approximately 0.75 miles of total bypassed reach (among all developments,) seasonal base flows from the powerhouses to support walleye spawning, and monitoring requirements that were approved by the USFWS and FERC in 2015. The scientific and technical basis was provided by the IFIM studies, which determined optimal flows to increase macroinvertebrate reproduction in the Oswego River, to support populations of resident fish. The Owner does experience frequent flow excursions, but FERC has not determined that any are violations to date. The current LIHI condition requires that the Owner report annually on these excursions, and provide evidence of consultations with other river stakeholders to minimize these excursions. In comments received on the Monitoring Plan, the USFWS suggests the upstream Phoenix Project may be the cause of most of the Owner's flow excursions, and suggested that Project may be in violation of its FERC license requirements. Without direct intervention by FERC in the Phoenix Project, the LIHI condition is the best way to document these excursions (which apparently are out of the Owner's control,) and work towards a resolution.

I conclude that the Facility satisfies this Criterion in all Zones; however, I am recommending that the Owner provide meeting minutes or action items that demonstrate ongoing progress towards resolution of flow excursions, in their Annual Compliance Report to LIHI.

B. *Water Quality*

The Owner properly selected Standard 2, Agency Recommendation for all Zones. This stretch of the Oswego River is listed as impaired for PCB contamination. I confirmed with NYDEC on March 30, 2018 that this is due to previous industrial discharges and not due to the ongoing operations of these hydroelectric facilities (see Attachment 1.) Zones 1-6 (Fulton impoundment to Minetto tailrace) are designated as Non-trout Class B waters,

³ Although FERC stated that USFWS “concurred” with the plan, it is probably more accurate to say USFWS did not object to the plan. I did not find explicit concurrence in USFWS comments on the plan.

⁴ A FERC inspection in August 2015 found several of the gauges were not legible and required cleaning. The Owner promptly cleaned these gauges and provided photo documentation in October 2015, which FERC acknowledged. The Owner also provided evidence of annual work orders to clean and inspect all eel ladders

and this deteriorates to Class C in Zones 7-9 (Varick impoundment to confluence with Lake Ontario.) This region is heavily urbanized with significant industrial activity. This region was listed as an “Area of Concern” as part of the U.S.-Canada Great Lakes Water Quality Agreement, and a Remedial Action Plan (RAP) was developed and implemented by the U.S. EPA and NYDEC in 1987. In 2006, this region was delisted due, in part, to provisions implemented in the FERC License for the Oswego River Hydroelectric Project. The 2004 Water Quality Certificate was incorporated into Article 401 of the FERC License, and flow requirements for all Zones are designed to protect water quality. Therefore, the same scientific basis and monitoring requirements discussed under section A above are also sufficient to satisfy this Criterion using Standard B2.

C. Upstream Fish Passage

The Owner properly selected Standard 2, Agency Recommendation for all Zones that impact upstream fish passage at the Facility, (the bypassed reaches,) and Standard C1, Not Applicable, for all other Zones. This region of the Oswego River is home to a variety of warm-cool water and coldwater species, including largemouth bass, white perch, walleye, channel catfish, northern pike, yellow perch, bluegill, American eel and black and white crappie. Lake Sturgeon are also known to occur in the River, but these are discussed under section F below, due to their threatened status. Article 407 of the FERC License requires seasonal eel passage installation from June 15 through September 15 at each of the dams. This system is an 18-inch wide open channel with 1.5-inch diameter by 5-inch long PVC tubes anchored to the channel floor in a diagonal pattern, and attached directly to the spillway or powerhouse wall. Appropriate attraction flow is supplied through the fishway entrances. A 2015 Environmental Inspection found the eel passage facilities were heavily incrustated with algae, and should be cleaned and maintained regularly. Eel passage was incorporated into the Settlement Agreement, and aligns with a USFWS priority to re-introduce eels to all habitats within its historical range by 2010. By letter dated March 23, 2018, USFWS provided the following comments about eel passage at the site (Attachment 1):

“The owner voluntarily added the eel ladders during an amendment process for the licenses. No effectiveness testing has been done. The American eel population in the Oswego River is probably relatively low now due to the declining numbers coming up the St. Lawrence River. The Oswego is getting near the edge of the range. The eel ladders are still important, but we don't know their effectiveness.” (Attachment 1)

The modified run-of-river requirement discussed in section A also impacts upstream fish migration. These seasonal bypass flows are designed to protect riffle habitat for the reproduction of macroinvertebrates, minnows, and darters, supporting fish propagation and spawning habitat. Therefore, the same scientific basis and monitoring requirements discussed under section A support this Criterion.

The Owner adequately demonstrated compliance with upstream fish passage recommendations contained in the FERC License and Settlement Offer, and satisfies the Upstream Fish Passage criterion in all Zones. Standard C1, Not Applicable is appropriate for all other Zones as these areas have no impact on the ability of migratory or resident fish species to move upstream.

D. Downstream Fish Passage

The Owner selected Standard 2, Agency Recommendation for all Zones that impact downstream fish passage at the Facility, (the bypassed reaches,) and Standard D1, Not Applicable, for all other Zones. The agency recommendations are contained in license Article 407, and include year-round base flow releases through existing sluice gates or unused powerhouse bays, coupled with seasonal installation of 1” trashrack overlays from May 1st – November 30th, or when flows allow safe installation (whichever is later.) These recommendations were developed based on fish entrainment and mortality studies and habitat-based IFIM studies, both conducted in the mid-90s. These are described in the Flows criterion above and in Attachment 2. Zones

The Owner adequately demonstrated compliance with these base flows, minimum flows, and fish entrainment protection requirements contained in the FERC License and Settlement Offer, and satisfies the Downstream Fish Passage criterion in all Zones.

E. Watershed and Shoreline Protection

The Owner properly selected Standard 1, Not Applicable/De Minimis for all Zones. It is readily apparent that each of these developments is located in urbanized areas⁵, with impervious surfaces and residential/commercial development surrounding the Oswego River and each of the project boundaries. The shorelines are clearly not of significant ecological value, and there are no shoreline management plans in place (Figures 4-6). Therefore, the Facility satisfies this criterion in all Zones.



Figure 4 - Fulton



Figure 5 - Minnetto

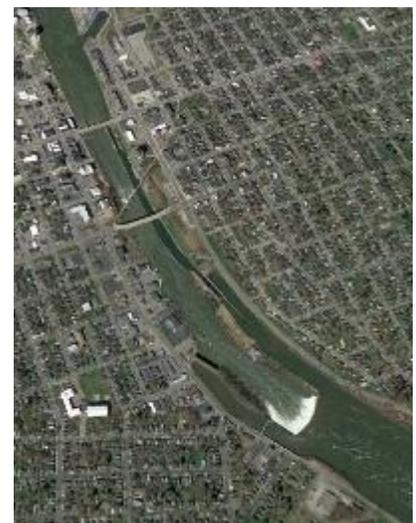


Figure 6 - Varick

F. Threatened and Endangered Species

The Owner selected Standard 3, Recovery Plan and Action for all Zones. The species identified include the Indiana Bat (federally endangered), Northern Long-eared Bat (federally threatened), Bald Eagle (state threatened), Bog Turtle (federally threatened), Eastern Massasauga (federally threatened), and Lake Sturgeon (state threatened). The Owner gave a thorough description of how they comply with the recovery plans for both species of bats, the Bog Turtle, and the eastern Massasauga. This includes minimizing vegetation removal and seasonal tree-clearing, habitat protection, and run-of-river operation. The Owner cited their existing upstream and downstream fish passage and protection measures coupled with run-of-river operations as evidence of protection of resident sturgeon. The NYDEC is using habitat enhancement and artificial propagation (fish hatchery programs) to support populations of this species, and published a Species Recovery Plan on January 31, 2018 for the period 2018 – 2024⁶. The Oswego River projects (including Oswego Falls and Oswego River,) straddle two management units, the Central NY unit and Eastern Lake Ontario unit. The Plan states that sturgeon are known to regularly migrate upstream between these units, indicating that they are able to pass through or otherwise navigate these projects. The primary recommendations consist of monitoring populations of these

⁵ Minnetto is the one exception, located in a moderately rural setting. However, the shoreline is lined with roads and houses, and the area does not fit the general LIHI standard of “significant ecological value,” in my opinion.

⁶ https://www.dec.ny.gov/docs/fish_marine_pdf/lakesturgeonrp.pdf

species and eventual spawning habitat structures pending the successful testing of spawning beds elsewhere in the region. The Oswego River projects are not interfering with any of these activities, and the seasonal trashrack overlays and flow requirements also likely benefit this species. I solicited comments from NYDEC and USFWS to verify compliance with these management plans, and on March 29, 2018 they confirmed that there has been “good progress” across their native range, and the Owner has been responsive to their requests.

The Owner adequately demonstrated compliance with recovery plans for all listed species, and satisfies the Threatened and Endangered Species criterion in all Zones.

G. Cultural and Historic Resources Protection

The Owner selected Standard 2, Approved Plan for all Zones. This selection requires proof of compliance with any plans issued “for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.” The project is governed by a Cultural Resources Management Plan, pursuant to Article 410 of the License and approved by FERC on January 26, 2007. There are limited historical resources at the Project⁷, and the plan primarily addresses the mitigation of impacts to historic or archaeological resources during ground-disturbing activities. Annual reporting is required to disclose any ground-disturbing activities. The most recent report was filed on January 27, 2017, and disclosed only minor ground-disturbing activities occurred during the prior year, but noted that these were exempt from consultation pursuant to the “Compendium of Compatible Operations and Maintenance Activities (Categorical Exemptions for Historic Hydro Facilities)”.

The Owner adequately demonstrated compliance with their Cultural Resources Management Plan by submitting annual reports pursuant to the Plan, and therefore satisfies this Criterion using Standard G2, Approved Plan for all Zones.

H. Recreation

The Owner applied Standard 2, Agency Recommendation for all Zones. The recommendations are contained in the Final Revised Recreation Management Plan, developed in consultation with NYDEC, USFWS and the National Park Service (NPS), and approved by FERC on August 8, 2006. This stretch of the Oswego River is used extensively for recreational purposes, primarily boating and fishing. The New York State Canal Commission operates the locks that provide boat access around the dams, and several day-use recreational facilities are owned and maintained by local municipalities or New York State. The Owner provides safe and free access to project areas for fishermen, often working with the local park owners to help fund improvements or access points. For example, the City of Oswego owns and maintains the West Side Linear Park, which runs along the Varick development and attracts thousands of fishermen each year. The Owner assisted by contributing funds for a bridge over the tailrace and walkway onto Varick Island, and an access point into the bypassed reach. Additional recreational facilities include various walkways and paths, a canoe portage trail and boat launch facility, and other miscellaneous access points (see Table 1). There were no comments filed on the final recreational plan, and no records of violations on FERC e-library. The Owner was found in compliance with recreational provisions in the most recent FERC environmental inspection, conducted on August 6, 2015.

The Owner adequately demonstrated compliance with the recreation plan, and therefore satisfies this Criterion using Standard H2, Agency Recommendation for all Zones.

⁷ On July 19 1996, the Owner executed a Programmatic Agreement with the Advisory Council on Historic Preservation, the New York Historic Preservation Office and FERC, which identified the dams and intake structures as historic properties.

Table 1 - FERC-approved Recreational Facilities at Oswego River Hydroelectric Facility

Recreation Site Name	Recreation Facilities
West Side Linear Park ⁶ (Varick Development)	Bank fishing access locations (ADA angler walkway over the tailrace, a walkway onto Varick Island, and stairs into the bypassed reach); undesignated parking lot (with some ADA accessible spaces)
Minetto Development ⁷	Canoe portage (1 put-in and 1 take-out at municipal park); canoe portage trail; informal bank fishing; undesignated parking lot; unspecified information site signs
Fulton Development	Bank fishing access (stairs); informal trail system (fishing access)

VI. Conclusion

In my opinion, the materials provided and referenced above are sufficient to make a recertification recommendation, and no further application review is needed. In conclusion, I recommend Recertification of the Oswego River Hydroelectric Facility to one new, five-year term. I also recommend the LIHI condition that was issued in the previous re-certification continue to remain in effect, and the Owner should provide documentation of meeting minutes or other action items taken during consultation with upstream Phoenix facility and appropriate state and federal agencies that have responsibilities for flow requirements, in an effort to reduce flow excursions at the Facility.

Please contact me if you have any questions.

Sincerely,



Peter R. Drown, President
Cleantech Analytics LLC

Attachment 1
Agency and Applicant Communications

Date: March 30, 2018
Contact Person: Valarie Ellis
Agency: New York State Department of Environmental Conservation

 **Ellis, Valarie D (DEC)** <valarie.ellis@dec.ny.gov> Mar 30 (4 days ago) ★
to Peter, Kevin, Ian, Scott

Mr. Drown,

The Water Inventory/Priority Waterbodies List categorizes the sediments of that section of the **Oswego** River as impaired for PCB contamination. This is likely due to probable, past industrial discharges to the river. Therefore, the Department is not considering any on-going operations or discharges as contributing to PCB loadings to the sediments in the river.

I hope this information has been helpful. If there is anything else we can assist you with, please let us know.

Valarie D Ellis, PE
Professional Engineer I (Environmental), Division of Water, Region 7
Onondaga Lake Monitor

New York State Department of Environmental Conservation
615 Erie Blvd., West, Syracuse, NY 13204-2400
P: [315.426-7500](tel:3154267500) | F: [315.426-7459](tel:3154267459) | valarie.ellis@dec.ny.gov

Water Quality on **Oswego** River Inbox x

 **Peter Drown** <peter.drown@cleantechanalytics.com> Mar 28 (6 days ago) ☆
to Ian

Hi Ian,

I am completing my reviewer's report for the re-certification of the **Oswego** Falls Hydroelectric Project (FERC #5984) for the Low Impact Hydropower Institute. Can you confirm that the Project is not the cause of the water quality impairment listed for this stretch of the **Oswego** River?

Thanks,

...

Date: March 29, 2018
Contact Person: Ian Blackburn, Fish and Wildlife Technician
Agency: New York State Department of Environmental Conservation



Peter Drown <peter.drown@gmail.com>

Low Impact Hydropower Power - NY Recertifications

Blackburn, Ian R (DEC) <ian.blackburn@dec.ny.gov>
To: Peter Drown <peter.drown@cleantechanalytics.com>

Thu, Mar 29, 2018 at 12:17 PM

Peter: Nysdec's recovery plan for lake sturgeon has recently been revised and there has been good progress across the state in their native range. Brookfield has been responsive to our recent requests in releasing efforts in the Oswego River system.

Hope that helps. Please contact me if you need additional clarification.

Thank you,

Ian Blackburn

[Get Outlook for Android](#)



Peter Drown <peter.drown@cleantechanalytics.com>

Mar 23 (11 days ago) ☆



to Stephen_Patch, Robyn_Niver

Hello Stephen, Robyn,

I am the reviewer responsible for the **Oswego** River projects, and I would appreciate your comments on the following two items:

- The Owner noted the possible presence of Lake Sturgeon in the **Oswego** River. As a threatened and endangered species, is the Owner in compliance with any relevant conditions in species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar plans issued by your agency? If these plans have not been developed, is there any concern from your agency with the impact of these projects on resident Lake Sturgeon?

- The Owner has installed and operates upstream eel passage at the facilities. Can you comment on the effectiveness of these facilities?

Thanks,

[\[text\]](#)

Date: March 23, 2018
Contact Person: Stephen Patch, Lake Sturgeon Hydro Project Coordinator
Agency: US Fish and Wildlife Service



Patch, Stephen

Mar 23 (11 days ago) ☆



to Dave, Peter, Ian, Robyn

If you haven't contacted the New York State Department of Environmental Conservation, please contact Dave or Ian (cc'd above). As Robyn indicated, we have no jurisdiction over lake sturgeon. The owner voluntarily added the eel ladders during an amendment process for the licenses. No effectiveness testing has been done. The American eel population in the **Oswego** River is probably relatively low now due to the declining numbers coming up the St. Lawrence River. The **Oswego** is getting near the edge of the range. The eel ladders are still important, but we don't know their effectiveness.

[\[text\]](#)

**Attachment 2
Specific Agency Requirements and LIHI Compliance**

FLOWS, WATER QUALITY, AND FISH PASSAGE	
Requirements	LIHI Standard Compliance
Standard Article 8 requires the licensee to install and thereafter maintain gages and stream gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located.	A2, Agency Recommendation
Standard Article 11 requires the licensee to install fish passage and other wildlife facilities when requested by state and federal resource agencies.	C2 and D2, Agency Recommendation
Article 401 requires the licensee to file plans required by the New York State Department of Environmental Conservation (NYDEC) Water Quality Certificate (WQC) conditions, to the Commission for approval. Most recent filings: Stream Flow and Water Level Monitoring Plan filed on 8/22/14 and approved by the Commission 6/12/15.	A2, Agency Recommendation B2, Agency Recommendation
Article 402 reserves authority to the Commission to require the licensee to construct, operate, and maintain, or to provide for construction, operation, and maintenance of, such fish passage facilities as may be prescribed by the Secretary of the Interior under section 18 of the FPA.	C2 and D2, Agency Recommendation
Article 403 requires the licensee to operate the Oswego River Project in Modified Run-of-River (MROR) mode. At the Fulton and Minetto developments the impoundment may fluctuate 0.5 foot (year-round) and 1.0 foot at the Varick impoundment. The Varick impoundment has various flashboard heights ranging from 10”-36” and typically water level is maintained at 30 inches above crest.	A2, Agency Recommendation
Article 404 requires the licensee to release a base-flow downstream of the powerhouse at Fulton of 800 cfs or inflow (whichever is less) for walleye spawning and 300 cfs at all other times.	A2, Agency Recommendation
Article 405 requires the licensee to release bypass-flows downstream of each development as follows: Fulton - 75 cfs fish friendly flow; Varick – 800 cfs during walleye spawning season, 400 cfs end of walleye season through May 31, 200 cfs June 1 through September 15, and 400 cfs from September 16 to the beginning of walleye season.	A2, Agency Recommendation B2, Agency Recommendation
Article 406 requires the licensee to install low-level flow diversion structures along a portion of the western side of the bypassed reach near the tailrace of the Varick powerhouse. These structures shall be field located just upstream of the existing tailrace training wall. The licensee shall construct these low level flow diversion structures with minimal height and length to avoid any unnecessary impact to the river or fish. These modifications will attempt to divert approximately 70 percent of the upper bypassed reach flow, during the 200 cfs bypass flow release period from June 1 through September 16, to the lower bypassed reach.	A2, Agency Recommendation

<p>Article 407 requires the licensee to implement the fish-protection, passage, and movement measures as follows: Fulton – 75 cfs fish friendly release through the existing sluice gate adjacent to the Fulton powerhouse; Minetto – 25 cfs fish passage release through an existing unused bay within the Minetto powerhouse; Varick – 200 cfs fish friendly release through a location adjacent to the newly installed trashrack overlays and upstream eel conveyance systems at each development to be installed seasonally from June 15 through September 15. The licensee shall also install seasonal overlays (May 1 through November 30) in the form of 1” clear-spaced trashracks or 1.5” diameter perforated plates at the Fulton and Minetto trashracks and at the “State Head Gates” adjacent to the dam at Varick. (Note that licensee no longer uses trashrack overlays and has installed one-inch spaced trashracks at all developments.)</p> <p>Most recent filings: Licensee notified the Commission on 6/24/13 that upstream eel conveyance systems at Fulton and Minetto were damaged by high-flow events, and by letter filed 8/14/13 notified the Commission that repairs to the systems were completed and were now operational.</p>	<p>C2, Agency Recommendation D2, Agency Recommendation</p>
<p>Article 408 requires the licensee to file for Commission approval, no less than 90 days prior to the installation, construction, or modification of any structures required by articles 407 and 408, design drawings for the proposed activity. The design drawings shall be prepared in consultation with the NYSDEC and U.S. Fish and Wildlife Service (FWS) and that the licensee include with the drawings documentation of agency consultation, copies of comments and recommendations on the completed drawings after they have been prepared and provided to the agencies, and specific descriptions of how the agencies’ comments are accommodated by the drawings. The Commission reserves authority to require changes to the drawings and the activity shall not be implemented until the licensee is notified by the Commission that the drawings are approved. Upon Commission approval, the licensee shall implement the requirements of article 407, including any changes required by the Commission. Functional design drawings of fish protection measures were filed on 8/25/10 and approved by the Commission on 9/21/10.</p>	<p>C2, Agency Recommendation D2, Agency Recommendation</p>
<p>RECREATIONAL, CULTURAL AND WATERSHED RESOURCES</p>	
<p>Requirements</p>	<p>Compliance with LIHI Standard</p>
<p>Article 409 requires the licensee to file, for Commission approval, a revision of the recreation plan that was filed with the Commission on 12/14/93, which has been prepared in consultation with the New York State Canal Corporation (NYSCC), the NYDEC, and the U.S. Department of the Interior, National Park Service (NPS). Revised recreation plan filed on 1/6/06 and approved by the Commission on 8/8/06.</p>	<p>H2, Agency Recommendation</p>
<p>18 CFR, Part 8: Recreation signing and posting.</p>	<p>H2, Agency Recommendation</p>
<p>Standard Article 13 requires the licensee to allow public free access to project waters and adjacent lands.</p>	<p>H2, Agency Recommendation</p>

<p>18CFR, Part 8, Section 8.11: Recreation Report Form 80. Form 80 filed on 4/1/2015.</p>	
<p>Article 410 requires the licensee to implement its Programmatic Agreement with the State executed on 7/19/96, including the submittal of a Cultural Resources Management Plan (CRMP). CRMP was filed on 3/8/06 and approved by the Commission on 1/26/07. Most recent annual report was filed on 1/21/15, stating that only minor ground-disturbing activities occurred within the past year. Commission approval is not required.</p>	<p>G2, Agency Recommendation</p>
<p>Facilities and measures to assure public safety (18 CFR, Part 12). Public Safety Plan filed 11/8/02. Revised Public Safety Plan for Varick was filed on 12/22/14 in response to Commission request to file a revised plan once additional safety measures were completed. Commission approval is not required.</p>	<p>H2, Agency Recommendation</p>
<p>Standard Article 19 requires the licensee to take reasonable measures to control sedimentation and other pollution at the project.</p>	<p>E1, Not Applicable/De Minimis</p>
<p>Standard Article 20 requires the licensee to clear and keep clear to an adequate width of lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works.</p>	<p>E1, Not Applicable/De Minimis</p>
<p>Article 411 gives the licensee authority to grant conveyances for non-project use of project lands and waters, for certain types of use without prior Commission approval.</p>	<p>N/A</p>