

Reviewer's Report for Application for Recertification to the Low Impact Hydropower Institute from EBH – Middle Raquette River

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Table of Contents

1. INTRODUCTION 4

2. PROJECT LOCATION..... 5

3. PROJECT DESCRIPTION 6

 3.1 Major Project Works –Higley Development 6

 3.2 Major Project Works – Colton Development..... 7

 3.3 Major Project Works – Hannawa Falls Development 7

 3.4 Major Project Works – Sugar Island Development 8

 3.5 Mode of Operation for Power 8

 3.6 Mode of Operation for Impoundment Fluctuation 9

 3.7 Mode of Operation for Minimum Flow Releases 9

 3.8 Mode of Operation for Whitewater Flow Releases..... 10

 3.9 Mode of Operation for Downstream Fish Passage 11

 3.10 Mode of Operation for Upstream Fish Passage 12

4. REGULATORY STATUS 12

 4.1 Summary of Project Redevelopment and Agency Consultation Process..... 12

 4.2 License and Compliance Issues 13

5. PUBLIC COMMENTS RECEIVED 14

6. CONSISTENCY WITH LIHI CRITERIA AND ISSUES IDENTIFIED 16

 6.1 Summary of the Reviewer’s Findings 16

 Criterion A – Flows 16

 Criterion B – Water Quality 19

 Criterion C – Fish Passage and Protection..... 20

 Criterion D – Watershed Protection 20

 Criterion E – Threatened and Endangered Species Protection 21

 Criterion F – Cultural Resources 21

 Criterion G – Recreation 22

 Criterion H – Dam Removal 22

 6.2 Recommendations of the Reviewer 22

7. DETAILED CRITERIA EVALUATION 24

 7.1 Flows 24

7.2 Water Quality..... 25

7.3 Fish Passage and Protection 26

7.4 Watershed Protection 28

7.5 Threatened and Endangered Species Protection 29

7.6 Cultural Resources..... 30

7.7 Recreation 31

7.8 Dam Removal..... 31

APPENDIX A 32

REVIEW OF APPLICATION FOR RECERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE (LIHI) OF THE MIDDLE RAQUETTE RIVER PROJECT

*Prepared by:
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1. INTRODUCTION

The newly defined Middle Raquette River Project (MRRP or Project) is comprised of the Federal Energy Regulatory Commission's (FERC) license 2320 that includes Erie Boulevard Hydro's (EBH) Higley, Colton, Hannawa and Sugar Island hydro developments. EBH is a wholly owned subsidiary of Brookfield Renewable Energy Group (BREG).

Prior to this review, the MRRP was certified as part of the larger Raquette River Project (RRP or LIHI certificate #14), which was comprised of fourteen hydro developments in FERC licenses 2060, 2084, 2320 and 2330.¹ LIHI #14's second five year recertification for the RRP ended on July 9, 2014.

EBH submitted a third application to LIHI for recertification of the RRP on May 12, 2014. Based on review comments by the U.S. Fish and Wildlife Service (USFWS) on May 27, 2014², EBH resubmitted a revised LIHI application for recertification on July 28, 2014.

In reviewing this latest application package, LIHI determined that the RRP needed to be separated into three smaller LIHI certificates to help reduce the overall size and complexity of the issues, and to make the application more manageable. A logical approach was to segment the prior LIHI project by FERC licenses, as described here. This solution was arrived at after discussions with EBH. The applicant agrees with this new approach.

The MRRP will now be defined as LIHI Project #14B going forward. The developments in FERC licenses 2060 and 2084 will now be defined as the Upper Raquette River Project (URRP or LIHI #14A). The developments in FERC license 2330 will now be defined as the Lower Raquette River Project (LRRP or LIHI #14C).³ This report reviews the applicable portions of the latest application for recertification of the MRRP.⁴

¹ FERC licenses – 2060 (Carry Falls), 2084 (Stark Falls, Blake Falls, Rainbow Falls, Five Falls, and South Colton), 2330 (Higley, Colton, Hannawa and Sugar Island), 2320 (Norwood, East Norfolk, Norfolk and Raymondville).

² USFWS LIHI application request, “ ... Brookfield should update the entire LIHI Application to reflect current conditions, not those that existed at the time of the 1998 Settlement or the original application to LIHI. In addition, they should provide photo-documentation that demonstrates that all of the eel ladders have been successfully installed and are operating as designed. Finally, Brookfield should indicate which fish protection and downstream passage facilities have been completed and which are yet to be completed (along with proposed installation dates) ...”

³ FERC issued separate licenses for the Carry Falls Project (P-2060), the Upper Raquette River Project (P-2084), the Middle Raquette Project (P-2320) and the Lower Raquette River Project (P-2330) on February 13, 2002. The term for each license was for 31 years and 11 months ending on December 31, 2033. In December of 2006, FERC amended the Lower Raquette River Project as a means of accelerating the fish protection and downstream passage schedule.

⁴ EBH – Daniel Daoust, Compliance Specialist - (315.598.6130 – Daniel.Daoust@brookfieldrenewable.com).

2. PROJECT LOCATION

The Project consists of four hydro developments, Higley, Colton, Hannawa and Sugar Island, along the Raquette River in St. Lawrence County, New York.

The Raquette River, with a total drainage basin of 1,269 square miles at its mouth, originates in the Adirondack highlands at Blue Mountain Lake, Raquette Lake and Long Lake, flows generally north-northwest for more than 120 miles, through Potsdam, New York and empties into the St. Lawrence River, near Massena, New York into the St. Lawrence River/Seaway at the St. Regis Indian Reservation in Franklin County.

The area experiences cold, snowy winters and short summers. Annual precipitation is about 40 inches. As the river flows north, it transitions from cold water habitat to a cool water aquatic fishery as the river reaches the lower gradients.

Most of the basin is sparsely populated, with much of the land forested and brush land. The Project is in a largely rural, forested area that is dependent on forestry, some agriculture, wood products, and tourism. Historically, the river has been developed for water power for sawmills, paper mills, tanneries, and other industry.

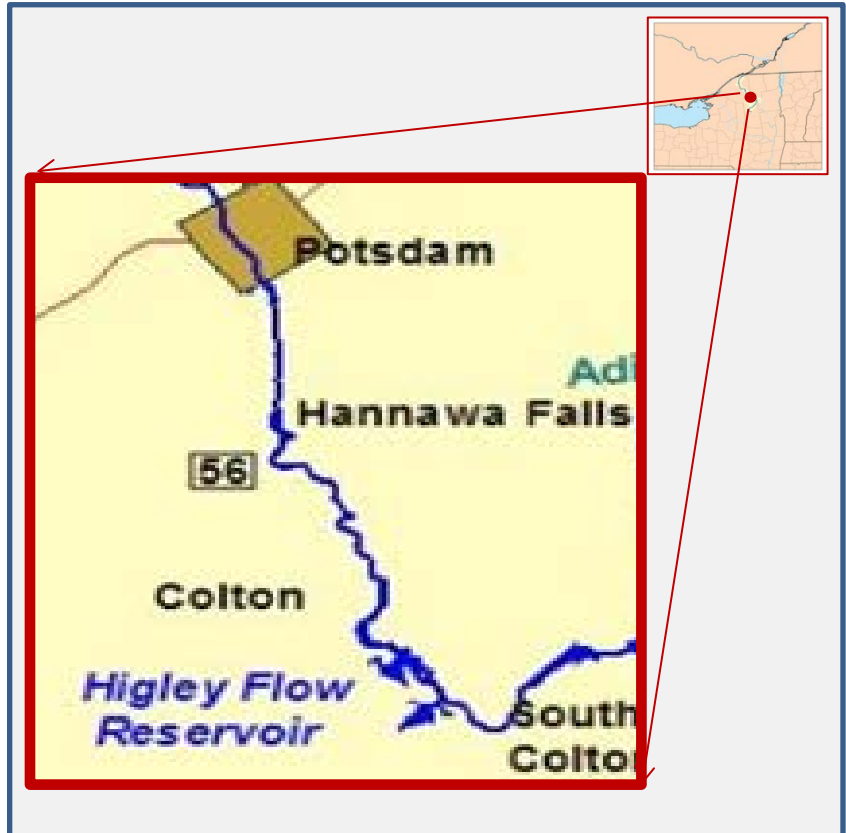


Figure 1 - Location Map

In the Raquette River headwaters, the Carry Falls development, located at river mile (RM) 68 impounds 877 square miles (sq. mi.) of upstream drainage. This development's seasonal storage pond is the largest on the Raquette River (RM 76 to 68) and is used to store and regulate the majority of this upstream flow to the downstream MRRP developments. Flows below the MRRP's most downstream project (Sugar Island) travel an additional ten miles before reaching the most upstream development in the LRRP (Norwood).

Four other FERC projects are located within this ten mile stretch of the Raquette River. They include the Potsdam Project (FERC-2869) (RM 35), owned by the Village of Potsdam, Sissonville Limited Partnership's (SLP) Sissonville Project (FERC-9260) (RM 33) and EBH's Hewittville (FERC-2499) (RM 32) and Unionville (FERC-2498) (RM 31) Projects, acquired in March of 2007. All of these projects have individual dams/spillways that receive inflow from the MRRP for power production. Project outflows are passed through each project and eventually become inflow for the LRRP.

3. PROJECT DESCRIPTION

The MRRP is located on the Raquette River from RM 47 to 38 in St. Lawrence County, NY about five miles below the URRP. This project consists of four developments, Higley, Colton, Hannawa, and Sugar Island, as shown in Table 1. Each development has a dam, reservoir, and powerhouse. In 2003, EBH redeveloped the Higley development and increased the installed capacity from 4.97 to 7.3 MW.

On December 13, 2011, EBH notified FERC of its initial powerhouse rehabilitation construction for its Hannawa Falls development. No changes were made to the powerhouse's turbines or generators. The final construction report was submitted to FERC on October, 22, 2013.

Development	River Mile	Latitude of Dam	Longitude of Dam	Generation (MW)	Dam Crest Elevation (feet)
Higley	47	44.53053	-74.93198	7.3	880.6
Colton	45	44.55520	-74.93935	30.1	835.0
Hannawa Falls	39	44.61185	-74.97466	7.2	548.5
Sugar Island	38	44.7433	-75.0053	4.8	470.0
Total				49.4	

3.1 Major Project Works –Higley Development

The Higley development has a total drainage area of 979 sq. mi. with an intervening drainage area of 37 sq. mi. between the Higley and the upstream URRP's South Colton development. Higley operates as a re-regulating development to provide steadier flows for the downstream hydroelectric facilities. The other three developments of the MRRP operate in a pulsing mode. The Higley development consists of:

- (1) A 34-foot-high concrete gravity dam with;
 - a. 3-foot-high wooden flashboards;
 - b. A 209-foot-long concrete gravity ogee-crested spillway;
 - c. Two flood gates,
 - d. Eight steel forebay gates each measuring 12-feet high by 5-feet, 9-inches wide;
 - e. A trashrack, and;
 - f. Two 10-foot high by 8-foot wide waste gates;
- (2) A 160-foot long by 50-foot wide flume formed by concrete retaining walls on each side;
- (3) A retired in-place powerhouse measuring 64-feet a side by 38-feet high, containing three generating units with a total generating capacity of 4.972 MW;
- (4) A new intake structure with a 14 x 14-foot head gate, a 13-foot diameter, 225-foot long steel pipeline directly inflow to a new powerhouse;
- (5) A new redeveloped powerhouse measuring 90-foot long and 53-feet wide containing a single 7.3 MW generator;
- (6) Appurtenant electrical and mechanical facilities, and;
- (7) A reservoir with a 742-acre surface area and a 4,400-acre-foot usable storage capacity at normal maximum pool elevation 883.6 feet mean sea level (MSL).

3.2 Major Project Works – Colton Development

The Colton development has a total drainage area of 981 sq. mi. with an intervening drainage area of 2 sq. mi. between the Colton and the upstream Higley development. The Colton development consists of:

- (1) a 27-foot high concrete gravity dam with;
 - a. 2-foot-high flashboards;
 - b. An 8-foot wide log flume;
 - c. A trash gate, and;
 - d. A 204.67-foot long ogee-crested spillway equipped with a single taintor gate measuring 10-feet high and 25-feet wide;
- (2) A reservoir with a 195-acre surface area and a 620-acre-foot usable storage capacity at normal maximum pool elevation of 837.0 feet MSL;
- (3) A concrete intake structure with a brick superstructure, which measures 50-feet wide by 30-feet long by 12-feet high overall, equipped with a motor driven, 16-foot high by 25.5-foot wide taintor gate;
- (4) A steel pipeline, 11,090-feet long with a diameter of 13.5-feet transitioning to a 2,100-foot long steel pipeline with a diameter of 12-feet;
- (5) An 80-foot-high Johnson differential surge tank;
- (6) Three penstocks of lengths 160-feet, 140-feet, and 125-feet, and diameters of 7.5-feet, 7.5-feet, and 9-feet respectively;
- (7) A brick and structural steel powerhouse measuring 165-feet long and 46-feet wide, containing three generating units with a total capacity of 30.1 MW.
- (8) Appurtenant electrical and mechanical facilities.

3.3 Major Project Works – Hannawa Falls Development

The Hannawa Falls development has a total drainage area of 993 sq. mi. with an intervening drainage area of 12 sq. mi. between the Hannawa Falls and the upstream Colton development. Hannawa Falls consists of:

- (1) A 38-foot high stone and concrete dam with:
 - a. 3.5-foot-high wooden flashboards;
 - b. A log chute;
 - c. A motor operated taintor gate measuring 14-feet high by 28-feet wide;
 - d. An ogee-crested spillway, and;
 - e. A sluice gate;
- (2) A reservoir with a 204-acre surface area and a 690-acre-foot usable storage capacity at normal maximum pool elevation of 552.0 feet MSL;
- (3) A headworks structure with five sliding timber gates, all 18-feet high, with three 9.7-feet wide, one 9-feet wide, and one 8.8-feet wide;
- (4) A 2,700-foot long canal measuring 30-feet wide at the bottom, 120-feet wide at the top, with an average depth of 22-feet, equipped with trashracks that completely cover the canal entrance;
- (5) Two 10-foot diameter penstocks 190-feet long, and;
- (6) A sandstone and structural steel powerhouse measuring 66-feet wide by 248-feet long by 40-feet high containing two generating units with a total capacity of 7.2 MW, and;
- (7) Appurtenant electrical and mechanical facilities.

3.4 Major Project Works – Sugar Island Development

The Sugar Island development has a total drainage area of 994 sq. mi. with an intervening drainage area of 1 sq. mi. between the Sugar Island and Hannawa Falls developments. Sugar Island consists of:

- (1) A 37-foot high concrete gravity dam with;
 - a. two taintor gates, and;
 - b. a 192-foot long spillway;
- (2) An earth saddle dike;
- (3) A concrete and brick intake structure with trashracks and a steel head gate measuring 14-feet wide by 16-feet high;
- (4) A 4,700-foot long steel pipeline;
- (5) A 71-foot high surge tank;
- (6) Two 8-foot-diameter penstocks;
- (7) A brick and structural steel powerhouse measuring 35-feet wide by 67-feet long by 30-feet high containing two generating units with a total capacity of 4.800 MW
- (8) A reservoir with a 29-acre surface area and a 55-acre-foot usable storage capacity at normal maximum pool elevation of 470.0 feet MSL;
- (9) Appurtenant electrical and mechanical facilities.

3.5 Mode of Operation for Power

The MRRP operation is coordinated with EBH's other LIHI projects on the Raquette River, the URRP and the LRRP. As described in the Raquette River Project Offer of Settlement (RRPSO), submitted to FERC on April 22, 1998⁵ and the 2002 FERC license⁶, the MRRP's most upstream development, Higley, operates as a re-regulating development to provide steadier flows for the downstream hydroelectric facilities within the MRRP and LRRP.

Each of the MRRP developments below Higley are allowed to operate in a pulsing mode that limits the normal reservoir fluctuation at Colton and Hannawa to no more than 0.4 feet, and at Sugar Island to no more than 1.0 foot.

Each development generates when total inflow is available to pass the minimum bypass flow plus run one turbine at its minimum turbine limit. Once a development's net inflow (inflow available after passing minimum flow) exceeds the powerhouse's hydraulic capacity, the powerhouse is run at full hydraulic capacity and all excess water is passed over the spillway or top of flashboards.

The MRRP developments have an overall installed capacity of 49.4 MW and produce an average annual energy (AAE) of 299.31 GWh (Plant factor of 69.1%).

⁵ The RRPSO - http://elibrary.ferc.gov/idmws/search/intermediate.asp?link_info=yes&doclist=1845587

⁶ Copy of February 13, 2002 FERC License - <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13707261>

3.6 Mode of Operation for Impoundment Fluctuation

As described in the RRPSO, the Section 401 Water Quality Certificate (WQC)⁷ and the 2002 FERC license, the MRRP developments operate in a pulsing mode that limits impoundment fluctuations while providing minimum flows and whitewater releases.

Higley serves dual purposes of providing re-regulation of peaking flows from the URRP, as well as providing significant recreational opportunities during summer months. To facilitate these dual purposes, EBH limits impoundment fluctuations at Higley by season.

From the end of Labor Day weekend to start of Memorial Day weekend a 2.5 foot impoundment fluctuation limit is used as needed to facilitate reregulation (883.6 feet MSL to 881.1 feet MSL).

For the remainder of the year (Memorial Day weekend through the Labor Day weekend):

- From 6:00 am on Mondays through 10:00 pm on Fridays - A 2.5 foot impoundment fluctuation is used as needed to facilitate reregulation (883.6 feet MSL to 881.1 feet MSL);
- From 10:00 pm on Fridays through 6:00 am on Mondays - By 10:00 pm on Friday, the impoundment should be at, or near, top of flashboards (883.6 feet MSL). Over the course of the weekend EBH can utilize a 2.0 foot drawdown. By 6:00 am Monday, the impoundment should be at, or near, 2.0 feet below top of flashboards (881.6 feet MSL).

The developments downstream of Higley are allowed to operate in a pulsing mode that limits the normal impoundment fluctuation to 0.4 foot at Colton and Hannawa Falls and to 1.0 feet at Sugar Island. Normal impoundment fluctuations are measured from permanent dam crest or top of flashboards.

The impoundment fluctuation limitations may be curtailed or suspended if required by operating emergencies beyond the control of EBH, including security, and for short periods upon mutual agreement between EBH and the New York State Department of Environmental Conservation (NYSDEC). If the limitations are so modified, EBH notifies the FERC as soon as possible, but no later than ten business days after each such incident.

For construction and maintenance activities that require lowering the level of an impoundment below the normal operating limits, EBH's operating procedure (HOP 202) requires notification of NYSDEC and compliance with drawdown rates specified in the WQC.

3.7 Mode of Operation for Minimum Flow Releases

EBH is required to supply minimum flows⁸ as follows:

- (1) From Higley, a 20-cubic-feet-per-second (cfs) year-round flow through the stop log section of the dam;
- (2) From Colton, 110-cfs from November 1 through the start of walleye spawning season⁹, 200-cfs

⁷ A copy of the WQC issued by the New York State Department of Environmental Conservation on June 11, 1998 was submitted to FERC by EBH on June 23, 1998 - <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=55629>

⁸ All minimum flows actual release at any given time may be slightly above or below the required value. The degree of variation is a function of head pond impoundment fluctuation. EBH must determine the appropriate gate settings for the provision of minimum flows at each development based upon the midpoint of the normal impoundment fluctuation of each development. For example, if the normal impoundment fluctuation is 1.0 foot, and the instream flow is 45 cfs, the gate setting to provide 45 cfs shall be based upon a drawdown of 0.5 feet.

- during the walleye spawning season w
- (3) When no spring spillage is occurring or 240-cfs during the walleye spawning season when spring spillage is occurring, 200-cfs from the end of the walleye spawning season through June, 125-cfs from July 1 to August 15, 90-cfs from August-16 to September 15, and 125-cfs from September 16 through October 31. The development's intake structure was rehabilitated 1998. A butterfly flap gate located immediately adjacent to the pipeline intake serves as a trash sluice. This gate empties to a short channel which merges with the bypass reach and is retrofitted to serve as the primary downstream fish movement point. Additionally, a plunge pool has been provided. EBH will pass at least 20-cfs of the instream flow through this gate. Secondary gates will provide any remainder of the instream flow. EBH is not required to provide safe fish movement and/or downstream plunge pools at the secondary gates;
 - (4) From the stop log section of the Hannawa dam, 50-cfs from October 31 through the start of walleye spawning season, 90-cfs for the walleye spawning season through June 30, and 65-cfs from July 1 through October 31; and
 - (5) From Sugar Island, 300-cfs year-round from the minimum flow pipe, with an increase to 400-cfs from the start of the walleye spawning season through June 30, through a instream flow release structure that empties into a pool of adequate depth for fish.

No base flow requirements are defined for the MRRP.

Minimum flows may be curtailed or suspended if required by operating emergencies beyond the control of EBH, including security, and for short periods upon mutual agreement between EBH and the NYSDEC. If the limitations are so modified, EBH notifies the FERC as soon as possible, but no later than ten business days after each such incident.

3.8 Mode of Operation for Whitewater Flow Releases

EBH provides releases for whitewater recreation at the Colton, Hannawa and Sugar Island developments.

In order to keep abreast of changing conditions that may affect river flows and management objectives, the Raquette River Advisory Council (RRAC) was created as part of the 2002 FERC license. Initially, the signatories of the RRPSO were invited to serve on the RRAC. Current participants include the NYSDEC, Trout Unlimited, NYS Conservation Council, St. Lawrence County and EBH. The NYSDEC chairs the RRAC.

Whitewater activities of the MRRP are managed by a Whitewater Subcommittee (WS) of the RRAC. At a minimum, the WS consists of EBH, NYSDEC, Adirondack Mountain Club, a representative of local boater interests and a representative of local government. Any member of the RRAC may elect to participate on the WS each year or only during specific years.

In general, the WS is charged with the responsibility of developing a whitewater release schedule. The WS meets at least once by February 1st of the year to determine how to schedule and allocate the whitewater budget among the three MRRP developments. EBH is required to provide a report of the WS's determination of the release schedule for the upcoming whitewater season to the RRAC by March

⁹ The walleye spawning season at all of the MRRP developments is based on water temperature readings taken in the vicinity of the tailrace of the South Colton development, which is a development within the URRP. Walleye spawning season starts when water temperature reaches 4 degrees Celsius (39.2 degrees F) for four consecutive days after March 15 of each year and ends 30 days after water temperature has reached 10 degrees Celsius (50 degrees F) for four consecutive days.

1st of each year. This report contains: the release schedule for the upcoming season, a summary of energy losses associated with the release schedule, a summary of the previous year's use records, and rationale for the release schedule and any changes in ramping rates.

Every five years, beginning in 2005, the WS reviews whitewater use records to determine if variations in the magnitude of the whitewater budget are warranted. The WS may select an annual whitewater budget between 400 MWh and 1,080 MWh. The rationale for any changes in magnitude of the whitewater budget must be included in the WS's annual report submitted to the RRAC for that year.

The whitewater season runs from July 1 through September 30 of the year. The approximate peak whitewater flows are: 1250-cfs at Colton, 800-cfs at Hannawa and 1,500-cfs at Sugar Island. Ramping flows are an hourly doubling of the instream flows in Section 3.7 when ascending to the peak flow and an hourly halving when descending.

An associated maximum seasonal energy loss total is also part of the whitewater budget. Every five years since 2005, this maximum seasonal energy loss total is reviewed by a WS. Upon mutual agreement, the 800-MWh whitewater budget may be increased up to a maximum of 1,080 MWh (six full days each, at Colton, Hannawa, and Sugar Island). Conversely, the whitewater budget may also be decreased to a minimum of 400-MWh (three full days at Colton).

Whitewater releases may be curtailed or suspended if required by operating emergencies beyond the control of EBH, including security, and for short periods upon mutual agreement between EBH and NYSDEC. If the limitations are so modified, EBH notifies the FERC as soon as possible, but no later than ten business days after each such incident.

3.9 Mode of Operation for Downstream Fish Passage

As defined in the 2002 FERC license, EBH provides for safe downstream fish movement and protection at all of the MRRP developments coincident with the release of minimum flows and modifications to the structures and streambed in order to make the flows more "fish friendly"¹⁰.

For the MRRP developments, with the exception of Sugar Island, 1-inch clear spacing physical barriers were to be installed by the end of 2011. The Sugar Islands development's trashracks were not replaced since the much larger instream flow through a special release structure that empties into a pool of adequate depth for fish satisfies the need for safe downstream fish passage.

Higley (completed in 2003) and Hannawa Falls (completed in 2013 as part of powerhouse rehabilitation) have 1-inch clear spacing physical barriers installed immediately above their existing trashrack structure. As stated in an August 27, 2014 notice FERC, "... Colton should have 1-inch clear spacing physical barriers installed immediately above their existing trashrack structure by the end of 2014 ..."¹¹ Although currently not notice in the FERC docket, Dan Daoust has informed me that the new installation of the trashracks at Colton was completed on November 6, 2014.

¹⁰ Fish-friendly flow is a flow that is released in a manner that is not expected to injure fish through contact with hard or rough surfaces.

¹¹ August 27, 2014 notice from EBH - <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13623741>

Downstream fish passage may be curtailed or suspended if required by operating emergencies beyond the control of EBH, including security, and for short periods upon mutual agreement between EBH and the NYSDEC. If the limitations are so modified, EBH will notify the FERC as soon as possible, but no later than ten business days after each such incident.

3.10 Mode of Operation for Upstream Fish Passage

No upstream fish passage requirements are currently part of the FERC license. However, Article 403 of the license reserves the FERC's authority to require EBH to construct, operate, and maintain fishways as the U.S. Department of Interior (USDOI) may prescribe.

4. REGULATORY STATUS

4.1 Summary of Project Redevelopment and Agency Consultation Process

The original license for the Middle Raquette River Project (P-2320) was issued in 1964, with an expiration date of December 31, 1993. From January 1, 1994 until the issuance of the 2002 FERC license, the project operated under annual licenses. Niagara Mohawk Power Company (NMPC), the predecessor of EBH¹², filed a new license application in 1991.

Notice of the relicense application was issued, soliciting comments, protests, and motions to intervene. The USDOI, Adirondack Mountain Club (AMC), New York State Adirondack Park Agency (NYSPA), NYSDEC, New York Rivers United (NYRU), American Whitewater (AW), American Rivers (AR), the Adirondack Council (AC), the Association for the Protection of the Adirondacks (APA), the National Audubon Society of New York (NASNY) and the Natural Heritage Institute (NHI) filed motions to intervene in the proceeding.

In 1995, parties to the pending FERC relicense proceedings for the Lower Raquette River Project (P-2330) and the Middle Raquette River Project (P-2320) requested that all proceedings be combined with the FERC relicense proceedings for the Carry Falls and the Upper Raquette River Project. On December 13, 1995, the FERC approved the request and Niagara Mohawk Power Company (NMPC), the predecessor of EBH agreed to accelerate the FERC relicensing of the Carry Falls and Upper Raquette River Projects¹³.

On April 22, 1998, NMPC filed the RRPSO that addressed issues pertaining to all four FERC licenses on the Raquette River, signed by seventeen participants¹⁴. Shortly thereafter, the NYSDEC issued the WQC for the Raquette River on June 11, 1998.

The RRPSO provides for minimum flows releases, limitations on impoundment fluctuations, and fish

¹² In 1999, NMPC sold their entire hydropower portfolio to Orion Power. EBH was created as a subsidiary of the newly formed company dealing with the operation of the hydropower assets. Orion Power was eventually acquired through a secession of sales and purchases by the BREG, current owner of EBH.

¹³ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=8299440:1>

¹⁴ RRPSO signatories include EBH, the NYSDEC, USFWS, AMC, NYSPA, NYRU, American Canoe Association (ACA), AR, AW, NASNY, the National Park Service (NPS), New York State Conservation Council (NYSCC), North Country Raquette River Advocates (NCRRA), St. Lawrence County, The Adirondack Council (AC), APA, and the Jordan Club. The New York Power Authority (NYPA) and the New York Council of Trout Unlimited (TUNY) participated in the proceeding and had no objections, but chose not to become signatories.

passage and protection measures to protect and enhance the water quality and fishery resources of the Raquette River. It also provides for enhanced recreational opportunities in a manner that is consistent with the undeveloped nature of the surroundings.

On February 10, 1999, NMPC filed notice of a new license application which reflected the provisions of the RRPSO and the WQC¹⁵, soliciting comments, protests, and motions to intervene. The USDO, AMC and the NYSPA filed motions to intervene in the proceeding.

On June 16, 2000, the FERC issued for comment a draft Multiple Project Environmental Assessment (DEA) that evaluated the potential environmental impacts of the continued operation of the four projects¹⁶. The USDO, NYSDEC, the St. Regis Mohawk Tribe, AMC, and EBH filed comments on the DEA.

On April 18, 2001, Commission staff issued a final EA (EA)¹⁷. The EA concludes that relicensing the four projects will not have a significant adverse impact on the quality of the human environment and recommends issuance of new licenses as proposed in the applications.

On February 13, 2002, the FERC issued separate licenses for the Carry Falls Project (P-2060)¹⁸, the Upper Raquette River Project (P-2084)¹⁹, the Middle Raquette Project (P-2320)²⁰ and the Lower Raquette River Project (P-2330)²¹. The term for each license was for 31 years and 11 months ending on December 31, 2033.

4.2 License and Compliance Issues

In addition, to protect and enhance project-related environmental resources, EBH agreed to:

- (1) Limit normal reservoir fluctuations, according to a seasonal regime at Higley to provide regulating flows and recreational opportunities;
- (2) Limit normal reservoir fluctuations at Colton and Hannawa to no more than 0.4 feet, and at Sugar Island to no more than 1.0 foot;
- (3) Provide additional measures to facilitate downstream fish movement at the Higley, Colton, and Hannawa developments;
- (4) Provide a 1-inch clear spacing physical barriers at the location of the existing trashrack structures at Higley, Colton, and Hannawa;
- (5) Provide scheduled whitewater releases, a flow notification system, and access trails at Colton, Hannawa, and Sugar Island;
- (6) Develop a recreation plan to provide a canoe portage at each development, a whitewater access at Colton, Hannawa, and Sugar Island, a car-top boat launch with overnight parking at Colton, a scenic overlook, picnic facilities, and roadside parking at Hannawa, and a day use area at Sugar Island, and;
- (7) Modify the project boundary to include all EBH lands that will be occupied by these recreational facilities.

¹⁵ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=3150004>

¹⁶ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=8057323:1>

¹⁷ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=164819:1>

¹⁸ FERC license for (P-2060) - <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13707255>

¹⁹ FERC license for (P-2084) - <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=11860652>

²⁰ FERC license for (P-2320) - <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13707261>

²¹ FERC license for (P-2330) - <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=11860653>

5. PUBLIC COMMENTS RECEIVED

EBH submitted a third application to LIHI for recertification of the RRP on May 1, 2014. LIHI notified and requested public comment on EBH's application for LIHI certification on May 12, 2014. LIHI policy is for all comments to be posted to the web site and for EBH to have an opportunity to respond. Any EBH responses are also posted. Public comments needed to be received on or before 5 pm Eastern time on July 1, 2014, to be considered.

Review comments from the USFWS were received on May 27, 2014. In this letter the USFWS stated, "... *The LIHI Application filed by Brookfield is incorrect and incomplete under Section C: Fish Passage and Protection. ... Brookfield should update the entire LIHI Application to reflect current conditions, not those that existed at the time of the 1998 Settlement or the original application to LIHI. In addition, they should provide photo-documentation that demonstrates that all of the eel ladders have been successfully installed and are operating as designed. Finally, Brookfield should indicate which fish protection and downstream passage facilities have been completed and which are yet to be completed (along with proposed installation dates).*" In response to these comments, EBH resubmitted a revised LIHI application for recertification on July 28, 2014.

On May 22, 2014, LIHI received a letter from Mr. John Omohundro. In this letter he stated, "...*I wish to comment on the performance of Brookfield Renewable (Erie Hydropower) in these Raquette licenses. I participated in the settlement agreement in the late 1990s and have been a regular member of the Raquette River Advisory Council (RRAC) since then. I designed, built and manage a hiking trail on Brookfield land in the Middle Raquette area. So I am familiar with the licensee's performance on recreation and cultural preservation.*

I give the licensee good marks for the recreational opportunities it maintains in the new license, for paddlers, walkers, and soon (we expect) cyclists. Fishing platforms have been built, and, when damaged by storms, rebuilt. Enhancement of whitewater events at Stone Valley with improved safety, information, and viewing has also nearly at the construction phase. The licensee sets aside money each year in the RRAC for applicants who wish to enhance or introduce recreational or preservation features. Historic preservation, particularly along the Stone Valley recreation area in the Middle Raquette, has been addressed as illustrated by its support for the plans to interpret with signage the old mills like the tannery in the Stone Valley area.

The licensee has fallen behind on repairs on features built when the new license began and before, such as picnic facilities and signage at boat launches on the upper and lower Raquette, but I remain optimistic it will perform those eventually."

Resource agency contacts contained within the LIHI certification application that have been acknowledged to be knowledgeable on the operational issues with the Project are:

1. Stephen Patch - USFWS, 3817 Luker Road, Cortland, NY 13045 - (607.753.9334 - Stephen_patch@fws.gov),
2. Mark Woythal - NYSDEC, 625 Broadway, 5th Floor, Albany, NY 12233-4756 - (518.402.8847 - mwoythala@gw.dec.state.ny.us)

On July 22, 2014, this reviewer emailed Mr. Stephen Path with the USFWS. In my email I stated, "*I am the LIHI reviewer tasked with determining whether Brookfield Renewable Energy Group (BREG)'s Beaver, Salmon, Raquette and Hoosic River Hydroelectric Project should be LIHI recertified. I am emailing you today because you have been identified in the application by the owner as resource agency and non-*

governmental organization contacts familiar with the project. I would appreciate your perspective regarding the project's proposed operation with regard to satisfying its licensed environmental obligations (FERC articles). Without your input my review can only be based on the documents found in the FERC docket. Thank you for your time in this matter."

To date, other than their May 27, 2014 letter, no additional USFWS comments have been received.

On November 5, 2014, this reviewer emailed Mr. Mark Woythal with the NYSDEC. In my email I stated, "I am the LIHI reviewer tasked with determining whether Erie Boulevard Hydropower's (EBH's) Raquette River Projects should be LIHI recertified. I am emailing you today because you have been identified in the application by the owner as resource agency familiar with the project. I would appreciate your perspective regarding the project's operation with regard to satisfying its licensed environmental obligations (FERC articles). Any other views or concerns on the operation of the Projects are welcome. Without your input my review can only be based on the documents found in the FERC docket. Thank you for your time in this matter.

To date, no NYSDEC comments have been received.

6. CONSISTENCY WITH LIHI CRITERIA AND ISSUES IDENTIFIED

Recertification review focuses primarily on determining the answers to the following two questions:

- 1) Has there been a material change in circumstances since the original certification was issued? For purposes of recertification review, a "material change in circumstances" will mean one or both of the following:
 - (a) Non-compliance: Since receiving its last certification from LIHI, the certificate holder/applicant has not implemented, or has delayed implementing, or has done an inadequate job of implementing obligations at or near the facility that are of relevance to LIHI's criteria. These obligations could be in the form of terms and conditions of license(s), settlement agreements, resource agency recommendations or agreements, LIHI conditions of certification including annual notifications, agreements with local municipalities or other third parties or similar relevant obligations; or
 - (b) New or renewed issues of concern that are relevant to LIHI's criteria: Since receiving its last certification from LIHI, either new issues of concern and relevance to LIHI's criteria have emerged that did not exist or were not made known to LIHI at the time of certification, or there continues to be ongoing problems with previously known issues that appeared to LIHI to be resolved or on the road to resolution at the time of certification but in fact are not resolved, and are ongoing at the time of the recertification application.

If a new license, settlement agreement, prescription, biological opinion or other similar regulatory decision has been made since the original recertification, these documents will be evaluated to determine if new or renewed issues have been raised.

- 2) Have any of LIHI's criteria, or the Board's interpretation of one or more criterion, changed in meaningful ways since original certification that are applicable to the circumstances of the facility seeking re-certification?

The following section summarizes the record for LIHI recertification.

6.1 Summary of the Reviewer's Findings

Criterion A – Flows

Agency recommendations for environmental flow requirements and agreements and coordination with other projects on the Raquette River are well established in the FERC proceedings for this project.

The MRRP's most upstream development, Higley, operates as a re-regulating development to provide steadier flows for the downstream hydroelectric facilities within the MRRP and LRRP. Each of the MRRP developments below Higley are allowed to operate in a pulsing mode that limits the normal reservoir fluctuation at Colton and Hannawa to no more than 0.4 feet, and at Sugar Island to no more than 1.0 foot.

Each development generates when total inflow is available to pass the minimum bypass flow plus run one turbine at its minimum turbine limit. Once a development's net inflow (inflow available after passing minimum flow) exceeds the powerhouse's hydraulic capacity, the powerhouse is run at full hydraulic capacity and all excess water is passed over the spillway or top of flashboards.

Each year EBH files documentation with FERC confirming compliance with flow and impoundment level conditions²².

A multitude of impoundment fluctuation limit and flow deviations have occurred at the MRRP developments since 2009. EBH reported deviations occurring on January 2, 2009 (Hannawa Falls)²³, March 3, 2009 (Hannawa Falls)²⁴, November 16, 2009 (Hannawa Falls)²⁵, January 17, 2012 (Hannawa Falls)²⁶, August 17, 2012 (Sugar Island)²⁷, June 16, 2013 (Colton)²⁸, July 7, 2013 (Higley)²⁹, October 10, 2013 (Colton)³⁰, December 9, 2013 (Hannawa Falls)³¹, and October 25, 2014 (Hannawa Falls)³².

The first five notifications of deviations from January 2, 2009 through August 17, 2012 were eventually determined by FERC as events caused by unusual circumstances beyond the control of EBH personnel and that the proposed measures to avoid similar occurrences were appropriate. In all these cases, FERC deemed these deviations as not violating the license.

On August 1, 2013³³, FERC ruled that EBH's June 16, 2013 and July 7, 2013 deviations from operational requirements at the Middle Raquette River Project were violations of the license.

FERC stated the June 16, 2013 deviation is similar to a November 16, 2009 deviation that EBH reported on November 30, 2009. In that prior report, EBH committed to preventing similar deviations by opening gates prior to trashrack cleaning events. The June 16, 2013 report indicates the deviation was the result of the operator's failure to follow the proper procedure.

FERC stated the July 7, 2013 report indicates the impending deviation at Higley was identified almost 90 minutes prior to its occurrence; however, the action taken to prevent it took much longer to become effective. Instead of adjusting flows at the Higley Development (i.e. backing off on turbine flow), flows were increased at the URRP's Stark Development, requiring the increased flows to pass through four intervening developments before having any effect on the water level at Higley. Although the operators took timely actions after identifying the problems, the actions were inadequate to prevent the deviations.

FERC concluded that in both cases the deviations could have been prevented by following proper procedures or making adjustments that would rectify the problem more quickly. The violations were added to the compliance history of the project and no further enforcement action was pursued.

On November 12, 2013³⁴, FERC ruled that EBH's October 10, 2013 deviation from operational requirements at Colton is a violation of their license. FERC stated that although EBH instituted and is

²² The latest annual minimum flow compliance report for 2013 was filed by EBH on January 21, 2014 -

<http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13493651>

²³ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=11953574>

²⁴ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=11962613>

²⁵ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12210443>

²⁶ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12876498>

²⁷ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13048065>

²⁸ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13294402>

²⁹ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13305389>

³⁰ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13376581>

³¹ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13421253>

³² <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13676083>

³³ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13320060>

³⁴ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13391488>

investigating measures to prevent future deviations of a similar nature (slack in taintor gate chains) the deviation is the result of the operator failing to follow proper procedures. EBH was also reprimanded for not reporting the incident within the required 10 days window. The violation was added to the compliance history of the project and no further enforcement action was pursued.

No FERC response was found in the docket for EBH's December 9, 2013 notification of a deviation at Colton. EBH stated that, "... an excursion occurred on December 9, 2013. Specifically, the impoundment elevation at the Colton Hydro Development dropped below its low limit. Erie has included an "Environmental License Excursion Report" which provides detail of the event ..." This report was submitted to FERC separately using CEII (privileged status) therefore details of this event are unknown.

Also, no FERC response has been filed as yet with regard to the October 25, 2014 deviation at Hannawa Falls. EBH's notice states the station was operating normally with alarms on low pond level at 3.25 and 3.15 ft. Due to a river flow change, river conditions were in a transitional state and required further attention. The system operator, remotely located at their National System Control Center (NSCC) in Marlborough, MA, failed to recognize and respond appropriately to a low pond level alarm contributing to the time delay of the traveling operator's response. The violation duration was for 8 hours and 18 minutes.

EBH's corrective measure to prevent future occurrences was to review the alarm display to ensure the alarm functioned properly and required remedial training of the system operator related to flow change procedures and alarm response.

In summary, a total of ten impoundment fluctuation deviations occurred since issuance of the last LIHI certification. Of those, at least three have been deemed a license violation by FERC. The October 25, 2014 incident will likely be found as a violation of the license due to the extensive duration of the deviation and the fact that proper procedures were once again not followed. Since operator error is a common cause of the deviations, it is reasonable to assume that additional deviations will occur without taking a more proactive approach. To certify the MRRP as "Low Impact", LIHI needs assurance that these operational deviations will cease or be significantly reduced in the future.

Although not recommended at this time, I believe operational deviations would be significantly reduced if EBH installed a programmable logic controller (PLC) within the powerhouses at each development in the MRRP. If a PLC is already installed it would need to be enhanced such that:

- It has its own power backup and is capable of running the plant compliant with current license operational constraints in the event of a temporary loss of communication with the NSCC;
- It issues an audible alarm to the NSCC operator whenever the PLC discovers an operational constraint is about to be violated near-term (to be determined);
- In the event that proper procedures are not initiated within a reasonable time (to be determined) after an alarm is sent to the NSCC, the PLC will take control of the plant and start emergency procedures.

One option I recommend is to enhance the alarm annunciation within the NSCC's remote control system for all the MRRP developments by having an audible alarm component added to complement screen display alerts (For example, flashing red values). This will reduce the chance that the alarm is overlooked and increases the odds that the system operator is more quickly notified of a violation.

Additionally, I recommend EBH submit a draft Deviation Reduction Plan (DRP) to LIHI no later than the three months after LIHI certification of the Project. The DRP will propose more aggressive approaches to implement as a means of reducing the likelihood of operational deviations occurring in the future (i.e. local audible alarms, PLCs, etc.). LIHI and EBH may need to enter into discussions on the plan before LIHI can agreed to a final DRP and its implementation schedule going forward. The final DRP needs to be completed and agreed to by both EBH and LIHI no later the six months after LIHI certification.

Lastly, I recommend that EBH provide annual reports to LIHI documenting operational deviations that occurred throughout the year whether unintentional or planned due to construction or maintenance. The report will include all deviations that actually occurred, whether or not the deviations were eventually deemed as not violating the license by FERC. The report will be due at the same time as the annual compliance statement and payment of the annual certification fee. Based on LIHI's review of this annual report, and at LIHI's sole discretion, certification may be modified or rescinded.

Given EBH's agreement and adherence to these conditions, it is my view that this LIHI criterion is satisfied.

Criterion B - Water Quality

The MRRP is in compliance with conditions pursuant to the WQC issued by the NYSDEC. The WQC includes and incorporates the terms of the RRPSO. Therefore, compliance with the WQC implies compliance with the entire RRPSO. The WQC contains standard provisions related to erosion and sediment control for project maintenance and construction activities. The NYSDEC has confirmed that EBH has properly consulted when there has been any construction at the projects that triggers WQC conditions.

The NYSDEC classifies the project area based on their designated best use. Water classifications for the project areas include Class B (Coldwater fishery) (Best use is primary contact recreation and other uses except as a source of water supply for drinking and culinary or food processing purposes), Class C (T) (Coldwater fishery that supports trout) (best use is fishing and all other uses except as a source of water supply for drinking, culinary or food processing purposes and primary contact recreation), and Class D (warm water fishery) (best use is secondary contact recreation).The NYSDEC identified several areas of the Raquette River and associated tributaries in their June 3, 2002 Section 303 (d) List. Carry Falls Reservoir is on the 303(d) list of waterbodies that fail to meet one or more applicable water quality standards. The NYSDEC Section 303(d) List indicates atmospheric deposition (acid rain) is common within the entire length of the Upper Raquette River causing pH to be elevated in the Adirondacks and associated tributaries identified under Section 303 (d). The river's ecosystem is generally low in nutrients and fine sediments. The list indicates that the Carry Falls Reservoir is classified as not meeting the water quality standard for fish consumption due to mercury contamination from atmospheric deposition. The NYSDEC believes there are no indications that the MRRP contributes to this water classification.

Since EBH is in compliance with water quality aspects of the WQC and the FERC license, this LIHI criterion is satisfied.

Criterion C – Fish Passage and Protection

The 1998 RRPSO and the 2002 FERC license contain requirements by Resource Agencies for downstream fish passage in the form of required downstream passage flows, modifications to the structures and streambed in order to make the flows fish-friendly, and scheduled installation of 1 inch clear spaced bar trashracks to prevent/reduce entrainment.

For the MRRP developments, with the exception of Sugar Island, 1-inch clear spacing physical barriers were to be installed by the end of 2011. The Sugar Islands development's trashracks were not replaced since the much larger instream flow through a special release structure that empties into a pool of adequate depth for fish, satisfies the need for safe downstream fish passage.

Higley had 1-inch clear spacing physical barriers installed immediately above their existing trashrack structure in 2003 as part of the powerhouse redevelopment. Hannawa Falls had 1-inch clear spacing physical barriers installed in 2013, following a time extension request on December 23, 2011, as part of the powerhouse rehabilitation. As discussed back in section 3.9, EBH confirmed installation of the new trashrack scheme at Colton was completed on November 6, 2014.

A review of the FERC docket indicates EBH installed the required trashracks about four years ahead of schedule at one location (Higley) and fell behind schedule by about three years at the remaining two locations (Hannawa Falls and Colton). No other outstanding issues have surfaced regarding fish passage and protection aspects of its FERC license for MRRP.

The upstream passage for anadromous or catadromous fish was not a management objective of the RRPSO. However, the USDOJ reserved their authority to prescribe fish passage facilities for the MRRP in Article 403 of the 2002 FERC license. The Article also reserved FERC authority to require construction, operation and maintenance of any such prescribed fish passage facilities.

Upstream passage of American eel became a management goal during the 2006 license amendment proceedings for the LRRP. The FERC issued an Order Amending License and Accelerating Fish Protection and Downstream Passage Schedule on December 5, 2006 for the LRRP. In response, EBH filed a Final Eel Passage Plan on December 14, 2007.

Given that EBH requests for time extensions at Hannawa Falls and Colton were reviewed and justified by FERC and that since installation no new issues pertaining to their operation has been documented, I conclude that EBH is in compliance with all fish passage and protection aspects of its license, and this LIHI criterion is satisfied.

Criterion D – Watershed Protection

No documentation has been provided in the LIHI application to verify that more than 50% of the project impoundments have dedicated buffer zones for conservation purposes that extend 200-feet from the high water mark.

In 1996, NMPC developed a plan for divestiture of over 12,000 acres of land within the Raquette River watershed. None of these lands were within the FERC project boundaries associated with the Carry Falls, Upper Raquette River, Middle Raquette River, or Lower Raquette River Hydroelectric Projects.

NMPC presented maps of this plan to the State and to the RRPSO signatories. In response, the State prepared maps indicating which parcels were of interest to the State. The signatories reviewed and commented on the maps prepared by the State. For the most part, the two sets of maps identified the same parcels. NMPC held the conveyance of only those lands identified by the State, until October 1, 1997, the scheduled close of the RRPSO negotiations.

This land conveyance process between NMPC and the State pertained to lands outside of the FERC boundaries associated with the projects of RRPSO, and therefore was outside the jurisdiction of the FERC relicensing process. However, this land conveyance process was included as part of the RRPSO because certain aspects of the land transfer affected the outcome of certain aspects of the RRPSO.

The vast majority of this land transfer to the State pertained to property associated with the nearby URRP. Please refer to the URRP recertification review report for details.

Within the MRRP license, EBH committed lands for inclusion within the FERC boundary that were associated with recreation facilities within applicable FERC boundaries but not currently within the FERC boundary. These lands include:

- Portions of the canoe portage routes at Hannawa Falls;
- The intermediate access point to the east bank of the Colton bypass reach off Lenny Road;
- Portions of the Stone Valley Trail system at Colton that were not currently within the FERC boundary;
- All lands associated with the development of the Red Sandstone Trail system.

No material change in circumstances has occurred since the last recertification of this Project. Therefore, the Project in compliance with all requirements regarding watershed protection and passes this criterion.

Criterion E – Threatened and Endangered Species Protection

The threatened bald eagle is known to pass within the boundaries of the MRRP only as a transient species. The NYSDEC has determined that the bald eagle will not be affected by operations of the MRRP.

The yellow lampmussel exists in the vicinity of the MRRP and is considered a species of concern/interest by the USFWS and NYSDEC. The FERC's EA notes that two state-listed species have been documented in the vicinity of the project: the common loon (a protected wildlife/special concern species), and the spruce grouse (a threatened species). Erie surveyed reaches of the river and the final EA concluded no further studies required at this time. The FWS and DEC did not provide any comments on the final EA conclusions.

Given compliance with all threatened or endangered species protection aspects of the FERC license, this LIHI criterion is satisfied.

Criterion F – Cultural Resources

On February 6, 2002, EBH signed a fully revised Programmatic Agreement (PA) with FERC, the Advisory Council on Historic Preservation (ACHP), and the New York State Historic Preservation Officer (SHPO) for the four of its FERC licenses on the Raquette River, with the St. Regis Tribe and the USDOJ as concurring parties. By letter dated February 11, 2002, the ACHP filed with FERC the executed agreement that amended the previous 1996 PA.

On April 14, 2003, Erie submitted its required Historic Property Management Plan³⁵ (HPMP) to FERC. On September 28, 2004, FERC issued an order approving the HPMP.³⁶ As part of the HPMP, EBH is required to file an annual report. EBH has successfully complied with this requirement. The latest filing occurred on February 12, 2104.³⁷

Given EBH is in compliance with all aspects regarding cultural resource protection, mitigation or enhancement, this LIHI criterion is satisfied.

Criterion G – Recreation

On April 10, 2004, EBH submitted its final Raquette River Recreation Plan in accordance with the License article 404 and the RRPSO. On November 17, 2004, FERC issued an order approving the plan.³⁸

Facilities provided as part of the plan included:

- At Higley - Canoe portage;
- At Colton - Canoe portage, whitewater access and car-top boat launch with overnight parking;
- At Hannawa Falls - Canoe portage, scenic overlook and picnic facilities, Red Sandstone trail – (southern end), whitewater access and roadside parking;
- At Sugar Island - Canoe portage, day use area, Red Sandstone trail – (northern end) and Clear Pond Wild Forest trail;

Land & Water Associates (LWA), the LIHI reviewer for the prior certification of the RRP, confirmed that the recreation facility improvements were completed according to schedule in a timely manner, in consultation with parties to the RRPSO. All facilities have both access to the reservoir and downstream reaches free of charge.

Additionally, the RRAC can advise EBH on issues related to recreation, and other resource enhancements.

The MRRP is in compliance with recreational access, accommodation, and facilities conditions in the FERC license and passes this criterion.

Criterion H – Dam Removal

No state or federal agencies have recommended that dam to be removed. Therefore, the project passes this criterion.

6.2 Recommendations of the Reviewer

The application for LIHI recertification was adequate to allow for LIHI review. However, I needed to rely consistently on reference of FERC docket documents, a complete copy of the RRPSO and multiple discussions with EBH to complete my review. No material change in circumstances has occurred since the last recertification of this project.

³⁵ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=10473424>

³⁶ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=10255973>

³⁷ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13468931>

³⁸ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=10295185>

Based on my review of information submitted by the applicant, the additional documentation noted herein, public comments submitted in writing or other communications with resource agencies and other entities, I recommend that the Middle Raquette River Project be conditionally certified, with a certification term of five years.

A concern that I have with regard to LIHI recertification pertains to minimum flow and impoundment fluctuation deviations. A total of ten deviations occurred since issuance of the last LIHI certification. Of those, at least three have been deemed a license violation by FERC. The October 25, 2014 incident will likely be found as a violation of the license due to the extensive duration of the deviation and the fact that proper procedures were once again not followed. Since operator error is a common cause of the deviations, it is reasonable to assume that additional deviations will occur without taking a more proactive approach. To certify the MRRP as "Low Impact", LIHI needs assurance that these operational deviations will cease or be significantly reduced in the future.

Therefore, I am recommending that the following conditions be included in the next LIHI certification:

1. Alarm annunciation within the NSCC's remote control system for all the MRRP developments needs to have an audible alarm component added to complement screen display alerts.
2. EBH needs to develop and submit a draft Deviation Reduction Plan (DRP) to LIHI no later than three months after LIHI certification of MRRP. The DRP will propose more aggressive approaches to implement as a means of reducing the likelihood of operational deviations occurring in the future (i.e. local audible alarms, PLCs, etc.). LIHI and EBH may need to enter into discussions on the plan before LIHI can agree to a final DRP and its implementation schedule going forward. The final DRP needs to be completed and agreed to by both EBH and LIHI no later than the six months after LIHI certification.
3. EBH needs to provide annual reports to LIHI documenting operational deviations that occurred throughout the year of certification whether unintentional or planned due to construction or maintenance. The report will include all deviations that actually occurred, whether or not the deviations were eventually deemed as not violating the license by FERC. The report is due at the same time as the annual compliance statement and payment of the annual certification fee. Based on LIHI's review of this annual report, and at LIHI's sole discretion, certification may be modified or rescinded.

7. DETAILED CRITERIA EVALUATION

7.1 Flows

<p>LIHI Goal: The Flows Criterion ensures that healthy flows for fish, wildlife and water quality are provided downstream of the project and in all bypassed reaches, including, where appropriate, seasonal flow fluctuations characteristic of a natural system.</p>	
A.1	<p><i>Is the Facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations)</i></p>
	<p>Reviewer Analysis: A number of impoundment fluctuation limit and minimum flow deviations have occurred at the MRRP developments since 2009. Three conditions have been recommended to allow for a conditional satisfaction of this criterion.</p> <p>Alarm annunciation within the NSCC's remote control system for all the MRRP developments needs to have an audible alarm component added to complement screen display alerts. Also, EBH needs to develop and submit a draft Deviation Reduction Plan (DRP) and EBH needs to provide annual reports to LIHI documenting operational deviations that occurred throughout the year of certification.</p> <p>Conclusion: Conditional Pass A.1; go to the Water Quality Criterion.</p>
A.2	<p><i>If there is no flow condition recommended by any Resource Agency for the Facility, or if the recommendation was issued prior to January 1, 1987, is the Facility in Compliance with a flow release schedule, both below the tailrace and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or "good" habitat flow standards calculated using the Montana-Tennant method?</i></p>
	<p>Reviewer Analysis and Conclusion: N/A.</p>
A.3	<p><i>If the Facility is unable to meet the flow standards in A.2., has the Applicant demonstrated, and obtained a letter from the relevant Resource Agency confirming that demonstration, that the flow conditions at the Facility are appropriately protective of fish, wildlife, and water quality?</i></p>
	<p>Reviewer Analysis and Conclusion: N/A.</p>

7.2 Water Quality

LIHI Goal: The Water Quality Criterion ensures that water quality in the river is protected.	
B.1	<p><i>Is the Facility either:</i></p> <p>a) <i>In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or</i></p> <p>b) <i>In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?</i></p>
	<p>Reviewer Analysis: The WQC for the Project includes and incorporates the RRPSO and is conditioned on compliance with the terms of the RRPSO. The Project is in compliance with all conditions of the WQC issued to the Project after December 31, 1986.</p> <p>Conclusion: YES, Pass B.1(a); Go to B.2</p>
B.2	<p><i>Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?</i></p>
	<p>Reviewer Analysis: The NYSDEC identified several areas of the Raquette River and associated tributaries in their June 3, 2002 Section 303 (d) List. Carry Falls Reservoir is on the 303(d) list of waterbodies that fail to meet one or more applicable water quality standards. The NYSDEC Section 303(d) List indicates atmospheric deposition (acid rain) is common within the entire length of the Upper Raquette River causing pH to be elevated in the Adirondacks and associated tributaries identified under Section 303 (d). The river's ecosystem is generally low in nutrients and fine sediments. The list indicates that the Carry Falls Reservoir is classified as not meeting the water quality standard for fish consumption due to mercury contamination from atmospheric deposition.</p> <p>Conclusion: YES; Go to B.3</p>
B.3	<p><i>If the answer to question B.2 is yes, has there been a determination that the Facility does not cause, or contribute to, the violation?</i></p>
	<p>Reviewer Analysis: The NYSDEC believes there are no indications that the MRRP contributes to this water classification.</p> <p>Conclusion: YES; Pass on B.3; Go to Fish Passage Criterion.</p>

7.3 Fish Passage and Protection

<p>LIHI Goal: The Fish Passage and Protection Criterion ensure that, where necessary, the Facility provides effective fish passage for Riverine, anadromous and catadromous fish, and protects fish from entrainment.</p>	
<p>C.1</p>	<p><i>Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?</i></p> <p>Reviewer Analysis: The 1998 RRPSO and the 2002 FERC license contain requirements by Resource Agencies for downstream fish passage in the form of required downstream passage flows, modifications to the structures and streambed in order to make the flows fish-friendly, and scheduled installation of 1 inch clear spaced bar trashracks to prevent/reduce entrainment. These installation were scheduled from and 2007 to 2011.</p> <p>The Sugar Islands development's trashracks were not replaced since the much larger instream flow through a special release structure that empties into a pool of adequate depth for fish, satisfies the need for safe downstream fish passage.</p> <p>Higley had 1-inch clear spacing physical barriers installed immediately above their existing trashrack structure in 2003 as part of the powerhouse redevelopment. Hannawa Falls had 1-inch clear spacing physical barriers installed in 2013, following a time extension request on December 23, 2011, as part of the powerhouse rehabilitation. EBH confirmed installation of the new trashrack scheme at Colton was completed on November 6, 2014.</p> <p>The upstream passage for anadromous or catadromous fish was not a management objective of the RRPSO. However, the USDO I reserved their authority to prescribe fish passage facilities for the MRRP in Article 403 of the 2002 FERC license. The Article also reserved FERC authority to require construction, operation and maintenance of any such prescribed fish passage facilities.</p> <p>Conclusion: Yes; go to C.2</p>
<p>C.2</p>	<p><i>Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish run is extinct)?</i></p> <p>Reviewer Analysis: No historical records were found of migratory fish in the project vicinity prevented from passage due to downstream blockage of fish extinction.</p> <p>Finding: NO; Go to C.3</p>

<p>C.3</p>	<p>If, since December 31, 1986:</p> <p>a) Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation as described in C2a above), and</p> <p>b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription,</p> <p>c) Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage Prescription one of the following: (1) the technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?</p>
	<p>Reviewer Analysis: The agencies have issued a prescribe fish passage as discussed in C.1. None of the C.3.b or C.3.c factors apply to the MRRP.</p> <p>Conclusion: N/A; Go to C.4</p>
<p>C.4</p>	<p>If C3 was not applicable:</p> <p>a) Are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology? OR</p> <p>b) If the Facility is unable to meet the fish passage standards in 4.a, has the Applicant either demonstrated, and obtained a letter from the U.S. Fish and Wildlife Service or National Marine Fisheries Service confirming that demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource, or committed to the provision of fish passage measures in the future and obtained a letter from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service indicating that passage measures are not currently warranted?</p> <p>Reviewer Analysis:</p> <p>Finding: N/A; Go to C.5</p>
<p>C.5</p>	<p>Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of Riverine fish?</p> <p>Reviewer Analysis: Covered in response to C.1. No compliance issues are documented.</p> <p>Finding: N/A; Go to C.6</p>
<p>C.6</p>	<p>Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?</p> <p>Reviewer Analysis: The USFWS has reserved their authority to set mandatory conditions for migratory fish entrainment protection measures under the license and WQC.</p> <p>Finding: N/A; PASS and go to the Watershed Protection Criterion.</p>

7.4 Watershed Protection

<p>LIHI Goal: The Watershed Protection criterion is designed to ensure that land resources are being protected within and around the facility boundary. The term of certification is extended from five to eight years for projects that have either a shoreline buffer zone or a watershed enhancement fund.</p>	
<p>D.1</p>	<p><i>Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the high water mark in an average water year around 50 - 100% of the impoundment, and for all of the undeveloped shoreline?</i></p> <p>Reviewer Analysis: No licensee article designates a formal buffer zone around the project impoundments.</p> <p>In 1996, NMPC developed a plan for divestiture of over 12,000 acres of land within the Raquette River watershed. None of these lands were within the FERC project boundaries associated with the Carry Falls, Upper Raquette River, Middle Raquette River, or Lower Raquette River Hydroelectric Projects.</p> <p>This land conveyance process between NMPC and the State pertained to lands outside of the FERC boundaries associated with the projects of RRPSO, and therefore was outside the jurisdiction of the FERC relicensing process. However, this land conveyance process was included as part of the RRPSO because certain aspects of the land transfer affected the outcome of certain aspects of the RRPSO.</p> <p>The vast majority of this land transfer to the State pertained to property associated with the URRP.</p> <p>Conclusion: No, Go to D.2</p>
<p>D.2</p>	<p><i>Has the facility owner/operator established an approved watershed enhancement fund that:</i> <i>a) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1.,and</i> <i>b) has the agreement of appropriate stakeholders and state and federal resource agencies?</i></p> <p>Reviewer Analysis/Conclusions: N/A.</p> <p>Conclusion: No Go to D.3</p>
<p>D.3</p>	<p><i>Has the facility owner/operator established through a settlement agreement with appropriate stakeholders and that has state and federal resource agencies agreement an appropriate shoreline buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation).</i></p> <p>Reviewer Analysis: N/A</p> <p>Conclusion: YES, Go to D.4</p>
<p>D.4</p>	<p><i>Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreline management plan regarding protection, mitigation or enhancement of shoreline surrounding the project?</i></p>

<p>Reviewer Analysis: See response to D.1. No agency concerns have surfaced.</p> <p>Conclusion: Yes; pass and Go to Threatened/Endangered Species Criterion.</p>
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7.5 Threatened and Endangered Species Protection

<p>LIHI Goal: The Threatened and Endangered Species Protection Criterion is designed to ensure that the Facility does not negatively impact state or federal threatened or endangered species.</p>	
E.1	<p><i>Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?</i></p> <p>Reviewer Analysis: The yellow lampmussel exists in the vicinity of the MRRP and is considered a species of concern/interest by the USFWS and NYSDEC. The FERC notes that two state-listed species have been documented in the vicinity of the project: the common loon (a protected wildlife/special concern species), and the spruce grouse (a threatened species). Erie surveyed reaches of the river and the final EA concluded no further studies required at this time. The FWS and DEC did not provide any comments on the final EA conclusions.</p> <p>Conclusion: YES; Go to E2.</p>
E.2	<p><i>If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?</i></p> <p>Reviewer Analysis: There are no formal recovery plans for the threatened and endangered species at the Project.</p> <p>Conclusion: N/A; Go to E3.</p>
E.3	<p><i>If the Facility has received authorization to incidentally Take a listed species through: (I) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authorization pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authorization?</i></p> <p>Reviewer Analysis: There are no formal incidental take permits for the threatened and endangered species at the Project.</p> <p>Conclusion: N/A; Go to E4.</p>
E.4	<p><i>If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that: a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or b) The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or c) There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or d) The recovery plan under active development will have no material effect on the Facility's operations?</i></p>

	<p>Reviewer Analysis: There are no formal incidental take permits for the threatened and endangered species at the Project.</p> <p>Conclusion: N/A; Go to E5 do not apply.</p>
E.5	<p><i>If E.2 and E.3 are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?</i></p> <p>Reviewer Analysis: The RRPSO declared that project facilities and operations consistent with the agreement will have no adverse effect on federal or state listed threatened or endangered species.</p> <p>Conclusion: Yes; Pass - Go to Cultural Resource Protection Criterion.</p>

7.6 Cultural Resources

<p>LIHI Goal: The Cultural Resource Protection Criterion is designed to ensure that the Facility does not inappropriately impact Cultural Resources.</p>	
F.1	<p><i>If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?</i></p> <p>Reviewer Analysis: On February 6, 2002, EBH signed a fully revised Programmatic Agreement (PA) with FERC, the Advisory Council on Historic Preservation (ACHP), and the New York State Historic Preservation Officer (SHPO) for the four of its FERC licenses on the Raquette River, with the St. Regis Tribe and the USDOJ as concurring parties. By letter dated February 11, 2002, the ACHP filed with FERC the executed agreement that amended the previous 1996 PA.</p> <p>On April 14, 2003, Erie submitted its required Historic Property Management Plan (HPMP) to FERC. On September 28, 2004, FERC issued an order approving the HPMP. As part of the HPMP, EBH is required to file an annual report. EBH has successfully complied with this requirement. The latest filing occurred on February 12, 2104.</p> <p>Finding: PASS and go to Recreation Criterion.</p>

7.7 Recreation

LIHI Goal: The Recreation Criterion is designed to ensure that the Facility provides access to the waters and accommodates recreational activities.	
G.1	<p><i>If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?</i></p> <p>Reviewer Analysis: Erie filed a recreation plan in accordance with the 2002 License and RRPSO. A Raquette River Advisory Council advises EBH on issues related to recreation, and other resource enhancements.</p> <p>Land & Water Associates, the prior LIHI reviewer, confirmed that the recreation facility improvements required in the FERC license were completed according to schedule in a timely manner, in consultation with parties to the RRPSO.</p> <p>EBH also makes whitewater releases as defined within the RRPSO.</p> <p>Finding: YES; Go to G.3</p>
G.3	<p><i>Does the Facility allow access to the reservoir and downstream reaches without fees or charges?</i></p> <p>Reviewer Analysis: Access is provided without charge within the limited Project boundaries.</p> <p>Finding: YES; PASS and go to Dam Removal Criterion.</p>

7.8 Dam Removal

LIHI Goal: The Dam Removal Criterion is designed to ensure that the Facility is not certified if a Resource Agency has recommended that a dam associated with the Facility should be removed.	
H.1	<p><i>Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?</i></p> <p>Reviewer Analysis: There is no evidence that any agencies have requested that the Project dam be removed.</p> <p>Conclusion: NO, pass H.1 and pass on all LIHI criteria.</p>

APPENDIX A

FERC CORRESPONDENCE

FERC documents listed in reverse chronological order. Click on the hyperlink in the table to view the referenced FERC documents in FERC's library. You need to be connected to the web. The initial click will return the file's properties (author, recipient, etc.). Clicking on the [File List] tab will return a document list. Clicking on a document name will open the document for viewing.