

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Erie Boulevard Hydropower, L.P.

Project No. 2713-082-New York

NOTICE OF AVAILABILITY OF ENVIRONMENTAL ASSESSMENT

(October 18, 2011)

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission's (Commission) regulations, 18 CFR Part 380 (Order No. 486, 52 FR 47897), the Office of Energy Projects has reviewed the application for license for the multi-development Oswegatchie River Hydroelectric Project, located along a 90-mile stretch of the Oswegatchie River in St. Lawrence County, New York, and has prepared an Environmental Assessment (EA) for the project. The project does not occupy any federal land.

The EA contains the staff's analysis of the potential environmental impacts of the project and concludes that licensing the project, with appropriate environmental protective measures, would not constitute a major federal action that would significantly affect the quality of the human environment.

A copy of the EA is available for review at the Commission in the Public Reference Room or may be viewed on the Commission's website at <http://www.ferc.gov> using the "eLibrary" link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll-free at 1-866-208-3676, or for TTY, (202) 502-8659.

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For further information, contact John Baummer at (202) 502-6837.

Kimberly D. Bose,
Secretary.

ENVIRONMENTAL ASSESSMENT
FOR
NEW MAJOR HYDROPOWER LICENSE

Oswegatchie River Hydroelectric Project
FERC Project No. 2713-082
New York

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, DC 20426

October 2011

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ACRONYMS AND ABBREVIATIONS

Adirondack State Park	Park
APE	area of potential effects
Certification	water quality certification
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
D2SI	FERC Division of Dam Safety and Inspections
DO	dissolved oxygen
EA	Environmental Assessment
Erie	Erie Boulevard Hydropower, L.P
ESA	Endangered Species Act
°F	degrees Fahrenheit
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
FPS	Feet per second
FPW	Five Ponds Wilderness Area
FWS	U.S. Fish and Wildlife Service
Interior	U.S. Department of the Interior
ILP	Integrated Licensing Process
ISMP	Invasive Species Management Plan
kV	kilovolt
Loon Plan	Common Loon Nesting Platform Installation and Monitoring Plan
LLL	Logistical Lasting Launches
mg/l	milligrams per liter
msl	mean sea level
MW	megawatt
MWh	megawatt-hours
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
NERC	North American Electric Reliability Council
New York DEC	New York State Department of Environmental Conservation
New York DOCR	New York Division of Coastal Resources
NGVD	National Geodetic Vertical Datum
NOI	Notice of Intent
NPCC	Northeast Power Coordinating Council
NPS	National Parks Service
NYISO	New York Independent System Operator

ACRONYMS AND ABBREVIATIONS (continued)

NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation
Oswegatchie Project	Oswegatchie River Hydroelectric Project
PA	Programmatic Agreement
PAD	Pre-Application Document
RM	River Mile
RMP	Recreation Management Plan
SD1	Scoping Document 1
SHPO	State Historic Preservation Officer, New York State Department of Historic Resources
Settlement	Settlement Agreement
St. Lawrence Co.	St. Lawrence County
SSA	Slope Stability Area
Trout Unlimited	New York State Council of Trout Unlimited
USGS	United States Geological Survey

EXECUTIVE SUMMARY

Proposed Action

On December 30, 2010, Erie Boulevard Hydropower, L.P (Erie), filed an application for a new license to operate and maintain its 28.56-megawatt (MW) Oswegatchie River Hydroelectric Project (Oswegatchie Project). The project has six developments located along a 90-mile stretch of the Oswegatchie River in St. Lawrence County, New York. The project does not occupy any federal land.

Project Description and Operation

The Oswegatchie River Hydroelectric Project consists of the following six developments, listed from upstream to downstream: Browns Falls, Flat Rock, South Edwards, Oswegatchie, Heuvelton, and Eel Weir (Appendix C, figures 2-6). Each development includes a dam, powerhouse, and impoundment. The six developments have a total installed capacity of 28.56 megawatts (MW) and an average annual generation of 129,096 megawatt-hours (MWh). The four developments located the farthest upstream (i.e., Browns Falls, Flat Rock, South Edwards, and Oswegatchie) operate to meet peak demands for electric generation, while the two downstream developments (i.e., Heuvelton and Eel Weir) operate in a run-of-river mode. The current license does not restrict water level fluctuations in any of the impoundments except Oswegatchie, which is limited to a 0.4 foot fluctuation. The project bypasses approximately 7,500 feet of the Oswegatchie River at the Browns Falls Development, 1,500 feet at the South Edwards Development, and 350 feet at the Oswegatchie Development. The current license includes minimum flow requirements in each of these bypassed reaches.

Proposed Environmental Measures

To address the environmental effects of the project, Erie proposes to implement a comprehensive settlement agreement (Settlement) that was filed on February 18, 2011, and signed by the Adirondack Mountain Club, Adirondack Park Agency, Clifton-Fine Economic Development Corporation, 5 Ponds Subcommittee, St. Lawrence County, the New York State Department of Environmental Conservation (New York DEC), New York State Council of Trout Unlimited, U.S. Fish and Wildlife Service, and the National Park Service. The Settlement resolves among the Parties issues related to project operations, fisheries, wildlife, water quality, recreation, and cultural resources.

Alternatives Considered

This EA analyzes the effects of continued project operation and recommends

conditions for any new license that may be issued for the project. In addition to Erie's proposal, we consider two alternatives: (1) Erie's proposal with staff modifications (staff alternative); and (2) no action – continued operation with no changes.

Under the staff alternative, the project would include all of Erie's proposed measures and two additional measures recommended by staff: (1) an erosion and sediment control plan and (2) a modified Recreation Management Plan that includes installation of boat slides at the Flat Rock and South Edwards developments.

Public Involvement and Areas of Concern

Before filing its license application with the Commission, Erie conducted pre-filing consultation in accordance with the Commission's Integrated Licensing Process. The intent of the Commission's pre-filing process is to involve the public early in the project planning process and to encourage citizens, governmental entities, tribes, and other interested parties to identify and resolve issues prior to an application being formally filed with the Commission. As part of the pre-filing process, staff conducted scoping to identify issues and alternatives. Staff distributed a scoping document to stakeholders and other interested entities on February 22, 2008. Scoping meetings were held in Canton, New York on March 25 and March 26, 2008, respectively.

Erie filed its license application on December 30, 2010. On April 21, 2011, staff requested comments, recommendations, and terms and conditions, in a notice that the license application was ready for environmental analysis.

The primary issues associated with relicensing the project are minimum flows in the bypassed reaches, upstream and downstream fish passage, fish entrainment and impingement at the project intakes, and recreational access. Below we briefly discuss the anticipated environmental effects of issuing a new license for the project under the staff alternative.

Staff Alternative

Geology and Soils

Developing and implementing an erosion and sediment control plan would limit erosion and sedimentation associated with ground disturbing activities related to the construction of recreational improvements and fish passage facilities.

Aquatic Resources

Implementing the proposed limits on daily impoundment fluctuations and installing new crest control devices at Browns Falls and South Edwards would improve

and maintain aquatic habitat in the impoundments. The fisheries community in the Browns Falls bypassed reach would be enhanced by providing a year-round minimum flow of 30 cfs and implementing a trout stocking and monitoring plan. Fish mortality due to entrainment would be minimized by installing the proposed permanent trashracks or seasonal overlays with 1-inch clear spacing at all developments except Oswegatchie, which already has trashracks with 1-inch clear spacing. Fish passage would be enhanced compared to existing conditions by constructing and operating the proposed fishways at Heuvelton and Eel Weir for upstream and downstream passage of lake sturgeon, American eel, and other fish species.

Terrestrial Resources

Implementation of the proposed Common Loon Nesting Platform Installation and Monitoring Plan would encourage loon nesting at the project impoundments by providing stable nesting locations that are unaffected by water level fluctuations. Surveying for eagle or osprey nests prior to clearing trees, and consulting with the fish and wildlife agencies if nests are found, would prevent destruction and/or minimize disturbance of eagle and osprey nests in or near areas proposed for clearing. Implementing the proposed Invasive Species Management Plan would help prevent the introduction and/or spread of invasive species.

Recreation

Implementing the proposed Recreation Management Plan (RMP) would enhance recreational opportunities at the project and ensure operation and maintenance of existing and proposed project recreational facilities. Installation of boat slides along two steep sections of the portage route at the Flat Rock development, and one steep section of the South Edwards development portage route would ease the use of these portage routes and improve safety.

Cultural Resources

Continued project operation would not adversely affect historic resources; however, the proposed Historic Properties Management Plan (HPMP), would provide a mechanism for addressing the effects of any future modifications or activities that could potentially affect the characteristics of the hydroelectric facilities that are eligible to be listed on the National Register of Historic Places (National Register).¹

¹ The hydroelectric facilities at five project developments, Browns Falls, Flat Rock, South Edwards, Heuvelton, and Eel Weir, are eligible to be listed on the National Register.

No-Action Alternative

Under the no-action alternative, the project would continue to operate as it has in the past. None of the proposed or recommended measures would be implemented and there would be no enhancement of environmental resources.

License Conditions

Staff recommendations for conditions of any new license for the project are based on the analysis presented in this EA. Draft license articles are attached in Appendix A.

Conclusions

Based on our analysis, we recommend licensing the project as proposed by the licensee, with some staff modifications and additional measures.

In section 4.2 of the EA, we estimate the likely cost of alternative power for each of the three alternatives identified above. Our analysis shows that during the first year of operation under the no-action alternative, project power would cost \$1,441,000, or \$11.16 per megawatt-hour (MWh) less than the likely alternative cost of power. Under the proposed action alternative, project power would cost \$556,600, or \$4.33/MWh less than the likely alternative cost of power. Under the staff alternative, project power would cost \$554,600, or \$4.33/MWh less than the likely alternative cost of power.

We chose the staff alternative as the preferred alternative because: (1) the project would continue to provide a dependable source of electrical energy for the region (128,113 MWh annually); (2) the 28.56 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution, including greenhouse gases; and (3) the recommended environmental measures proposed by Erie, as modified by staff, would adequately protect and enhance environmental resources affected by the project. The overall benefits of the staff alternative would be worth the cost of the proposed and recommended environmental measures.

We conclude that issuing a new license for the project, with the environmental measures we recommend, would not be a major federal action significantly affecting the quality of the human environment.

ENVIRONMENTAL ASSESSMENT

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, D.C.

Oswegatchie River Hydroelectric Project FERC Project No. 2713-082–New York

1. INTRODUCTION

1.1 APPLICATION

On December 30, 2010, Erie Boulevard Hydropower, L.P. (Erie) filed an application for a new major license to operate and maintain the existing 28.56-megawatt (MW) Oswegatchie River Hydroelectric Project (Oswegatchie Project). The project's six developments are located along a 90-mile stretch of the Oswegatchie River in St. Lawrence County, New York (figure 1). The project has an estimated annual generation of 129,096 megawatt-hours (MWh). Erie proposes to install upstream and downstream fish passage facilities at the Heuvelton and Eel Weir developments. No new capacity is proposed and the project does not occupy any federal lands.

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The purpose of Oswegatchie Project is to continue to provide a source of hydroelectric power. Therefore, under the provisions of the Federal Power Act (FPA), the Commission must decide whether to issue a license to Erie for the continued operation of the Oswegatchie Project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, or water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection of, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

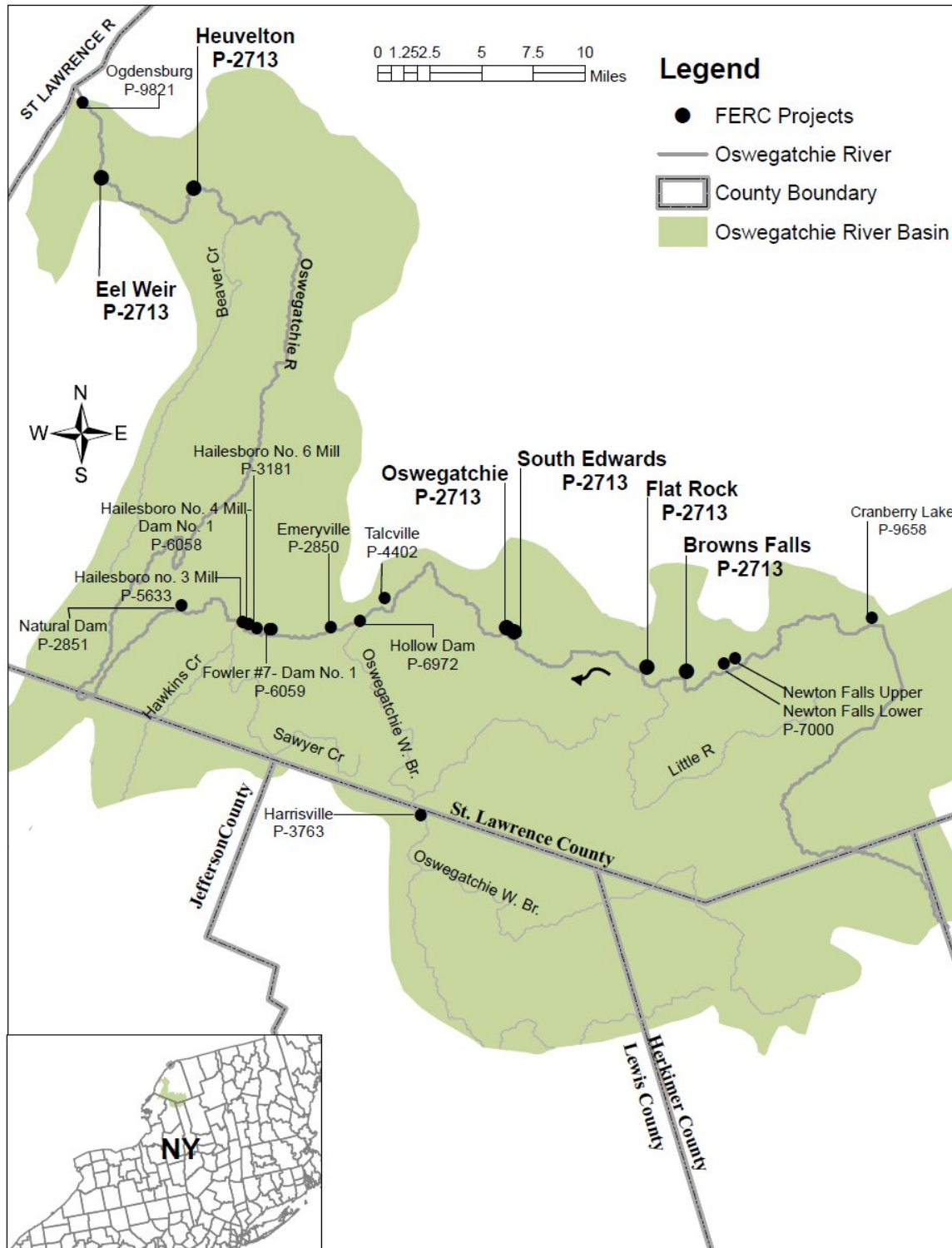


Figure 1. Location of the Oswegatchie Project Developments. (Source: staff).

Issuing a new license for the Oswegatchie Project would allow Erie to generate electricity at the project for the term of a new license, making electric power from a renewable resource available to its customers.

This environmental assessment (EA) assesses the effects associated with continued operation of the project, evaluates alternatives to the proposed project, and makes recommendations to the Commission on whether to issue a new license, and if so, recommends terms and conditions to become a part of any license issued.

In this EA, we assess the environmental and economic effects of operating and maintaining the project: (1) as proposed by Erie in a settlement agreement (Settlement) filed on February 18, 2011, and (2) with our recommended measures. We also consider the effects of the no-action alternative. Important issues that are addressed by this EA include, minimum flows in the bypassed reaches, fish passage, fish entrainment and impingement at the project intakes, and recreational access.

1.2.2 Need for Power

To assess the need for project power, we reviewed the licensee's present and anticipated future use of project power, together with that of the operating region in which the project is located. Historically, the Oswegatchie Project generated an average of 129,096 MWh annually; as proposed the estimated average annual generation would be about 128,113 MWh. The power generated is sold to the New York State Independent Service Operator (NYISO) market.

The North American Electric Reliability Council (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The project is located in the Northeast Power Coordinating Council, Inc. (NPCC) region of the NERC. According to NERC's 2010 forecast (NERC, 2010), summer peak demand in the NPCC region is projected to grow at a rate of 5.7 percent from 2010 through 2019.

We conclude that power from the Oswegatchie Project would help meet a need for power in the NPCC region in both the short and long term. The project provides a low-cost power that displaces generation from non-renewable sources. Displacing the operation of non-renewable facilities may avoid some power plant emissions, thus creating an environmental benefit.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

A new license for the Oswegatchie Project is subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are summarized in table 1 and described below.

Table 1. Major Statutory and Regulatory Requirements for the Oswegatchie Project. (Source: staff).

Requirement	Agency	Status
Section 18 of the FPA - fishway prescriptions	Interior	Interior filed preliminary prescriptions and requested reservation of authority to prescribe fishways, on June 16, 2011.
Section 10(j) of the FPA	Interior, New York State Department of Environmental Conservation (New York DEC)	Interior and New York DEC filed section 10(j) recommendations on June 16 and June 20, 2011, respectively.
Section 401 of the Clean Water Act—water quality certification	New York DEC	Application for certification received by New York DEC on May 11, 2011; due May 12, 2012.
Endangered Species Act (ESA)	Interior	Section 3.3.4 of the EA discusses potential effects on Indiana bat and concludes that relicensing the project would have “no effect”.
Coastal Zone Management Act Consistency (CZMA)	New York State Department of State, Division of Coastal Resources (New York DOCR)	The project is not located within New York’s coastal boundary and does not require certification of consistency (personal communication between John Baummer and New York DOCR, January 19, 2011).

National Historic Preservation Act	New York State Historic Preservation Office (SHPO)	Staff intends to execute a Programmatic Agreement (PA) with the New York SHPO, and invite Erie and the Oneida Indian Nation to concur. The PA will include implementation of the final HPMP, filed on December 30, 2010.
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1.3.1 Federal Power Act

1.3.1.1 Section 18 Fishway Prescriptions

Section 18 of the FPA states that the Commission is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of Commerce or the Interior. Interior, by letter filed June 16, 2011, filed preliminary fishway prescriptions and a request that a reservation of authority to prescribe fishways under section 18 be included in any license issued for the project. The preliminary prescriptions are described under section 2.2.4, *Modifications to the Applicant's Proposal – Mandatory Conditions*.

1.3.1.2 Section 10(j) Recommendations

Under section 10(j) of the FPA, each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

Interior and New York DEC filed recommendations under section 10(j) on June 16 and June 20, 2011, respectively. These recommendations are summarized in Table 17 and discussed in section 5.4.

1.3.2 Clean Water Act

Under section 401 of the Clean Water Act (CWA), a license applicant must obtain certification from the appropriate state pollution control agency verifying compliance

with the CWA. On May 9, 2011, Erie applied to the New York DEC for a 401 water quality certification (Certification) for the project. The New York DEC received the application for certification on May 11, 2011. The New York DEC has not yet acted on the application. The certification is due by May 12, 2012.

1.3.3 Endangered Species Act

Section 7 of the ESA requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Review of the FWS website in July 2011 indicated that the Indiana Bat (*Myotis sodalis*) occurs near the Oswegatchie Project. Relicensing the Oswegatchie Project, as proposed with staff-recommended measures, would have no effect on the Indiana bat because there are no known roost sites or hibernating sites in the project area and any individuals that could be found in the area are likely to be occasional transients.

1.3.4 Coastal Zone Management Act

Under section 307(c)(3)(A) of the CZMA, 16 U.S.C. § 1456(3)(A), the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

The Oswegatchie Project is not located within New York's coastal boundary and would not affect coastal resources; therefore, it does not require certification of consistency (personal communication between John Baummer and New York DOCR, January 19, 2011).

1.3.5 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires that every federal agency "take into account" how its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

To meet the requirements of section 106, the Commission intends to execute a Programmatic Agreement (PA) for the protection of historic properties from the effects of the operation of the Oswegatchie Project. The terms of the PA would ensure that Erie addresses and treats all historic properties identified within the project's area of potential

effects (APE) through the finalization of the existing draft Historic Properties Management Plan.

1.4 PUBLIC REVIEW AND COMMENT

The Commission's regulations (18 CFR, sections 5.1 to 5.16) require applicants to consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, the ESA, the NHPA, and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

Relicensing of the Oswegatchie Project was formally initiated December 28, 2007, when Erie filed with the Commission a Pre-Application Document (PAD) and a Notice of Intent (NOI) to license the Oswegatchie Project using the Integrated Licensing Process (ILP). The Commission issued a Notice of Commencement of Proceeding on February 22, 2008.

1.4.1 Scoping

During the pre-filing consultation process, scoping meetings were held to determine what issues and alternatives should be addressed in the EA. Scoping Document 1 (SD1) was issued on February 22, 2008. Scoping meetings were held in Canton, New York on March 25 and March 26, 2008, respectively, to request comments on the project. A court reporter recorded all comments and statements made at the scoping meetings, and these are part of the Commission's public record for the project. Environmental site reviews were held July 9, 2008 and October 13, 2010.

In addition to comments provided at the scoping meetings, the following entities provided written comments pertaining to SD1, the PAD, and additional study needs:

<u>Commenting Entity</u>	<u>Date Filed</u>
U.S. Fish and Wildlife Service (FWS)	April 10, 2008
New York DEC	April 25, 2008
Adirondack Mountain Club	April 21, 2008

1.4.2 Interventions

On April 21, 2011, the Commission issued a notice accepting the application to relicense the Oswegatchie Project and soliciting motions to intervene and protests. This notice set June 20, 2011, as the deadline for filing protests and motions to intervene. The following entities intervened.

<u>Interveners</u>	<u>Date Filed</u>
Interior	June 17, 2011
New York DEC	June 20, 2011

1.4.3 Comments on the Application

A notice requesting conditions and recommendations was issued on April 21, 2011. The following entities commented:

<u>Commenting Entity</u>	<u>Date Filed</u>
Interior	June 17, 2011
New York DEC	June 20, 2011

Erie filed reply comments on July 29, 2011.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative as the baseline environmental condition for comparison with other alternatives.

2.1.1 Existing Project Facilities

The existing Oswegatchie River Hydroelectric Project consists of the following six developments, listed from upstream to downstream (Appendix B, figures 2-6):

Browns Falls

The existing Browns Falls Development is located at river mile 96.9 of the Oswegatchie River and consists of: (1) a 941-foot-long dam with a 192-foot-long, 69-foot-high concrete gravity ogee spillway with a crest elevation of 1,347.0 feet above mean sea level (msl) and equipped with 2-foot-high seasonal flash boards; (2) a 168-acre impoundment with a gross storage capacity of 3,234 acre-feet and a normal maximum pool elevation of 1,349 msl; (3) a 62-foot-long gated intake structure equipped with a trashrack with 2.5-inch clear bar spacing; (4) a 12-foot-diameter, 6,000-foot-long steel pipeline; (5) a 40-foot-diameter, 70-foot-high surge tank; (6) two 8-foot-diameter, 142-

foot-long steel penstocks; (7) a 74-foot-long, 53-foot-wide concrete-brick powerhouse containing two 8.576 MW rated vertical Francis turbines directly connected to two 7.5 MW generating units for a total installed capacity of 15.0 MW; (8) a 123-foot-long, 6.6-kilovolt (kV) transmission line; and (9) appurtenant facilities. The steel pipeline, penstocks, and powerhouse bypass approximately 7,500 feet of the Oswegatchie River.

The existing project boundary around Browns Falls includes 551.9 acres of land. The project boundary extends approximately 2 miles upstream of the dam and includes lands around the dam and impoundment. Downstream of the dam, the project boundary includes lands around the powerhouse, transmission line, and the bypassed reach and tailrace section of the river to a point approximately 180 feet downstream of the powerhouse (Appendix B, figure 2). No federal or tribal lands are within the project boundary.

Flat Rock

The existing Flat Rock Development is located at river mile 95.5 of the Oswegatchie River and consists of: (1) a 568-foot-long dam and a 120-foot-long earthen embankment with a concrete core wall, and a 229-foot-long, 70-foot-high concrete gravity ogee spillway with a crest elevation of 1,080.0 feet msl; (2) a 159-acre impoundment with a gross storage capacity of 2,646 acre-feet and a normal maximum pool elevation of 1,080.0 feet msl; (3) a 66-foot-long gated intake structure equipped with a trashrack with 2.5-inch clear bar spacing; (4) an 85-foot-long, 66-foot-wide concrete-brick powerhouse containing two vertical Francis turbines rated at 2.088 and a 2.98 MW and directly connected to two 3.0 MW generating units for a total installed capacity of 5.07 MW; (5) a 30-foot-long, 2.4-kV transmission line; and (6) appurtenant facilities.

The existing project boundary around Flat Rock includes 205.99 acres of land. The project boundary extends approximately 1.27 miles upstream of the dam and includes lands around the dam and impoundment (including a portion of Skate Creek). Downstream of the dam, the project boundary extends to include lands around the powerhouse and transmission line to a point approximately 3,800 feet downstream of the powerhouse (Appendix B, figure 3). No federal or tribal lands are within the project boundary.

South Edwards

The existing South Edwards Development is located at river mile 87.1 of the Oswegatchie River and consists of: (1) a 200-foot-long dam with a 88-foot-long, 48-foot-high concrete gravity ogee spillway with a crest elevation of 843.2 feet msl and equipped with 2-foot-high seasonal flash boards; (2) a 510-foot-long earthen embankment and a 240-foot-long earthen embankment located along the south bank of the reservoir, each with a concrete core wall and partially equipped with 10-inch-high

flashboards; (3) a 79.2-acre impoundment with a gross storage capacity of 1,003 acre-feet and a normal maximum pool elevation of 845.2 feet msl; (4) a 46-foot-long gated intake structure equipped with a trashrack with 2.5-inch clear bar spacing; (5) a 10-foot-diameter, 1,106-foot-long fiberglass pipeline; (6) a 51-foot-high surge tank; (7) a 30-foot-long, 4-foot-diameter pipe containing a submersible Flygt turbine that is used to release minimum flows and is rated at 0.24 MW and connected to a 0.251 MW generating unit, and a 78-foot-long by 45-foot-wide powerhouse containing two horizontal Francis turbines rated at 1.286 and 0.708 MW and directly connected to 1.0 MW and 0.68 MW generating units for a total installed capacity of 2.92 MW; (8) a 880-foot-long, 480-volt and 3,917-foot-long, 2.4-kV transmission lines; and (9) appurtenant facilities. The pipeline and powerhouse bypass approximately 1,500 feet of the Oswegatchie River.

The existing project boundary around South Edwards is contiguous with the boundary around the Oswegatchie Development and includes 149.93 acres of land. The project boundary extends approximately 1.3 miles upstream of the South Edwards dam and includes lands around the dam and impoundment. Downstream of South Edwards dam, the project boundary extends approximately 0.46 miles to include the South Edwards and Oswegatchie powerhouses, bypassed reaches, and tailraces to a point approximately 214 feet downstream of the Oswegatchie powerhouse (Appendix B, figure 4). No federal or tribal lands are within the project boundary.

Oswegatchie

The existing Oswegatchie Development is located at river mile 86.6 of the Oswegatchie River and consists of: (1) a 160-foot-long dam with an 80-foot-long, 12-foot-high concrete gravity spillway with a crest elevation of 758.6 feet msl and equipped with a 10-foot-wide minimum flow notch; (2) a 6-acre impoundment with a gross storage capacity of approximately 23 acre-feet and a normal maximum pool elevation of 758.6 feet msl; (3) a 50-foot-long gated intake structure equipped with two trashracks with a 2.5-inch and a 1-inch clear bar spacing, respectively; (4) a 6.5-foot-diameter, 75.5-foot-long steel penstock and a 6.5-foot-diameter, 65-foot-long steel penstock; (5) a 30-foot-long by 26-foot-wide concrete-masonry powerhouse containing two vertical Canadian Hydro Components turbines rated at 1.081 MW and directly connected to two 1.035 MW generating units for a total installed capacity of 2.07 MW; (6) a 2,227-foot-long, 2.4-kV transmission line; and (7) appurtenant facilities. The penstocks and powerhouse bypass approximately 350 feet of the Oswegatchie River.

The existing project boundary around the Oswegatchie Development is contiguous with the boundary around the South Edwards Development and includes 149.93 acres of land. The project boundary extends approximately 1.7 miles upstream of the Oswegatchie dam and includes lands around the dam and impoundment. Downstream of Oswegatchie dam, the project boundary includes lands around the powerhouse, bypassed reach, and tailrace section of the river to a point 214 feet downstream of the Oswegatchie

powerhouse (Appendix B, figure 4). No federal or tribal lands are within the project boundary.

Heuvelton

The existing Heuvelton Development is located at river mile 12 of the Oswegatchie River and consists of: (1) a 285-foot-long, 19-foot-high concrete gravity dam with a crest elevation of 276.5 feet msl and equipped with two 10.9-foot-high inflatable rubber bladder gates and four 10.5-foot-high tainter gates; (2) a 239-acre impoundment with a gross storage capacity of 405 acre-feet and a normal maximum pool elevation of 286.2 feet msl; (3) a 70-foot-long gated intake structure equipped with a trashrack with 3.5-inch clear bar spacing; (4) a 67-foot-long by 37-foot-wide brick powerhouse containing two vertical Francis turbines rated at 0.544 MW and directly connected to two 0.52 MW generating units for a total installed capacity of 1.04 MW; (5) a 62-foot-long, 2.4-kV transmission line; and (6) appurtenant facilities.

The existing project boundary around Heuvelton includes 220.4 acres of land. The project boundary extends approximately 2.2 miles upstream of the dam on the Oswegatchie River, includes a portion of Linbon Creek, and the lands around the impoundment up to contour elevation 286.7 feet. Downstream of the dam, the project boundary includes lands around the dam and powerhouse to a point approximately 15 feet downstream of the powerhouse (Appendix B, figure 5). No federal or tribal lands are within the project boundary.

Eel Weir

The existing Eel Weir Development is located at river mile 5.1 of the Oswegatchie River and consists of: (1) a 1,012-foot-long dam with a short earthen embankment and a 744-foot-long, 26-foot-high Ambursen spillway with a crest elevation of 272.0 feet msl; (2) a 96-acre impoundment with a gross storage capacity of 136.0 acre-feet and a normal maximum pool elevation of 272.0 feet msl; (3) a 117-foot-long gated intake structure equipped with a trashrack with 3.5-inch clear bar spacing; (4) a 117-foot-long by 55-foot-wide brick-and-tile powerhouse containing two propeller-type turbines rated at 1.0 MW and one 0.46 MW vertical Francis turbine directly connected to two 1.0 MW and one 0.5 MW generating units for a total installed capacity of 2.46 MW; (5) a 127-foot-long, 2.4-kV transmission line; and (6) appurtenant facilities.

The existing project boundary around Eel Weir includes 205.08 acres of land. The project boundary extends approximately 1.7 miles upstream of the dam and includes the lands around the impoundment up to contour elevation 274.7 feet msl. Downstream of the dam, the project boundary includes lands around the dam, powerhouse and transmission line to a point approximately one mile downstream of the powerhouse (Appendix B, figure 6). No federal or tribal lands are within the project boundary.

2.1.2 Project Safety

The Oswegatchie Project has been operating for over 48 years under the current license which was effective September 1, 1963. During this time, Commission staff have conducted operational inspections focusing on the continued safety of the structures, identification of unauthorized modifications, efficiency and safety of operations, compliance with the terms of the license, and proper maintenance. In addition, the Browns Falls, Flat Rock, and South Edwards developments have been inspected and evaluated every 5 years by an independent consultant and a consultant's safety report has been submitted for Commission review. As part of the relicensing process, Commission staff would evaluate the continued adequacy of the proposed project facilities under a new license. Special articles would be included in any license issued, as appropriate. Commission staff would continue to inspect the project during the new license term to ensure continued adherence to Commission-approved plans and specifications, special license articles relating to construction (if any), operation and maintenance, and accepted engineering practices and procedures.

2.1.3 Existing Project Operation

Browns Falls

Inflow to the Browns Falls impoundment comes from the upstream Cranberry Lake and passes through the Newton Falls Project (FERC Project No. P-7000) before it reaches Brown Falls. Water from the Browns Falls impoundment is either directed over the spillway and into the bypassed reach or through the headgates, into the steel pipeline, and then to the powerhouse. The steel pipeline runs parallel and adjacent to the bypassed reach. The tailrace discharges water from the powerhouse at the downstream end of the bypassed reach.

Browns Falls operates as a peaking facility to increase generation during periods of high electricity demand. The impoundment fluctuates on a daily cycle, typically drawing down when the demand for electricity increases and refilling when demand decreases. Erie typically installs flashboards at Browns Falls between late March and mid-May. Approximately half of the flashboards are installed year-round (except when they fail from ice or high flow events) and the remainder are removed around October 15.

Although the current license does not restrict impoundment elevations or fluctuations at Browns Falls. Erie typically operates the impoundment within 3 feet of the top of the flashboards (between elevations 1,349 and 1,346 feet msl when the flashboards are installed) or the spillway crest (between elevations 1,347 and 1,344 feet msl when the flashboards are not installed). Fluctuations greater than 3 feet occur infrequently. When not fluctuating, the impoundment is either maintained at or slightly

below the top of the flashboards (elevation 1,349 feet msl); or, at or slightly below the top of the spillway crest (elevation 1,347 feet msl).

Erie is required by the existing license to provide a minimum flow of 30 cubic feet per second (cfs) between April 1 and September 30, and 15 cfs between October 1 and March 31 in the Browns Falls bypassed reach. The minimum flows are either provided by the deep-sluice gate on the left side of the dam or directly over the spillway.

The minimum and maximum hydraulic capacities at the Browns Falls powerhouse are 187 and 880 cfs, respectively. When the impoundment is full, inflows in excess of hydraulic capacity plus the minimum flow (910 cfs between April 1 and September 30 and 895 cfs between October 1 and March 31) are released directly over the spillway into the bypassed reach.

Flat Rock

Inflow to the Flat Rock impoundment comes from the Oswegatchie River after passing through the Browns Falls Development. Water from the Flat Rock impoundment is either directed over the spillway into the Oswegatchie River or through the headgates to the adjacent powerhouse.

Flat Rock operates in tandem with Brown Falls as a peaking facility to increase generation during periods of high electricity demand. The impoundment fluctuates on a daily cycle, typically drawing down when the demand for electricity increases and refilling when demand decreases.

Although the current license does not restrict impoundment elevations or fluctuations at Flat Rock, Erie typically operates the impoundment within 3 feet of the top of the spillway crest (between elevations 1,080 and 1,077 feet msl). Fluctuations greater than 3 feet occur infrequently. When not fluctuating, the impoundment is maintained at or slightly below the top of the spillway crest (elevation 1,080 feet msl).

Erie is required by the existing license to provide a year-round minimum flow of 160 cfs, or inflow, whichever is less, downstream of the Flat Rock tailrace. The minimum flow is either provided directly over the spillway into the Oswegatchie River or through the powerhouse.

The minimum and maximum hydraulic capacities at the Flat Rock powerhouse are 100 and 1,223 cfs, respectively. When the impoundment is full, inflows in excess of the maximum hydraulic capacity are released directly over the spillway into the Oswegatchie River.

South Edwards

Inflow to the South Edwards impoundment comes from the Oswegatchie River after passing through the Flat Rock Development. Water from the South Edwards impoundment is either directed over the spillway and into the bypassed reach; or through the headgates, into the steel pipeline, and then to the powerhouse; or through the butterfly valve, into the fiber-glass pipeline to the minimum flow turbine, and then to the bypassed reach. The steel pipeline and fiber-glass pipeline run parallel and adjacent to the bypassed reach. The tailrace discharges water from the powerhouse at the downstream end of the bypassed reach.

South Edwards operates as a peaking facility to increase generation during periods of high electricity demand. The impoundment fluctuates on a daily cycle, typically drawing down when the demand for electricity increases and refilling when demand decreases. Erie typically installs the flashboards at South Edwards between late March and mid-May or as early as late-March and removes them from approximately October 15 through May 31.

Although the current license does not restrict impoundment elevations or fluctuations at South Edwards, Erie typically operates the impoundment within 3 feet of the top of the flashboards (between elevations 845.2 and 843.2 feet msl when the flashboards are installed) or the spillway crest (between elevations 843.2 and 840.2 feet msl when the flashboards are not installed). When not fluctuating, the impoundment is either maintained at or slightly below the top of the flashboards (elevation 845.2 feet msl); or at or slightly below the spillway crest (elevation 843.2 feet msl).

Erie is required by the existing license to provide a year-round minimum flow of 60 cfs in the South Edwards bypassed reach. The 60 cfs minimum flow is either provided by the minimum flow turbine or directly over the spillway. Erie is also required to provide a year-round minimum flow of 160 cfs, or inflow, whichever is less, downstream of the South Edwards tailrace. The 160 cfs minimum flow includes the 60 cfs minimum bypassed reach flow and the remaining 100 cfs is provided over the spillway or through the powerhouse.

The minimum and maximum hydraulic capacities at the South Edwards powerhouse are 60 and 745 cfs, respectively. When the impoundment is full inflows in excess of the maximum hydraulic capacity plus the minimum bypassed reach flow (805 cfs) are released directly over the spillway into the bypassed reach.

Oswegatchie

Inflow to the Oswegatchie impoundment comes from the Oswegatchie River after passing through the South Edwards Development. Water from the Oswegatchie impoundment is either directed through a notch in the dam or over the spillway and into

the bypassed reach; or through the headgates, into the headpond, and then through the steel pipeline to the powerhouse. The steel pipeline runs parallel and adjacent to the bypassed reach. The tailrace discharges water from the powerhouse at the downstream end of the bypassed reach.

Oswegatchie operates in tandem with South Edwards peaking facility to increase generation during periods of high electricity demand. The impoundment fluctuates on a daily cycle, typically drawing down when the demand for electricity increases and refilling when demand decreases.

Erie is required by the existing license to limit daily drawdowns in the impoundment to less than 0.4 foot below the top of the spillway crest (between elevations 758.6 and 758.2 feet msl). When not fluctuating, the impoundment level is maintained at the top of or slightly below the spillway crest (elevation 758.6 feet msl).

Erie is required by the existing license to provide a year-round minimum flow of 40 cfs in the Oswegatchie bypassed reach. The 40 cfs minimum flow is provided through a notch in the dam. Erie is also required by the existing license to provide a year-round minimum flow of 160 cfs, or inflow, whichever is less, downstream of the Oswegatchie tailrace. The 160 cfs minimum flow includes the 40 cfs minimum bypassed reach flow and the remaining 120 cfs is provided over the spillway or through the powerhouse.

The minimum and maximum hydraulic capacities at the Oswegatchie powerhouse are 50 and 740 cfs, respectively. When the impoundment is full inflows in excess of the maximum hydraulic capacity plus the minimum bypassed reach flow (780 cfs) are provided directly over the spillway into the bypassed reach.

Heuvelton

Inflow to the Heuvelton impoundment comes from the Oswegatchie River after passing through the upstream unlicensed Gouverneur Village Dam Project. Water from the Heuvelton impoundment is either directed over the spillway into the Oswegatchie River or through the headgates to the powerhouse.

Heuvelton operates as a run-of-river facility. Inflow to the impoundment is released through the turbines or over the spillway. Although the current license does not restrict impoundment elevations or fluctuations at Heuvelton, Erie typically maintains the impoundment at a normal maximum elevation of 286.2 feet msl with minimal impoundment fluctuation.

Erie is required by the existing license to provide a year-round minimum flow of 275 cfs downstream of the Heuvelton tailrace by releasing flow through the turbines. The minimum and maximum hydraulic capacities at the Heuvelton powerhouse are 200

and 992 cfs, respectively. During run-of-river operations, all inflows either less than 200 cfs (minimum hydraulic capacity) or in excess of 992 cfs (the maximum hydraulic capacity) are spilled over the crest of the rubber dams or through the tainter gates into the Oswegatchie River downstream of the dam. Flows between 200 cfs to 992 cfs are routed to the powerhouse for generation.

Eel Weir

Inflow to the Eel Weir impoundment comes from Oswegatchie River after passing through the Heuvelton Development. Water from the Heuvelton impoundment is either directed over the spillway or through the headgates to the powerhouse.

Eel Weir operates as a run-of-river facility. Inflow to the impoundment is released through the turbines or over the spillway. Although the current license does not restrict impoundment elevations or fluctuations at Eel Weir, Erie typically maintains the impoundment at a normal maximum elevation of 272 feet msl with minimal impoundment fluctuation.

Erie is required by the existing license to provide a year-round minimum flow of 325 cfs downstream of the Eel Weir tailrace. The minimum and maximum hydraulic capacities at the Eel Weir powerhouse are 220 and 2,840 cfs, respectively. During run-of-river operations, all inflows either less than 220 cfs (minimum hydraulic capacity) or in excess of 2,840 cfs (the maximum hydraulic capacity) are spilled over the crest of the spillway into the Oswegatchie River downstream of the dam. Flows between 220 cfs to 2,840 cfs are routed to the powerhouse for generation.

2.1.4 Existing Environmental Measures

Article 30 of the current license² requires Erie to release minimum flows as described in section 2.1.3 to maintain aquatic habitat and allow for fish movements. The current license also requires Erie to develop and erosion and sediment control plan prior to the start of any groundbreaking activities (Article 35).

The Oswegatchie Development has two installed fish protection measures.³ The

² The current license issued January 10, 1983, effective January 1, 1963 (22 FERC ¶62,020) was amended July 3, 1986 (36 FERC ¶61,067), February 5, 1987 (38 FERC ¶62,089), and March 5, 1993. The license was amended September 17, 2001 (96 FERC ¶62,260) to expand capacity and rehabilitate the Oswegatchie Development.

³ See order amending license to replace and increase capacity of the Oswegatchie Development (96 FERC ¶62,260).

spillway includes a 10-foot-wide by 2.5-foot-deep notch to maintain the 40-cfs minimum flow and allows fish to pass downstream of the project and the intake also has trashracks with 1-inch clear spacing covering the full height and width of the opening to limit fish entrainment.

As required by the current license, Erie maintains designated recreation areas throughout the project area. The Flat Rock Boat Launch and Picnic Area includes a boat launch, picnic tables, cooking grills, trash receptacles, and a parking area. The Heuvelton Picnic Area includes picnic tables, cooking grills and a parking area. The Eel Weir Development has a canoe portage route that runs along the east side of the Eel Weir powerhouse with a put-in located just downstream of the tailrace area. The Browns Falls Development has informal access to the impoundment via the Newton Falls canoe put-in location. There are no formal recreation facilities at the South Edwards and Oswegatchie Developments.

2.2 APPLICANTS PROPOSAL

On February 18, 2011, Erie filed a comprehensive settlement agreement (Settlement) that was signed by FWS, New York DEC, National Park Service, New York State Council of Trout Unlimited (Trout Unlimited), Adirondack Park Agency, Adirondack Mountain Club, St. Lawrence County, Clifton-Fine Economic Development Corp., 5 Ponds Subcommittee, and Erie.⁴ The Settlement includes Erie's proposal for relicensing the Oswegatchie Project and supersedes Erie's proposal in the license application.

2.2.1 Proposed Project Facilities

Erie proposes to upgrade the existing project facilities by replacing the existing seasonal 2-foot-high flashboards at Browns Falls and South Edwards with year-round crest control devices that include 2-foot-high inflatable rubber dams and/or 2-foot-high flashboards. Erie also proposes to develop and implement a plan which provides for the installation of trashracks with 1-inch clear spacing over the full length and height of the existing intake or overlays from March 15 through November 30 of each year at Browns Falls, Flat Rock, South Edwards, Heuvelton, and Eel Weir (section 3.6 of the Settlement). Erie also proposes to install new downstream and upstream fish passage structures at Heuvelton and Eel Weir to facilitate movements of lake sturgeon, American eel, and other fish species March 15 through November 30 (section 3.6 of the Settlement).

⁴ The Commission issued a notice of the Settlement on February 28, 2011. Comments supporting the Settlement were filed by Interior, Trout Unlimited and New York DEC.

Erie proposes to amend the existing project boundary to: (1) enclose an existing access road and several proposed recreational facilities including a portage route with several put-in/take-out and signage locations, a boat launch, a fishing access area, and two parking areas at Browns Falls; (2) enclose an existing access road and a new portage route with several put-in/take-out and signage locations at Flat Rock; (3) enclose an existing access road and the primary transmission lines at South Edwards and Oswegatchie; and (4) enclose an existing access road and primary transmission line, and a new portage route with put-in/take-out locations at Heuvelton.

Erie also proposes to amend the project boundary to remove a 13.8 acre parcel of land (located immediately downstream of the Little River/Browns Falls Road crossing), a 1.5-acre parcel (located downstream of the Oswegatchie River/Skate Creek confluence) at Flat Rock, and a 33.2-acre parcel downstream of the Eel Weir powerhouse. Erie did not provide any justification for removing these lands from the project boundary.

Additionally, staff identified additional areas where the proposed and existing project differ. As shown in Appendix B, Figures 2-6, Erie's proposed project boundary does not completely align or coincide with the existing project boundary around each development. In particular, certain parcels of land licensed in 1983 that surround the project impoundments are no longer be included in the proposed project boundary. Erie does not address these discrepancies or identify any site-specific circumstances justifying these revisions to the project boundary (i.e., encroachments, change in land rights or ownership, reservoir inundation, approval of project facilities or project operation, and environmental considerations or measures, etc.).

2.2.2 Proposed Project Operation

Browns Falls

From March 15 through July 14, Erie proposes to maintain the Browns Falls impoundment between elevations 1,349 feet msl (top of the crest control devices) and 1,345 feet msl (4 feet below the top of the crest control devices) or between elevations 1,347 feet msl (spillway crest) and 1,343 feet msl (4 feet below the spillway crest) if the crest control devices fail during high flow events (section 3.1 of the Settlement).

From July 15 to March 14, Erie proposes to maintain the Browns Falls impoundment between elevations 1,349 feet msl (top of the crest control devices) and 1,347 feet msl (2 feet below the top of the crest control devices) or between elevations 1,347 feet msl (spillway crest) and 1,345 feet msl (2 feet below the spillway crest) if the crest control devices fail during high flow events (section 3.1 of the Settlement).

Erie proposes to replace the existing seasonal 2-foot-high flashboards with crest

control devices.⁵ The crest control devices would be set to fail if the impoundment elevation exceeds 1,351 feet msl (2 feet above the top of the crest control devices) during high flow events; (section 3.4 of the Settlement)

Erie also proposes to provide a minimum flow of 30 cfs in the Browns Falls bypassed reach year-round (section 3.3 of the Settlement).

Flat Rock

From March 15 through July 14, Erie proposes to maintain the Flat Rock impoundment between elevations 1,080 feet msl (spillway crest) and 1,076 feet msl (4 feet below the spillway crest). From July 15 to March 14, Erie proposes to maintain the Flat Rock impoundment between elevations 1,080 feet msl (spillway crest) and 1,078 feet msl (2 feet below the spillway crest, section 3.1 of the Settlement)

Erie also proposes to continue providing a minimum flow of 160 cfs, or inflow, whichever is less, downstream of the Flat Rock tailrace year-round (section 3.2 of the Settlement).

South Edwards

From March 15 through July 14, Erie proposes to maintain the South Edwards impoundment between elevations 845.2 feet msl (top of the crest control devices) and 839.2 feet msl (6 feet below the top of the crest control devices) or between elevations 843.2 feet msl (spillway crest) and 837.2 feet msl (6 feet below the spillway crest) if the crest control devices fail during high flow events (section 3.1 of the Settlement).

From July 15 to March 14, Erie proposes to maintain the South Edwards impoundment between elevations 845.2 feet msl (top of the crest control devices) and 843.2 feet msl (2 feet below the top of the crest control devices) or between elevations 843.2 feet msl (spillway crest) and 841.2 feet msl (2 feet below the spillway crest) if the crest control devices fail during high flow events (section 3.1 of the Settlement).

Erie proposes to replace the existing seasonal 2-foot-high flashboards with crest control devices. The crest control devices would be set to fail if the impoundment elevation exceeds 847.2 feet msl (2 feet above the top of the crest control devices) feet during high flow events (section 3.4 of the Settlement)

Erie also proposes to continue providing a minimum flow of 60 cfs in the South

⁵ A crest control device is either a 2-foot-high inflatable rubber dam and/or flashboards designed to remain in place year-round.

Edwards bypassed reach year-round and a minimum flow of 160 cfs or inflow to the impoundment, whichever is less, downstream of the South Edwards tailrace year-round (section 3.3 of the Settlement)

Oswegatchie

Erie proposes to continue maintaining the Oswegatchie impoundment between elevations 758.6 feet msl (spillway crest) and 758.2 feet msl (0.4 foot below the top of the spillway crest) year-round (section 3.1 of the Settlement).

Erie proposes to continue providing a minimum flow of 40 cfs in the Oswegatchie bypassed reach year-round (section 3.2 of the Settlement) and a minimum flow of 160 cfs, or inflow, whichever is less, downstream of the Oswegatchie tailrace year-round (section 3.3 of the Settlement).

Heuvelton

Erie proposes to maintain the Heuvelton impoundment between elevations 287.6 feet msl (top of the tainter gates) and 287.1 feet msl (0.5 foot below the top the tainter gates) year-round (section 3.1 of the Settlement).

Erie also proposes to provide a minimum flow of 275 cfs , or inflow to the impoundment, whichever is less, downstream of the Heuvelton tailrace year-round (section 3.2 of the Settlement)

Eel Weir

Erie proposes to maintain the Eel Weir impoundment between elevations 272 feet msl (top of the spillway crest) and 271.5 feet msl (0.5 foot below the top of the spillway crest, section 3.1 of the Settlement) year-round.

Erie also proposes to provide a minimum flow of 325 cfs, or inflow to the impoundment, whichever is less, below the Eel Weir tailrace year-round (section 3.2 of the Settlement).

2.2.3 Proposed Environmental Measures

As part of the Settlement, Erie proposes to implement the following environmental measures:

Project-Wide Measures (to be implemented at all 6 Developments)

- Notify the New York DEC if any New York State-listed species are

identified during operation, maintenance, or construction activities and consult with New York DEC prior to any major construction or maintenance activities to avoid effects on state-listed species (section 2.12 of the Settlement).

- Survey work areas for eagle and osprey nests prior to any tree clearing activities. If a nest is identified, develop and implement an Eagle and Osprey Management Plan to set limits on the size and timing of construction and land clearing activities near the nest (section 2.13 of the Settlement).
- Develop and implement an Invasive Species Management Plan (ISMP) with measures to prevent the introduction or spread of invasive species (section 2.14 of the Settlement).
- Implement the Recreation Management Plan (RMP) which includes: (1) allowing public access to all lands within the project boundary;⁶ (2) constructing or formalizing portage routes (from take-out to put-in) around each project dam; (3) posting signage to indicate the locations of project recreational facilities, and areas restricted from public access; (4) continuing operation and maintenance of project recreational facilities on a seasonal basis;⁷ and (5) developing an online and/or paper brochure that describes available recreational opportunities and historical information at the project developments (section 3.8 of the Settlement).
- Develop and implement a Stream Flow and Water Level Monitoring Plan with gages and equipment to determine headpond elevations and minimum flows (where applicable). The plan would include binary staff gages to permit independent verification by New York DEC, Interior and the Adirondack Park Agency (section 3.9 of the Settlement).

Browns Falls

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.

⁶ With the exception of lands and facilities specifically related to hydroelectric generation, including but not limited to dams, dikes, gates, intake structures, water conveyance structures, powerhouses, substations, transmission lines, and fenced areas.

⁷ The recreation season is typically defined as occurring from Memorial Day to Labor Day.

- Maintain a year-round 30-cfs minimum flow in the bypassed reach, as described in section 2.2.2, to enhance aquatic habitat in the bypassed reach during the winter.
- Replace the existing seasonal 2-foot-high flashboards with crest control devices (section 3.4 of the Settlement).
- Implement a Common Loon Nesting Platform Installation and Monitoring Plan which includes the deployment and monitoring of loon nesting platforms in the impoundment (section 3.5 of the Settlement).
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement
- Implement a Trout Stocking and Monitoring Plan with measures to establish a viable trout population in the bypassed reach between the Browns Falls dam and the tailrace (section 3.7 of the Settlement).
- Implement a Recreation Management Plan (RMP) which includes providing a picnic table near the Browns Falls powerhouse and formalizing the two existing informal parking areas: (1) near the Browns Falls dam, and (2) adjacent to the Browns Falls powerhouse (section 3.8 of the Settlement).

Flat Rock

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a 160 cfs year-round minimum flow, as described in section 2.2.2, to the tailrace to maintain aquatic habitat in the tailrace downstream of the development (section 3.2 of the Settlement).
- Implement a Common Loon Nesting Platform Installation and Monitoring Plan which includes the deployment and monitoring of loon nesting platforms in the impoundment (section 3.5 of the Settlement).
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement;
- Implement a Recreation Management Plan (RMP) which includes

modifying the existing parking area to provide an ADA-compliant parking space, installing an ADA-complaint picnic table at the existing picnic and day-use area, deploying a seasonal ADA-compliant floating dock upstream of the Flat Rock dam at the existing boat launch, and installing a three-sided educational and historical kiosk at the existing day-use area (section 3.8 of the Settlement).⁸

South Edwards

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a 160 cfs year-round minimum flow, as described in section 2.2.2, to the tailrace to maintain aquatic habitat in the tailrace downstream of the development (section 3.2 of the Settlement).
- Maintain year-round 60-cfs minimum flow in the bypassed reach, as described in section 2.2.2, to maintain aquatic habitat in the bypassed reach during the winter.
- Replace the existing seasonal 2-foot-high flashboards with crest control devices (section 3.4 of the Settlement).
- Implement a Common Loon Nesting Platform Installation and Monitoring Plan which includes the deployment and monitoring of loon nesting platforms in the impoundment (section 3.5 of the Settlement).
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement
- Implement a proposed Recreation Management Plan (RMP) which includes constructing a day-use and parking area with two picnic tables, and developing a foot trail from the proposed day-use area to a car-top boat launch to provide access to the South Edwards impoundment from the north shoreline adjacent to Route 58 (section 3.8 of the Settlement).⁹

⁸ Improving access for individuals with disabilities at the project would be consistent with the Commission's policy on recreational facilities at licensed projects under which licensees are expected to consider the needs of individuals with disabilities in the design and construction of such facilities [See 18 CFR section 2.7(b)].

⁹ If determined through further design of the day-use area adjacent to Route 58

Oswegatchie

- Limit impoundment fluctuations as described in section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a 160 cfs year-round minimum flow, as described in section 2.2.2, to the tailrace to maintain aquatic habitat in the tailrace downstream of the development.
- Maintain a year-round 40-cfs minimum flow in the bypassed reach, as described in section 2.2.2, to enhance aquatic habitat in the bypassed reach.
- Implement a Common Loon Nesting Platform Installation and Monitoring Plan which includes the deployment and monitoring of loon nesting platforms in the impoundment (section 3.5 of the Settlement).

Heuvelton

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a 275 cfs year-round minimum as described in section 2.2.2, to maintain aquatic habitat downstream in the tailrace of the development.
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement.
- Construct an operate fishways, as described in section 2.2.1, to facilitate upstream and downstream the passage of fish at the development (section 3.6 of the Settlement).
- Develop and implement a Fishway Effectiveness Plan to evaluate the effectiveness of the proposed upstream and downstream fish passage facilities (section 3.6 of the Settlement).
- Implement a proposed Recreation Management Plan (RMP) which includes

proves infeasible for development, Erie proposes to construct a parking area and install picnic tables on the south shoreline of the South Edwards impoundment adjacent to the proposed portage route around the South Edwards dam.

maintaining the existing picnic area adjacent to the Heuvelton powerhouse, as well as developing a boat launch and parking area immediately upstream from the existing Heuvelton day-use area with capacity for three cars with trailers (section 3.8 of the Settlement).

Eel Weir

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a 325 cfs year-round minimum as described in section 2.2.2, to maintain aquatic habitat downstream in the tailrace of the development.
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement.
- Construct an operate fishways, as described in section 2.2.1, to facilitate upstream and downstream the passage of fish at the development (section 3.6 of the Settlement).
- Develop and implement a Fishway Effectiveness Plan to evaluate the effectiveness of the proposed upstream and downstream fish passage facilities (section 3.6 of the Settlement).

2.2.4 Modifications to Applicant's Proposal – Mandatory Conditions

The following mandatory conditions have been provided and are evaluated as part of Erie's proposal.

Section 18 Prescriptions

Interior's section 18 prescription specifies for the Eel Weir and Heuvelton Developments: (1) construction of rock ramps or vertical slot fishways for upstream passage of American eel; (2) construction of fishways for upstream and downstream passage of lake sturgeon, other fish species, operated annually from March 15 through November 30 of each year; and (3) a Fishway Effectiveness Plan to evaluate the effectiveness of the proposed upstream and downstream fish passage facilities. Interior did not specify any fish passage facilities at the other developments.

Interior also requests that any license issued for the project include a reservation of authority to prescribe fishways under section 18 of the FPA.

2.3 STAFF ALTERNATIVE

Under the staff alternative, the project license would include Erie's proposed measures as well as the following measures identified and recommended by staff: (1) development and implementation of an erosion and sediment control plan and (2) modification of the Recreation Management Plan to include installation of three separate parallel boat slides along steep sections of the proposed portage routes at Flat Rock and South Edwards. Proposed and recommended measures are discussed under the appropriate resource sections and summarized in section 5 of the EA.

The staff alternative also includes fish and wildlife recommendations made by Interior and New York DEC under section 10(j) of the FPA.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

We considered several alternatives to the applicant's proposal, but eliminated them from further analysis because they are not reasonable in the circumstances of this case. They are: (1) issuing a non-power license; (2) Federal Government takeover of the project; and (3) retiring the project.

2.4.1 Issuing a Non-power License

A non-power license is a temporary license that the Commission will terminate when it determines that another government agency will assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this point, no agency has suggested a willingness or ability to do so. No party has sought a non-power license and we have no basis for concluding that the project should no longer be used to produce power. Thus, we do not consider issuing a non-power license a realistic alternative to relicensing in this circumstance.

2.4.2 Federal Government Takeover

We do not consider federal takeover to be a reasonable alternative. Federal takeover and operation of the project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence to indicate federal takeover should be recommended by Congress. No party has suggested federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

2.4.3 Retiring the Project

Project retirement could be accomplished with or without dam removal. Either alternative would involve denial of the relicense application and surrender or termination

of the existing license with appropriate conditions.

No participant has suggested that dam removal would be appropriate in this case, and we have no basis for recommending it. The power generated by the Oswegatchie Project is an important resource, and is relied upon to provide clean, renewable energy. This source of power would be lost if the project were retired, and replacement power would need to be found. There also would be significant costs associated with retiring the development's powerhouses and appurtenant facilities. In addition, the impoundments at the Flat Rock, Browns Falls, Eel Weir and Heuvelton serve as an important recreational resource in the area. Thus, dam removal is not a reasonable alternative to relicensing the project with appropriate protection, mitigation and enhancement measures.

The second project retirement alternative would involve retaining the dam and disabling or removing equipment used to generate power. Project works would remain in place and could be used for historic or other purposes. This would require us to identify another government agency with authority to assume regulatory control and supervision of the remaining facilities. No agency has stepped forward, and no participant has advocated this alternative. Nor have we any basis for recommending it. Because the power supplied by the project is needed, a source of replacement power would have to be identified. In these circumstances, we don't consider removal of electric generating equipment to be a reasonable alternative.

3.0 ENVIRONMENTAL ANALYSIS

This section includes: (1) a general description of the project vicinity; (2) an explanation of the scope of cumulative effects analysis; and (3) our analysis of the proposed action and recommended environmental measures. Sections are organized by resource area (aquatic recreation, etc). Historic and current conditions are described under each resource area. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared including an assessment of the effects of the proposed mitigation, protection, and enhancement measures, and any cumulative effects of the proposed action and alternatives. Staff conclusions and recommendations are discussed in section 5.2 of the EA, *Comprehensive Development and Recommended Alternative*.¹⁰

3.1 General Description of the Oswegatchie River Basin

The Oswegatchie River is a tributary to the St. Lawrence River. The headwaters of the Oswegatchie River are located within the northwestern Adirondack Mountains. The mainstem of the Oswegatchie River generally flows in a westerly direction until it reaches the St. Lawrence/Jefferson County line where it turns in a more north-easterly direction until emptying into the St. Lawrence River in Ogdensburg, New York. The Oswegatchie River is navigable from Cranberry Lake downstream to the St. Lawrence River.

The Oswegatchie River is approximately 132 miles in length with a total drainage area of 1,034 square miles. The Oswegatchie watershed contains 1,344 miles of streams, 82,814 acres of wetlands, and encompasses portions of five counties (St. Lawrence, Jefferson, Lewis, Herkimer, and Hamilton), but is predominantly located in St. Lawrence County. The Indian, Black, Raquette, and Grasse River watershed also border the Oswegatchie River and drain into the St. Lawrence River. The Oswegatchie River is characterized as a sixth order stream from the confluence with the West Branch (River Mile 70) to the confluence with the Indian River (River Mile 6.3), where it becomes a seventh order stream.

The Oswegatchie River flows through four ecological zones: the central Adirondacks upstream of Newton Falls; Western Adirondack foothills; the Transition Zone from Newton Falls to Gouverneur; and the St. Lawrence Plan from Gouverneur to the St. Lawrence River. The topography of the watershed is characterized by mountains to the east, and areas of small hills with exposed bedrock to the west as elevations

¹⁰ Unless noted otherwise, the source of our information is the license application (Erie Boulevard Hydropower, L.P, 2010).

decrease as the Oswegatchie River approaches the St. Lawrence River (FERC, 2011).

The Oswegatchie Projects six developments are part of 20 other hydroelectric developments from the headwaters to the mouth of the river.

3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (40 CFR § 1508.7), an action may cause cumulative effects on the environment if its impacts overlap in time and/or space with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

In our scoping document, we identified water quality and aquatic habitat as having the potential to be cumulatively affected by continued operation of the Oswegatchie Project. Subsequently, based on our review of the license application and agency and public comments, we determined that aquatic resources and habitat have the potential to be cumulatively affected by the continued operation of the project, in combination with other past, present, and future activities. Aquatic resources and habitat were selected because the Oswegatchie Project, in combination with 14 other hydroelectric developments in the Oswegatchie River basin may cumulatively affect these resources in the Oswegatchie River through cumulative changes in flow, impoundment fluctuations, and by affecting fish passage.

3.2.1 Geographic Scope

The geographic scope of the cumulative analysis defines the physical limits or boundaries of the proposed action's effect on the resources. We have identified the scope for aquatic resources and habitat and recreational resources to include the entire Oswegatchie River Basin because the Oswegatchie Project includes 6 of 20 hydroelectric developments located from the headwaters to the mouth of the river that may cumulatively affect aquatic, recreational, and cultural resources of the basin.

3.2.2 Temporal Scope

The temporal scope of our cumulative effects analysis includes a discussion of past, present, and future actions and their effects on aquatic habitat. Based on the potential new license term, the temporal scope looks 30 to 50 years into the future, concentrating on the effects on the resources from reasonably foreseeable future actions.

3.3 PROPOSED ACTION AND ACTION ALTERNATIVES

In this section, we discuss the project effects of the project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the specific cumulative and site-specific environmental issues.

Only the resources that would be affected, or about which comments have been received, are addressed in detail in this EA. Based on this, we have determined that water quality and quantity, aquatic, terrestrial, threatened and endangered species, recreation, and cultural resources may be affected by the proposed action and alternatives. We have not identified any substantive issues related to socioeconomics and aesthetics associated with the proposed action, and therefore, these resources are not addressed in the EA. Land use is addressed in both the terrestrial and recreation sections. We present our recommendations in section 5.2, *Comprehensive Development and Recommended Alternative*.

3.3.1 Geology and Soils

3.3.1.1 Affected Environment

The four upstream developments (i.e., Browns Falls, Flat Rock, South Edwards, and Oswegatchie) are located in the Adirondack Mountain geologic region which consists primarily of metasedimentary and metavolcanic rocks including gneiss, marble, and quartzite. The remaining two downstream developments (i.e., Heuvelton and Eel Weir) are located in the St. Lawrence Lowland geologic region which consists primarily of Cambro-Ordovician sandstone and limestone bedrock.

Soil in the Adirondack Mountain region and in the area of the four upstream developments ranges from shallow to very deep, moderately well-drained to excessively drained, and consist of Tunsbridge-Potsdam-Lyman Unit (occurring in approximately 22 percent of the county) and the Adams- Croghan Unit (occurring in approximately 5 percent of the county). The shoreline surrounding the four upstream developments consists primarily of exposed bedrock, rocky out-crops, and large boulders. Within the St. Lawrence Lowland and along the shoreline of the two downstream developments, the soils consist of the Hogansburg-Muskellunge-Grenville Unit, the Muskellunge-Adjidaumo-Swanton Unit, and the Insula-Summerville-Quetico Unit. These soil units generally exhibit flatter topography, are very deep, and are moderately to very poorly drained.

3.3.1.2 Environmental Effects

Erie proposes several construction activities, including: (1) providing a new canoe

portage route around the Browns Falls dam, providing fishing access and signage downstream of the Brown Falls powerhouse, and performing improvements to two existing parking areas adjacent to Brown Falls dam and powerhouse; (2) providing a new canoe portage route around the Flat Rock dam, performing improvements to an existing boat launch facility and parking area, and installing a new information kiosk at the Flat Rock development; (3) providing a new canoe portage route around the South Edwards and dam and providing a parking and a picnic area upstream of the South Edwards dam; (4) providing a new canoe portage route around the Oswegatchie dam; (5) providing a new canoe portage route around the Heuvelton dam, providing a boat launch and parking area upstream of the Heuvelton powerhouse, and constructing upstream and downstream fish passage facilities at the Heuvelton dam; and (6) performing improvements to an existing canoe portage route around the Eel Weir dam, and constructing upstream and downstream fish passage facilities at the Eel Weir dam.

Erie proposes to implement best management practices during construction of recreational facilities. However, they do not specify what measures would be used or propose any measures to address potential erosion and sedimentation during construction of the fish passage facilities.

Staff Analysis

Sediments from construction materials and equipment could be released into the river, impoundments, and wetland areas during installation of boat ramps, canoe put-in and take-out locations, and construction of fish passage facilities. Sediments can clog stream channels and affect aquatic resources by covering fish spawning habitat and reducing downstream water quality. The movement of personal and heavy equipment in and around water during construction would also likely result in localized short-term shoreline erosion and sedimentation. Further, areas cleared of stabilizing vegetation to make way for the recreational enhancements, including the canoe portage trails, parking and picnic, informational kiosk, and boat launch areas, could increase erosion and sedimentation that may affect water quality.

The implementation of best management practices as proposed by Erie could reduce erosion and sedimentation in and around the construction areas; however, Erie's proposal lacks detail regarding the actual site conditions, an implementation schedule, and any necessary monitoring or maintenance programs. The proposal also does not include any measures for limiting potential sedimentation during construction activities involved with the fish passage facilities. Development of a detailed erosion and sediment control plan, in consultation with the agencies, would include these additional details and measures and would ensure that any adverse effects on soils and water resources from erosion and sedimentation would be minimized during project construction and operation.

3.3.2 Aquatic Resources

3.3.2.1 Affected Environment

Water Quantity

Browns Falls

The drainage area at the Browns Falls Development is approximately 178 square miles. Table 2 summarizes flow data from the United States Geological Survey (USGS) Gage No. 04262000, located at the Flat Rock Development that has been adjusted based on the size of the drainage area at the Browns Falls development.

Table 2. Summary of flow data for the Browns Falls Development (Source: application)

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	403	5	2,378	671	181
February	365	4	1,484	562	174
March	483	4	1,959	859	213
April	694	44	2,605	1,196	262
May	473	2	2,062	873	180
June	289	4	1,924	494	124
July	237	1	1,773	390	103
August	210	2	1,113	342	97
September	227	3	1,429	384	95
October	286	2	1,498	467	124
November	374	4	1,663	664	144
December	384	2	1,636	637	169
Annual	368	1	2,605	694	135

Flat Rock

The drainage area at the Flat Rock Development is approximately 262 square miles. Table 3 summarizes flow data from the USGS Gage No. 04262000 located at the Flat Rock Development.

Table 3. Summary of flow data for the Flat Rock Development (Source: application)

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	593	8	3,500	987	266
February	537	6	2,185	827	257
March	711	6	2,883	1,264	314
April	1,022	65	3,834	1,760	386
May	696	3	3,035	1,285	265
June	426	5	2,832	727	182
July	349	1	2,610	574	152
August	309	3	1,639	503	143
September	334	4	2,104	565	140
October	421	3	2,205	687	182
November	550	5	2,448	977	211
December	566	3	2,408	937	249
Annual	542	1	3,834	1,022	199

South Edwards

The drainage area at the South Edwards Development is approximately 277 square miles. Table 4 summarizes flow data from the USGS Gage No. 04262000, located at the Flat Rock Development, that has been adjusted based on the size of the drainage area at the South Edwards Development.

Table 4. Summary of flow data for the South Edwards Development (Source: application)

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	627	8	3,700	1,044	282
February	568	6	2,310	874	271
March	752	6	3,048	1,337	332
April	1,080	68	4,053	1,861	408
May	736	3	3,208	1,358	280
June	450	5	2,995	769	193
July	369	1	2,759	607	160
August	327	3	1,733	532	151
September	353	4	2,225	598	148
October	445	4	2,332	726	193
November	581	6	2,588	1,033	224
December	598	3	2,545	991	264
Annual	573	1	4,053	1,080	211

Oswegatchie

The drainage area at the Oswegatchie Development is approximately 279 square miles. Table 5 summarizes flow from the USGS Gage No. 04262000, located at the Flat

Rock Development, that has been adjusted based on the size of the drainage area at the Oswegatchie Development.

Table 5. Summary of flow data for the Oswegatchie Development (Source: application)

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	632	8	3,727	1,051	284
February	572	6	2,327	881	273
March	757	6	3,070	1,347	334
April	1,080	69	4,083	1,874	411
May	741	3	3,232	1,368	282
June	453	5	3,016	775	194
July	372	1	2,779	612	162
August	330	3	1,745	535	152
September	355	4	2,241	602	149
October	448	4	2,348	731	194
November	586	6	2,607	1,041	225
December	602	3	2,564	998	266
Annual	577	1	4,083	1,088	212

Heuvelton

The drainage area at the Heuvelton Development is approximately 995 square miles. Table 6 summarizes flow data from the USGS Gage No. 04263000, located at Heuvelton.

Table 6. Summary of flow data for the Heuvelton Development (Source: application)

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	1,869	326	15,394	3,849	651
February	1,634	326	14,605	3,207	641
March	3,045	396	15,493	6,306	908
April	4,145	644	18,947	7,352	1,589
May	2,098	422	10,559	3,956	825
June	1,121	189	9,967	2,003	455
July	751	128	4,589	1,331	337
August	622	106	4,786	1,066	292
September	717	128	7,036	1,205	308
October	1,172	188	7,579	2,309	404
November	1,818	225	12,039	3,533	602
December	1,973	337	10,855	3,730	789
Annual	1,743	106	18,947	3,977	427

Eel Weir

The drainage area at the Eel Weir Development is approximately 1,590 square miles. Table 8 summarizes flow data from the USGS Gage No. 04263000, located at

Heuvelton, that has been adjusted based on the size of the drainage area at the Eel Weir Development

Table 7. Summary of flow data for the Eel Weir Development (Source: application)

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)	10% Exceedance	90% Exceedance
January	3,054	532	25,156	6,289	1,064
February	2,670	532	23,866	5,241	1,048
March	4,976	647	25,317	10,304	1,484
April	6,773	1,053	30,961	12,014	2,596
May	3,429	690	17,255	6,465	1,348
June	1,831	310	16,287	3,274	743
July	1,228	210	7,498	2,175	550
August	1,016	173	7,821	1,742	477
September	1,172	210	11,498	1,969	503
October	1,915	308	12,385	3,773	660
November	2,971	368	19,673	5,773	984
December	3,224	552	17,738	6,096	1,290
Annual	2,848	173	30,961	6,499	698

Water Quality Standards

New York DEC designates the Oswegatchie River from its mouth to Rensselaer Falls as Class B. This section includes the Heuvelton and Eel Weir Developments. New York DEC lists the best uses for Class B waters as primary and secondary contact recreation and fishing. Class B waters are suitable for fish propagation and survival.

New York DEC designates the Oswegatchie River from Talcville to Newton Falls as Class C. This section includes the Browns Falls, Flat Rock, South Edwards, and Oswegatchie Developments. New York DEC lists the best uses of Class C waters as fishing. Class C waters are suitable for fish propagation and survival.

Numeric water quality standards for both Class B and Class C waters include: pH between 6.5 and 8.5, minimum daily average dissolved oxygen (DO) concentration of not less than 6.0 milligrams per liter (mg/l), and an instantaneous minimum DO concentration of 5.0 mg/l.

Water Quality

Water quality in the Oswegatchie River is generally high and none of the project waters are listed on the CWA 303(d) list of impaired waters. Erie conducted water quality sampling during 2007, 2008, and 2009 in project impoundments, tailraces, and bypassed reaches.

DO met or exceeded state water quality standards at all sampling times and

locations. Additionally, both DO and water temperature were similar between impoundments, tailraces, and bypassed reaches, indicating that project operations have little to no effect on these parameters. Several samples documented pH levels below water quality standards; however, this was attributed to the low buffering capacity of the water, typical of the Adirondack region, and is not related to project operation.

Fisheries Resources

The fishery of the Oswegatchie River in the project vicinity consists of a mix of warm, coolwater, and coldwater species. Erie conducted fish surveys from May to November, 2009, using gillnets, boat and backpack electrofishing, trawling, and angling. The most abundant species captured during the surveys were yellow perch, pumpkinseed, and minnow species such as bluntnose minnow, cutlips minnow, and golden shiner. Table 8 shows the fish species collected during the surveys.

Table 8. Fish species collected from the project vicinity in 2009, all gear types and seasons combined. (Source: application).

Species		Development ¹					
Scientific	Common	Browns Falls	Flat Rock	South Edwards	Oswegatchie ²	Heuvelton	Eel Weir
Acipenseridae	Sturgeons						
<i>Acipenser fulvescens</i>	Lake sturgeon					X	X
Amiidae	Bowfins						
<i>Amia calva</i>	Bowfin						X
Atherinidae	Silversides						
<i>Labidesthes sicculus</i>	Brook silverside					X	X
Catostomidae	Suckers						
<i>Catostomus commersonii</i>	White sucker	X	X	X		X	X
<i>Moxostoma anisurum</i>	Silver redhorse					X	X
Centrarchidae	Sunfish						
<i>Ambloplites rupestris</i>	Rock bass	X	X	X	X	X	X
<i>Lepomis gibbosus</i>	Pumpkinseed	X	X	X		X	X
<i>Lepomis macrochirus</i>	Bluegill	X				X	X
<i>Micropterus dolomieu</i>	Smallmouth bass	X	X	X	X	X	X
<i>Micropterus salmoides</i>	Largemouth bass	X	X	X		X	X
<i>Pomoxis nigromaculatus</i>	Black crappie	X	X	X		X	X
Cyprinidae	Carps and Minnows						
<i>Cyprinella spilopterus</i>	Spotfin shiner				X	X	
<i>Cyprinus carpio</i>	Common carp				X	X	X
<i>Exoglossum maxillingua</i>	Cutlips minnow	X		X	X		
<i>Notemigonus crysoleucas</i>	Golden shiner	X	X	X		X	X
<i>Notropis atherinoides</i>	Emerald shiner	X				X	X
<i>Notropis sp.</i>	Unidentified shiner					X	
<i>Pimephales notatus</i>	Bluntnose minnow	X	X	X		X	X
<i>Rhinichthys atratulus</i>	Blacknose dace	X		X			
<i>Rhinichthys sp.</i>	Unidentified dace	X	X				X
<i>Semotilus atromaculatus</i>	Creek chub	X	X				
<i>Semotilus corporalis</i>	Fallfish	X	X	X		X	X
Esocidae	Pike						
<i>Esox lucius</i>	Northern pike	X	X	X		X	X
<i>Esox masquinongy</i>	Muskellunge						X
Fundulidae	Killifishes						
<i>Fundulus diaphanus</i>	Banded killifish	X	X	X			X
Gadidae	Cods						
<i>Lota lota</i>	Burbot					X	X
Hiodontidae	Mooneyes						
<i>Hiodon tergisus</i>	Mooneye					X	X
Ictaluridae	North American Catfish						
<i>Ictalurus nebulosus</i>	Brown bullhead	X	X	X		X	X
<i>Ictalurus punctatus</i>	Channel catfish	X	X	X		X	X
<i>Noturus sp.</i>	Madtom sp.						X
Lepisosteidae	Gars						
<i>Lepisosteus osseus</i>	Longnose gar					X	X

Percidae	Perch						
<i>Ammocrypta pellucida</i>	Eastern sand darter						X
<i>Etheostoma oimstedi</i>	Tessellated darter					X	X
<i>Etheostoma flabellare</i>	Fantail darter						X
<i>Etheostoma nigrum</i>	Johnny darter						X
<i>Perca flavescens</i>	Yellow perch	X	X	X		X	X
<i>Percina caprodes</i>	Logperch					X	X
<i>Sander vitreus vitreus</i>	Walleye	X	X	X		X	X
Petromyzontidae	Lampreys						
<i>Ichthyomyzon unicuspis</i>	Silver lamprey					X	X
Salmonidae	Trouts						
<i>Salvelinus fontinalis</i>	Brook trout	X	X	X			
Umbridae	Mudminnow						
<i>Umbra limi</i>	Central mudminnow		X	X			X
Total Species¹		21	18	19	4	27	33

1. Development includes the associated reservoir, tailrace, and bypassed reach.
2. Sampling in this development was limited to angling and backpack electrofishing in the tailrace and bypassed reach due to access limitations.
3. Excluding unidentified species

3.3.2.2 Environmental Effects

Impoundment Fluctuations

Erie proposes the following daily impoundment fluctuation limits:

Maintain the Browns Falls impoundment between elevations 1,349 feet msl (top of the crest control devices) and 1,345 feet msl (4 feet below the top of the crest control devices) or between elevations 1,347 feet msl (spillway crest) and 1,343 feet msl (4 feet below the spillway crest) if the flashboards fail during high flow from July 15 through March 14; maintain the reservoir between elevations 1,349 feet msl (top of the crest control devices) and 1,347 feet msl (2 feet below the top of the crest control devices) or between elevations 1,347 feet msl (spillway crest) and 1,345 feet msl (2 feet below the spillway crest) if the flashboards fail during high flow From March 15 through July 14.

Maintain the Flat Rock impoundment between elevations 1,080 feet msl (spillway crest) and 1,076 feet msl (4 feet below the spillway crest) from July 15 through March 14; maintain the reservoir between elevations 1,080 feet msl (spillway crest) and 1,078 feet msl (2 feet below the spillway crest) from March 15 through July 14.

Maintain the South Edwards impoundment between elevations 845.2 feet msl (top of the crest control devices) and 839.2 feet msl (6 feet below the top of the crest control devices) or between elevations 843.2 feet msl (spillway crest) and 837.2 feet msl (6 feet below the spillway crest) if the flashboards fail during high flow from July 15 through March 14; maintain the impoundment between elevations 845.2 feet msl (top of the crest control devices) and 843.2 feet msl (2 feet below the top of the crest control devices) or between elevations 843.2 feet msl (spillway crest) and 841.2 feet msl (2 feet below the spillway crest) if the flashboards fail during high flow from March 15 through July 1.

Maintain the Oswegatchie impoundment between elevations 758.6 feet msl (crest of the spillway) and 758.4 feet msl (0.4 feet below the spillway crest).

Maintain the Heuvelton impoundment between elevations 287.6 feet msl (top of the tainter gates) and 287.1 feet msl (0.5 foot below the top of the tainter gates).

Maintain the Eel Weir impoundment between elevations 272 feet msl (top of the tainter gates) and 271.5 feet msl (0.5 foot below the top of the tainter gates).

The proposed impoundment fluctuation limits are consistent with section 3.1 of the Settlement as well as New York DEC's and Interior's 10(j) recommendation #1.

To better control seasonal impoundment fluctuations, Erie proposes to replace the existing seasonal 2-foot-high flashboards with crest control devices at the Browns Falls

and South Edwards Developments. This proposal is consistent with section 3.4 of the Settlement as well as New York DEC's and Interior's 10(j) recommendation #2.

Staff Analysis

Browns Falls, Flat Rock, and South Edwards

The current license does not restrict daily impoundment fluctuations at Browns Falls, Flat Rock, and South Edwards. Throughout most of the current license term and prior to 2008, Erie has occasionally operated these developments with daily fluctuations of as much as 8 feet. However, since 2008, Erie has typically limited daily fluctuations at these 3 developments to 3 feet or less below the top of the flashboards, when installed, or below the spillway crests when not installed. The proposed and recommended daily fluctuation limits would vary seasonally. From July 15 through March 14, the limits would be 4 feet at Browns Falls and Flat Rock, and 6 feet at South Edwards. From March 15 through July 14, the daily fluctuation limits at these three developments would be 2 feet.

Impoundment fluctuations affect aquatic resources by dewatering littoral habitat, which often includes beds of aquatic vegetation, submerged large woody debris, and areas of sand and gravel, habitat types that are used by a variety of fish species for cover, foraging, and spawning. Under the proposed and recommended daily fluctuation limits, littoral habitat at Browns Falls, Flat Rock, and South Edwards would be maintained and better protected than under the current license. According to the bathymetry data collected during Erie's impoundment fluctuation study, limiting the Browns Falls fluctuations to 4 feet compared to 8 feet under the existing license would prevent 23 acres of littoral habitat from being dewatered. For Flat Rock, the change from an 8-foot drawdown to a 4-foot drawdown would prevent dewatering 21 acres. For South Edwards, the change from an 8-foot drawdown to a 6-foot drawdown would prevent dewatering 6 acres. During the spring and early summer, the daily fluctuation limit would be 2 feet at all three developments. Because fish species such as largemouth bass, smallmouth bass, pumpkinseed, and bluegill spawn in shallow water during the spring and early summer, limiting daily fluctuations to 2 feet during this period would ensure habitat conditions are maintained during the spawning season and could result in higher reproductive success for these species.

Replacing the existing seasonal 2-foot-high flashboards at Browns Falls and South Edwards with more permanent crest control devices would reduce the frequency of flashboard failures and reduce the amount of time required to refill the impoundments, which in turn would protect littoral habitat by reducing the occurrence of unplanned drawdowns.

Oswegatchie, Heuvelton, and Eel Weir

The current license limits daily impoundment fluctuations at Oswegatchie to 0.4 foot, which is the same as the proposed and recommended daily limit. There are no limitations on daily drawdowns at Heuvelton and Eel Weir under the current license; however, Erie typically operates both with 0.5 foot or less of daily fluctuation. The proposed and recommended limits of 0.5 foot at Heuvelton and Eel Weir would make Erie's current operation at Heuvelton and Eel Weir a license requirement rather than a voluntary action. There would be no effect on aquatic resources. Daily impoundment fluctuations would continue to be minimal and littoral habitat and associated fish and other aquatic species would be maintained the same as under the current license.

Minimum Project Base Flows

Erie proposes to release the following minimum base flows, or inflows, whichever is less, into the tailraces of each of the following developments:

- Flat Rock: 160 cfs
- South Edwards: 160 cfs
- Oswegatchie: 160 cfs
- Heuvelton: 275 cfs
- Eel Weir: 325 cfs

This proposal is consistent with section 3.2 of the Settlement as well as New York DEC's and Interior's 10(j) recommendation #4.

Staff Analysis

The proposed and recommended minimum base flows are the same as those required by the current license. Therefore, these flows would provide the same amount of habitat and water quality conditions as have existed under the current license. The existing aquatic communities have persisted during the current license term; therefore, continuing to provide base flows should adequately support and maintain existing aquatic communities. Based on the flow duration curves for the project, flows downstream of the developments would continue to exceed these minimums between 90 and 98 percent of the time.

Flows in Bypassed Reaches

Erie proposes to release the following year-round minimum flows, or inflows whichever is less, into the bypassed reaches of the following developments:

- Browns Falls: 30 cfs
- South Edwards: 60 cfs
- Oswegatchie: 40 cfs

This proposal is consistent with section 3.3 of the Settlement as well as New York DEC's and Interior's 10(j) recommendation #5 (South Edwards and Oswegatchie developments) and recommendation #6 (Browns Falls).

Staff Analysis

The proposed and recommended minimum year-round flows for the South Edwards and Oswegatchie bypassed reaches are the same as those required by the current license. Therefore, these flows would provide the same amount of habitat and water quality conditions as have existed under the current license. The existing aquatic communities have persisted during the current license term; therefore, continuing to provide base flows should adequately support and maintain existing aquatic communities in the South Edwards and Oswegatchie bypassed reaches.

Erie conducted a Delphi study¹¹ of the Browns Falls bypassed reach and evaluated habitat conditions in relation to management goals for flows of 15, 23, 30, and 45 cfs. The results are presented in table 9. A flow of 45 cfs scored better than 30 cfs for meeting six of the management goals for the bypassed reach, including providing open water and overwintering habitat for trout. A flow of 30 cfs scored moderate to high on all except one management goal, providing walleye spawning habitat. A flow of 15 cfs scored low to moderate on eleven of the management goals. Based on the Delphi study, providing a year-round flow of 30 cfs in the Browns Falls bypassed reach would enhance overwintering habitat for trout from October 1 through March 31, compared to the current 15 cfs during this period. For the remainder of the year, habitat conditions, and the likelihood of achieving management goals, would be the same as the current flow regime.

¹¹ A Delphi study is a consensus-based demonstration flow study which evaluates the relationship of various flow releases with the aquatic habitat requirements of several target species and other flow dependent criteria such as angling opportunities.

Table 9. Browns Falls Bypassed Reach Management Goal Attainment Scoring Summary (Source: application)

Flow-Dependent River Management Goals	Browns Falls	Browns Falls	Browns Falls	Browns Falls
	<i>Bypassed Reach</i>	<i>Bypassed Reach</i>	<i>Bypassed Reach</i>	<i>Bypassed Reach</i>
	Flow Observed			
	15 cfs	23 cfs	30 cfs	45 cfs
Provide adequate flow for open water brook/brown trout habitat (all life stages)	1.5	2	2.5	3
Provide adequate flow for overwinter survival of brook/brown trout and incubating eggs (all life stages)	2	2.25	2.5	3
Provide a flow that supports quality sport fishing conditions	2	2.5	2.5	2.5
Provide adequate flow to support walleye spawning habitat	1	1.5	1.5	2
Provide adequate flow to support walleye non-spawning habitat	1.5	2	2	2.5
Provide a flow that minimizes vulnerability of fish to poaching	1.5	1.5	2	2.5
Provide adequate flow to support lake sturgeon (all life stages) (may need separate spawning flows and adequate flows for lake sturgeon spawning)	N/A	N/A	N/A	N/A
Provide adequate flow to support continued survival and growth of American eel	N/A	N/A	N/A	N/A
Provide adequate flow to support survival and growth of eastern sand darter (all life stages)	N/A	N/A	N/A	N/A
Provide adequate flow to support survival and growth of mooneye (all life stages)	N/A	N/A	N/A	N/A
Continue to support wetland habitat	2	2.5	3	3
Provide adequate flow to support survival and growth of longnose dace	1.5	2	2.5	3
Provide adequate flow to support survival and growth of macroinvertebrates	1.5	2	2.5	2.5
Provide adequate flow to support smallmouth bass (all life stages)	2.5	3	3	3
Provide adequate flow to support fall fish (all life stages)	2.5	3	3	2.5
Support northern pike habitat requirements (all life stages)	2	2	2.5	2.5
Provide adequate flow to support white sucker (all life stages)	2	2.5	2.5	2.5

Attainment Scoring Guide:

0 - Management goal not met; 1 - Low management goal attainment; 2 - Moderate management goal attainment; 3 - High management goal attainment; N/A - Goal not applicable at this site

Flow and Impoundment Elevation Monitoring

Erie proposes to develop and implement a Stream Flow and Water Level Monitoring Plan with gages and equipment to determine headpond elevations and minimum flows. The plan would include binary staff gages to permit independent verification by New York DEC, Interior, and the Adirondack Park Agency. The plan would specify that within 24 months of license issuance, Erie would ensure maintenance of the USGS gage at Flat Rock, or, at Erie's discretion, provide an alternate means of providing equivalent, real-time data to New York DEC, Interior, and the general public.

This proposal is consistent with section 3.9 of the Settlement as well as New York DEC's and Interior's 10(j) recommendation #8.

Staff Analysis

Any plan that is developed would include protocols for maintaining and calibrating equipment, as well as specify the frequency and methods for reporting monitoring data. The proposed gages and equipment would collectively provide an effective means of determining compliance with the required minimum base flows in the tailraces, minimum flows in the bypassed reaches, and reservoir daily fluctuation limits.

Trout Stocking and Monitoring Plan

Erie proposes to implement the Trout Stocking and Monitoring Plan with measures to establish a viable trout population in the bypassed reach between the Browns Falls dam and tailrace. This proposal is consistent with section 3.7 of the Settlement as well as New York DEC's and Interior's 10(j) recommendation #7.

Staff Analysis

As discussed above, one of the management goals for the Browns Falls bypassed reach is to enhance the trout population. The proposed trout stocking and management plan includes stocking brook trout (unless New York DEC requests a change to brown trout or a mixture of both species) into the Browns Falls bypassed reach, monitoring water temperature in the bypassed reach continuously from 2013 through 2017, and monitoring the success of the trout stocking by conducting sampling in 2014, 2016, and 2018. Implementing the plan, in combination with increasing the minimum bypassed reach flow from 15 cfs to 30 cfs from October 1 through March 31, is likely to increase trout populations in the Browns Falls bypassed reach. The proposed water quality and trout monitoring would measure the success of the plan, and provide information to guide any changes in the numbers or species of trout stocked into the bypassed reach, if appropriate.

Fish Protection

Erie proposes to develop and implement a trashrack installation and monitoring plan which would include the installation of trashracks with 1-inch clear spacing over the full length and height of the existing intakes at all of the developments except Oswegatchie, which already has permanent trashracks with 1-inch clear spacing. The installation would either be permanent trashracks or overlays that would be installed from March 15 through November 30 of each year. This proposal is consistent with section 3.6 of the Settlement as well as New York DEC's 10(j) recommendation #9.

Staff Analysis

The existing trashracks have clear spacings of 2.5 inches at Browns Falls, Flat Rock, and South Edwards, 1 inch at Oswegatchie, and 3.5 inches at Heuvelton and Eel Weir. The estimated intake velocities at the trashracks are 1.08 feet per second (fps) at Browns Falls, 0.78 fps at Flat Rock, 0.70 fps at South Edwards, 1.59 fps at Oswegatchie, 1.28 fps at Heuvelton, and 2.38 fps at Eel Weir. Based on the swimming speeds of fish species that occur in the impoundments, most fish should be able to avoid impingement on the existing racks, although because 5 of the 6 developments currently have trashracks with clear spacings of 2.5 inches or wider, it is unlikely that the current trashracks are effective at limiting or preventing entrainment of fish, including some adult gamefish.

By installing permanent trashracks or seasonal overlays with 1-inch clear spacing, fewer fish would be vulnerable to entrainment. Most fish that are 9 inches or longer would be too large to fit through the 1-inch clear spacing and would be physically excluded from passing through the racks (Lawler et. al., 1991). The 1-inch spacing may also result in some behavioral avoidance of the trashracks by smaller fish that may be able to physically pass through the bars, thereby limiting entrainment of fish less than 9 inches in length as well. Although site specific turbine survival data do not exist, studies at other similar sites suggest that survival of fish that pass through the Oswegatchie Project's Francis and vertical propeller type turbines would be in the range of 60 to 80 percent (EPRI, 1997). While there is nothing in the record to suggest that current levels of fish entrainment, and related mortality, are having an adverse effect on the fish community in the project vicinity, the proposed permanent trashracks or seasonal overlays with 1-inch clear spacing would reduce project-related entrainment and likely increase the abundance or stability of the fish communities in the vicinities of the five developments.

Fish Passage

Erie proposes to construct fishways for upstream and downstream passage of lake sturgeon, American eel, and other fish species, and to operate the fishways from March

15 through November 30 of each year. Erie also proposes to develop and implement a Fishway Effectiveness Study Plan to evaluate the effectiveness of the proposed upstream and downstream fish passage facilities. Erie would also continue releasing the required minimum bypassed reach flow of 40 cfs at the Oswegatchie Development through a notch in the spillway for the purpose of providing downstream fish passage.

This proposal is consistent with section 3.6 of the Settlement and New York DEC's 10(j) recommendation #10. Interior's preliminary section 18 prescription only specifies installation of the new upstream and downstream fishways at Heuvelton and Eel Weir.

Staff Analysis

Currently, fish may pass downstream at Heuvelton and Eel Weir along the length of the spillway when flows exceed the developments' hydraulic capacities or through the turbines at each development. No downstream passage mortality has been documented or quantified at these project developments. Upstream passage is not currently possible at these two developments.

The proposal (Settlement), New York DEC's section 10(j) recommendation #10, and Interior's preliminary section 18 prescription state that the type and final design of the upstream and downstream fishways would be determined through consultation between Erie, New York DEC, and Interior after license issuance. According to the conceptual designs included in Erie's Fish Passage and Protection Study Report, the upstream fishway design being considered for Heuvelton is a pool and weir fishway and the design being considered for Eel Weir is a rock ramp type fishway. Interior's preliminary fishway prescription does not include design drawings and briefly mentions the rock ramp and vertical slot fishway types, but does not indicate which type would be constructed at which development. The downstream fishways in Erie's conceptual designs for both developments include a collection facility in the forebay, a pipe to convey fish to the tailrace, and a plunge pool at the point where fish would exit the pipe. Interior's preliminary prescription does not specify a design for the downstream fishways.

Installing the proposed, recommended, and prescribed upstream and downstream fishways at Heuvelton and Eel Weir, and developing and conducting a fishway effectiveness study plan would potentially enhance fish movement and both the migratory and resident fish communities of the lower Oswegatchie River. Effective upstream fishways would allow fish to move upstream as far as Natural Dam, which is the location of a natural barrier to fish movement located near Gouverneur, New York. The proposed fishway effectiveness study plan would ensure that the fishways operate as intended and would provide information to guide any possible modifications to the fishways or their operation. Effective new downstream fishways, would attract fish that

would otherwise go over the spillway or through the turbines and therefore, could reduce entrainment-related mortality at the Heuvelton and Eel Weir Developments. Although the resident species that occur above and below these two developments do not need to pass the dams to complete any life-history requirements, the presence of the upstream and downstream fishways could increase the recruitment of fish to suitable habitat areas upstream and downstream of the developments. The combination of reduced mortality, increased access to spawning habitat for migratory species such as lake sturgeon, and increased recruitment to upstream and downstream habitat may improve fish communities in the vicinity of these two developments and as far upstream as Natural Dam.

3.3.2.3 Cumulative Effects

The Oswegatchie Project, in combination with the other hydroelectric projects located on the Oswegatchie River, has the potential to cumulatively affect aquatic resources. The adverse effects that can occur from multiple hydroelectric developments within a river basin include disruption of the natural hydrograph from peaking operations, reduced flows and habitat quality in bypassed reaches, fish mortality from turbine passage, and blockage of fish movements. In this case, Erie's proposed measures, including flow and reservoir elevation monitoring at all developments, reduced daily impoundment fluctuations at Browns Falls, Flat Rock, and South Edwards, year-round minimum flows in the bypassed reaches of Browns Falls, South Edwards, and Oswegatchie, trashracks or overlays with reduced clear spacing at all developments, and upstream and downstream passage facilities at Heuvelton and Eel Weir, would cumulatively benefit aquatic resources in the basin by reducing the effects of the project. In addition, other hydroelectric projects within the Oswegatchie River basin, including the Natural Dam and Emeryville projects (FERC Nos. 2851 and 2850 respectively) have recently undergone FERC relicensing and measures implemented as a result of those proceedings could further reduce cumulative effects in the Oswegatchie River basin.

3.3.2.4 Unavoidable Adverse Effects

The reduced spacing of Erie's proposed overlays or permanent trashracks would reduce fish entrainment; however, some smaller fish are likely to continue to be entrained and pass through the turbines. While approximately 60 to 80 percent the entrained fish would be expected to survive and contribute to the downstream fish communities, the remaining portion would likely experience mortality or injury and would be lost from the fishery.

Impoundment fluctuations at Browns Falls, Flat Rock, and South Edwards would continue to have some ongoing adverse effects on littoral habitat and associated fish species.

Some short-term and temporary disturbances to habitats may result from construction of the upstream and downstream fishways at Heuvelton and Eel Weir.

3.3.3 Terrestrial Resources

3.3.3.1 Affected Environment

The Oswegatchie Project changes in elevation from 1,349 feet above sea level at Browns Falls to 272 feet above sea level at Eel Weir as the Oswegatchie River flows from the Adirondack Mountains to the St. Lawrence Lowlands. The upper developments are located in the Hardwood Conifer Forest ecoregion. The lower developments are in the Northern Hardwoods Forest ecoregion, which contains the northernmost deciduous forests in eastern North America. The land around the upstream developments (i.e., Browns Falls, Flat Rock, South Edwards, and Oswegatchie) is primarily forested, and the land around the downstream developments (i.e., Heuvelton and Eel Weir) is primarily agricultural mixed with some wooded areas (FERC, 2011). Significant suburban development surrounds the Heuvelton dam, but the other five developments have little development in their vicinities.

Hardwood coniferous forests are the dominant habitat along the shores of the upstream impoundments. Common tree species in these forests include red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), eastern white pine (*Pinus strobus*), and eastern hemlock (*Tsuga canadensis*), along with the deciduous red maple (*Acer rubrum*) and yellow birch (*Betula alleghaniensis*). Understory woody plants include honeysuckles (*Lonicera* spp.) and striped maple (*Acer pensylvanicum*). Common forbs in the hardwood conifer forest are bunchberry (*Cornus canadensis*), common wood sorrel (*Oxalis montana*), witch-hobble (*Viburnum lantanoides*), yellow clintonia (*Clintonia borealis*), and several species of ferns and mosses.

Deciduous and mixed forests are the dominant habitat along the shores of the downstream impoundments. Common tree species in these forests include American basswood (*Tilia americana*), American elm (*Ulmus americana*), black cherry (*Prunus serotina*), box elder (*Acer negundo*), eastern hemlock, sugar maple (*Acer saccharum*), and white pine. Common native shrub species found in the understory of the forest are common buttonbush (*Cephalanthus occidentalis*), American highbush cranberry (*Viburnum trilobum*), silky dogwood (*Cornus amomum*), staghorn sumac (*Rhus typhina*), and willows (*Salix* spp.). Common forbs in the northern hardwood forest include eastern poison ivy (*Toxicodendron radicans*), goldenrod (*Solidago* spp.), riverbank grape (*Vitis riparia*), sensitive fern (*Onoclea sensibilis*), and Virginia creeper (*Parthenocissus quinquefolia*).

Aquatic Vegetation

Deep emergent marshes are common along the Oswegatchie River and project reservoirs. These marshes are poorly drained and often flooded to at least a depth of six inches. Common plant species in these wetlands include broadleaf arrowhead (*Sagittaria latifolia*), cattail (*Typha latifolia*), duckweed (*Lemna minor*), and pickerelweed (*Pontederia cordata*).

Shallow emergent marshes are also common within the project boundary. These marshes are permanently saturated, but usually experience fluctuations in water level that leave the substrate exposed for part of the year. Common plant species in these wetlands include bluejoint grass (*Calamagrostis canadensis*), cattails, goldenrod (*Solidago rugosa*), marsh fern (*Thelypteris palustris*), meadowsweet (*Filipendula ulmaria*) sedges (*Carex* spp.), speckled alder (*Alnus incana*), and willows (*Salix* spp.).

Shrub swamp wetlands are very common in the project area. This wetland is relatively well-drained and dominated by woody vegetation less than 20 feet tall. Common shrubs in this wetland type include common spicebush (*Lindera benzoin*), gray dogwood (*Cornus foemina*), highbush blueberry (*Vaccinium corymbosum*), and willows.

Floodplain forests also grow within the project boundary. This type of wetland occurs in river floodplains and deltas where soil is usually flooded for a relatively short time every year. Common trees in these forests include American elms (*Ulmus americana*), green (*Fraxinus pennsylvanica*) and white (*Fraxinus americana*) ashes, red and silver maples (*Acer saccharinum*), pin (*Quercus palustris*) and swamp white (*Quercus bicolor*) oaks, river birch (*Betula nigra*), and shagbark hickory (*Carya ovata*). Common shrubs in these forests include American hornbeam (*Carpinus carolinianus*), gray dogwood and speckled alder.

Invasive Species

Oriental bittersweet (*Celastrus obiculatus*) has been identified near developed areas of the Browns Falls and Flat Rock Developments. Japanese knotweed (*Polygonum cuspidatum*) and purple loosestrife (*Lythrum salicaria*) have been identified near the Heuvelton development. Purple loosestrife is widespread at the Eel Weir development. Two dead rusty crayfish (*Orconectes rusticus*) were found on top of Eel Weir dam as well, however it is possible that they were used as bait given the popularity of the site for fishing and that they were found well out of the water.

In addition to the invasive species identified within the project boundary, other invasive species are known to occur in the region and at other projects along the Oswegatchie River. These include glossy barberry (*Berberis thunbergii*), Eurasian watermilfoil (*Myriophyllum spicatum*), common reed (*Phragmites australis*), flowering rush (*Butomus umbellatus*), and spotted knapweed (*Centaurea stoebe*). Black locust (*Robinia pseudoacacia*), glossy buckthorn (*Rhamnus frangula*), honeysuckle (*Lonicera*

spp.), meadowsweet (*Spirea latifolia*), Queen Anne's lace (*Daucus carota*), and white sweet clover (*Melilotus albus*), are other plant species found in the region that are technically invasive, though they have been largely naturalized throughout the region (FERC, 2011).

Wildlife

Mammals and birds commonly found in the project area are presented in Tables 10 and 11, respectively. A list of reptiles and amphibians found in the project area are presented in Table 12.

Table 10. Mammals commonly found in or near the project area. (Source: FERC, 2011).

Common name	Scientific name
Beaver	<i>Castor canadensis</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Black Bear	<i>Ursus americanus</i>
Bobcat	<i>Felis rufus</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Fisher	<i>Martes pennanti</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Longtail Weasel	<i>Mustela frenata</i>
Mink	<i>Neovison vison</i>
Moose	<i>Alces alces</i>
Mouse-eared bats	<i>Myotis spp.</i>
Muskrat	<i>Ondatra zibethicus</i>
Opossum	<i>Didelphis virginiana</i>
Pine Marten	<i>Martes americana</i>
Porcupine	<i>Erethizon dorsatum</i>
Raccoon	<i>Procyon lotor</i>
Red Fox	<i>Vulpes vulpes</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
River Otter	<i>Lutra Canadensis</i>
Shrews	<i>Sorex spp.</i>
Shorttail Weasel	<i>Mustela erminea</i>
Snowshoe Hare	<i>Lepus americanus</i>
Striped Skunk	<i>Mephitis mephitis</i>

Common name	Scientific name
Voles	<i>Microtus</i> spp.
White-Footed Mouse	<i>Peromyscus leucopus</i>
White-Tailed Deer	<i>Odocoileus virginianus</i>
Woodchuck	<i>Marmota monax</i>

Table 11. Birds found in and near the project area. (Source: New York DEC, 2007).

Common name	Scientific name
Alder Flycatcher	<i>Empidonax alnorum</i>
American Crow	<i>Corvus brachyrhynchos</i>
American Goldfinch	<i>Carduelis tristis</i>
American Kestrel	<i>Falco sparverius</i>
American Redstart	<i>Setophaga ruticilla</i>
American Robin	<i>Turdus migratorius</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Baltimore Oriole	<i>Icterus galbula</i>
Barn Swallow	<i>Hirundo rustica</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Black-and-White Warbler	<i>Mniotilta varia</i>
Black-Capped Chickadee	<i>Poecile atricapillus</i>
Black-Throated Green Warbler	<i>Dendroica virens</i>
Blue Jay	<i>Cyanocitta cristata</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Brown-Headed Cowbird	<i>Molothrus ater</i>
Canada Goose	<i>Branta canadensis</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Chestnut-Sided Warbler	<i>Dendroica pensylvanica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Loon	<i>Gavia immer</i>
Common Raven	<i>Corvus corax</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>

Common name	Scientific name
Eastern Wood-Pewee	<i>Contopus virens</i>
European Starling	<i>Sturnus vulgaris</i>
Field Sparrow	<i>Spizella pusilla</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Green Heron	<i>Butorides virescens</i>
Golden-Winged Warbler	<i>Vermivora chrysoptera</i>
Hermit Thrush	<i>Catharus guttatus</i>
House Sparrow	<i>Passer domesticus</i>
House Wren	<i>Troglodytes aedon</i>
Indigo Bunting	<i>Passerina cyanea</i>
Killdeer	<i>Charadrius vociferus</i>
Least Flycatcher	<i>Empidonax minimus</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Northern Flicker	<i>Colaptes auratus</i>
Osprey	<i>Pandion haliaetus</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Purple Finch	<i>Carpodacus purpureus</i>
Red-Eyed Vireo	<i>Vireo olivaceus</i>
Red-Tailed Hawk	<i>Buteo jamaicensis</i>
Red-Winged Blackbird	<i>Agelaius phoeniceus</i>
Rock Pigeon	<i>Columba livia</i>
Rose-Breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Scarlet Tanager	<i>Piranga olivacea</i>
Song Sparrow	<i>Melospiza melodia</i>
Turkey Vulture	<i>Cathartes aura</i>
Warbling Vireo	<i>Vireo gilvus</i>
White-Breasted Nuthatch	<i>Sitta carolinensis</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Wood Thrush	<i>Hylocichla mustelina</i>
Veery	<i>Catharus fuscescens</i>
Yellow-Bellied Sapsucker	<i>Sphyrapicus varius</i>
Yellow-Throated Vireo	<i>Vireo flavifrons</i>
Yellow Warbler	<i>Dendroica petechia</i>

Table 12. Reptiles and amphibians found in and near the project area. (Source: FERC, 2011).

Common name	Scientific name
American Toad	<i>Bufo americanus</i>
Black Rat Snake	<i>Elaphe obsoleta</i>
Bull Frog	<i>Rana catesbeiana</i>
Common Map Turtle	<i>Graptemys geographica</i>
Eastern Garter Snake	<i>Thamnophis sirtalis</i>
Eastern Milk Snake	<i>Lampropeltis triangulum</i>
Eastern Ribbon Snake	<i>Thamnophis sauritis</i>
Four-Toed Salamander	<i>Hemidactylium scutatum</i>
Gray Tree Frog	<i>Hyla versicolor</i>
Mudpuppy	<i>Necturus maculosus</i>
Northern Brown Snake	<i>Storeria dekayi</i>
Northern Dusky Salamander	<i>Desmognathus fuscus</i>
Northern Green Frog	<i>Rana clamitans</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Northern Redbelly Snake	<i>Storeria occipitomaculata</i>
Northern Spring Peeper	<i>Pseudacris crucifer</i>
Northern Water Snake	<i>Nerodia sipedon</i>
Painted Turtle	<i>Chrysemys picta</i>
Pickerel Frog	<i>Rana palustris</i>
Redback Salamander	<i>Plethodon cinereus</i>
Red-Spotted Newt	<i>Notophthalmus viridescens</i>
Snapping Turtle	<i>Chelydra serpentina</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Wood Frog	<i>Rana sylvatica</i>
Wood Turtle	<i>Clemmys insculpta</i>

Avian Species of Special Interest

Common Loons

One avian species of special interest is the common loon (*Gavia immer*). Loons have great difficulty walking on land, and must nest right at the water's edge where their reproductive success is susceptible to water level changes. Loons also prefer protection from prevailing winds and waves, overhead vegetation or lateral cover, and a wide

viewing angle of their territory. Several common loons have been observed in the Browns Falls and Flat Rock reservoirs, but no nests have been found.

Bald Eagles

A second bird species of interest is the bald eagle (*Haliaeetus leucocephalus*). Bald eagles will hunt and scavenge for a variety of foods, but they prefer fish and are attracted to undisturbed lakes, reservoirs, and large rivers (USFWS, 2007). Bald eagles have occasionally been sighted in the vicinity of the Browns Falls development, but there are no known nests near the project.

Osprey

A third bird species of special interest is the osprey (*Pandion haliaetus*). Ospreys feed primarily on live fish and tend to nest near bodies of water, preferring high, isolated nesting sites that provide unobstructed views, such as rock outcroppings, trees, or utility poles (Vana-Miller 1987). Several adult osprey have been sighted flying over the South Edwards and Oswegatchie impoundments, and a nest with two chicks has been observed near the Eel Weir dam.

Wetlands

Because the project stretches from the Adirondack Mountains to the St. Lawrence lowlands, the project boundary contains a variety of riparian and wetland types. Over 107 acres of wetlands occur within the project boundary, representing 7.42% of the project area. The majority of these wetlands are palustrine emergent (50.09 acres), with palustrine forested wetlands the next most abundant (25.12 acres). There is nearly equal coverage from riparian buffer and streambed (12.70 and 12.05 acres, respectively), and a small total area of palustrine scrub-shrub wetland (7.33 acres). Wetland types vary by development.

Browns Falls

The Browns Falls reservoir is a lacustrine limnetic wetland with an unconsolidated cobble and gravel bottom. The Browns Falls Development features a diversity of littoral wetland types and an associated richness in wetland species diversity due to the varied topography surrounding it. Wetlands extend back from the impoundment along streams and areas of low relief. The Browns Falls Development has nearly 39 acres of wetlands, which is the largest acreage of wetlands of all the developments. Almost half of the wetlands are palustrine emergent wetlands.

Flat Rock

The Flat Rock reservoir is a lacustrine limnetic wetland with an unconsolidated cobble and gravel bottom. The Oswegatchie River immediately downstream of the Flat Rock Development is a permanently flooded riverine upper perennial wetland with an unconsolidated bottom. Littoral wetlands at the Flat Rock Development consist primarily of palustrine emergent marsh and scrub-shrub. A few small coves, areas of low relief, and a small island shelter the only wetland habitat not directly located on the shore of the impoundment. The Flat Rock Development has nearly 9 acres of wetlands.

South Edwards

The South Edwards reservoir is a lacustrine limnetic wetland with unconsolidated bottom consisting of cobble and gravel. The Oswegatchie River immediately downstream of the South Edwards Development is a permanently flooded riverine upper perennial wetland with unconsolidated bottom. Littoral wetlands at the South Edwards Development consist primarily of palustrine emergent marshes, and these extend back from the impoundment shoreline along areas of low relief and small streams that flow into the river. The South Edwards Development has nearly 8 acres of wetlands.

Oswegatchie

The small Oswegatchie reservoir is a permanently flooded riverine upper perennial wetland with an unconsolidated bottom. Littoral wetlands at the Oswegatchie impoundment consist almost entirely of palustrine emergent marsh communities. There are very few areas of low relief around the Oswegatchie Development, so the few areas of wetlands located back from the impoundment shoreline are only found along streams. At just over 3 acres of wetlands, the Oswegatchie Development has the lowest wetland area of all of the projects.

Heuvelton

The Heuvelton reservoir is a lacustrine limnetic wetland with unconsolidated cobble and gravel bottom. The Oswegatchie River immediately downstream of the Heuvelton Development is a permanently flooded riverine lower perennial wetland with unconsolidated bottom. The Heuvelton impoundment is irregularly-shaped and features a multitude of wetlands and shallow areas somewhat removed from, yet hydraulically connected to, the main impoundment. Littoral wetland habitat at the Heuvelton Development consist primarily of palustrine forested wetlands, with some areas of palustrine emergent marshes. Due to its proximity to populated areas and associated development and disturbance, this impoundment contains more invasive wetland species, such as purple loosestrife, than the upper developments. The Heuvelton Development has over 13 acres of wetlands.

Eel Weir

Most of the Eel Weir reservoir and the Oswegatchie River immediately downstream of it are a lacustrine limnetic wetland with unconsolidated cobble and gravel bottom. The Oswegatchie River immediately upstream of the Eel Weir Development is a permanently flooded riverine lower perennial wetland with unconsolidated bottom. Littoral wetland habitat at the Eel Weir Development consists primarily of emergent marshes and secondarily of palustrine forested wetlands. Purple loosestrife is also present along the shoreline and in the marshes at this impoundment. The Eel Weir development has over 35 acres of wetlands, and has the largest continuous patches of wetlands of all the developments.

3.3.3.2 Environmental Effects

Wildlife and Botanical Resources

As part of the Settlement (section 2.14), the licensee proposes to develop an Invasive Species Management Plan (ISMP) to prevent the introduction and/or spread of invasive species during construction, maintenance, and operation activities. The ISMP would be developed in consultation with the New York DEC. Also as part of the Settlement, the licensee proposes to install and maintain signage from New York DEC displaying information about invasive species.

Under section 10(j), New York DEC recommended (Recommendation #13) that the licensee develop an ISMP, as described in section 2.14 of the Settlement. New York DEC also commented that it would incorporate the Settlement's invasive species management provisions in the water quality certificate, and recommended that the provisions also be incorporated into the license as an article. Interior commented that, as stated in the Settlement, the licensee's ISMP should include measures to prevent the introduction and/or spread of invasive species during construction, maintenance, and operational activities.

Staff Analysis

Invasive plants can outcompete native ones, which could lead to a loss of diversity affecting forage and habitat for animal species. Invasive plant species found in the project area include Japanese knotweed, Oriental bittersweet, and purple loosestrife. Other invasive species found in St. Lawrence County that could be introduced to the project area include pale swallow-wort, glossy barberry, and spotted knapweed. The ISMP would include methods for monitoring for the introduction or spread of invasive plant species and describe measures to stop or reverse the spread of invasive plant species in the project boundary. Informative signage would help to educate users of the project facilities about invasive plant species so that they could help identify common invasives, as well as learn how to prevent their spread.

Wetlands

The licensee proposes to modify project operations to limit daily impoundment fluctuations that could have an adverse effect on wetlands. The licensee proposes to limit drawdowns to 4 feet from July 15 through March 14, at the Browns Falls and Flat Rock Developments. Drawdowns would be limited to 6 feet from July 15 through March 14, and 2 feet from March 15 through July 14, at the South Edwards Development. Oswegatchie's Development drawdown would be limited to 0.4 feet year-round, and Heuvelton and Eel Weir would be limited to 0.5 feet year-round.

The licensee also proposes to eliminate the seasonal fluctuations at Browns Falls and South Edwards that result from the installation and removal of 2-foot flashboards by installing year-round flashboards with crest control devices. The licensee's scheduling of the modification or replacement of the flashboards would be performed in consultation with the appropriate agencies .

Staff Analysis

Impoundment fluctuations can prevent wetland establishment by dewatering soils, especially in areas with littoral emergent and submerged vegetation. Dewatering could prevent the growth of new wetland plants or stress those that have already grown (Kallemeyn et al., 1998). The reduction in impoundment fluctuations, and installation of crest control devices, could result in an expansion of wetland habitat through the stabilization of water levels.

Reduced impoundment fluctuations could also limit the spread of some invasive species that tend to out-compete native species in disturbed environments, although stable water levels can benefit purple loosestrife and some other invasives (Herrick and Wolf, 2005; TVA, 2004).

Wildlife

Species of Special Concern

The licensee proposes to implement Section 2.12 of the Settlement and notify New York DEC in an appropriate and timely manner if species of special concern are encountered during project operation, construction, and maintenance. Additionally, prior to any construction or major maintenance activities that require consultation with New York DEC, the licensees would consult with New York DEC regarding how to avoid potential impacts to species of special concern.

Under Section 10j recommendation #11, New York DEC recommended that the

licensee follow section 2.12 of the Settlement.

Staff Analysis

The licensee's proposal to consult with New York DEC if state-listed endangered and threatened species or species-of-concern are encountered would benefit these species by allowing the New York DEC to guide the licensee on how to avoid impacts to these species.

Common Loon

The licensee proposes to implement the Common Loon Nesting Platform Installation and Monitoring Plan (Loon Plan), as described in section 3.5.1 of the Settlement, which details the deployment and monitoring of loon nesting platforms on the upstream impoundments. If loons use the rafts for nesting during the 5-year period prescribed in the Loon Plan, the licensee would continue to deploy the rafts seasonally. The licensee also proposes to limit fluctuations at Browns Falls, Flat Rock, and South Edwards to mitigate the potential effects of project operation on loon nesting habitat.

Under Section 10(j), New York DEC and Interior recommend (recommendations #3) that the licensee implement the Loon Plan from the Settlement. Additionally, New York DEC stated it would incorporate the Loon Plan in the water quality certificate, and recommended that the Loon Plan provisions also be incorporated into the license.

Staff Analysis

During relicensing studies, researchers observed common loons and potential nesting habitat at the upstream developments; however, researchers did not observe any loon nests or nesting behavior. Loon nesting success can be affected by reservoir level fluctuations (Evers, 2004), though relicensing studies could not determine if the fluctuations of the upstream impoundments are affecting loon nesting success because the researchers did not document any nesting attempts and/or abandonments. The upstream impoundments may not be suitable for loon nesting purposes due to a variety of factors other than impoundment fluctuation. However, if fluctuations are preventing or adversely affecting loon nesting at the developments, then the Loon Plan and installation of nesting rafts could provide suitable nesting habitat.

Because loon nesting rafts rise and fall with water levels, their use can reduce nest failures due to water level fluctuations. Nesting rafts can also provide protection from predators and from disturbances caused by recreational use of reservoirs. Artificial nesting rafts have shown to be successful in increasing loon nesting success in similar projects (FERC, 2011a).

Limiting impoundment fluctuations as the licensee proposes could also improve loon nesting success. While deployment of artificial loon nesting rafts may provide loon nesting habitat, fluctuation limits may also increase the chances of loon nesting success by providing more stable nesting conditions.

The 5-year monitoring period described in the Settlement would allow for observation to determine if loons are successfully nesting and using the rafts. If the loons use the nesting rafts, then the licensee would continue to deploy the rafts.

Eagles and Osprey

As part of the Settlement (section 2.13), the licensee proposes to survey for eagle and osprey nests prior to any tree-clearing activities and consult with Interior and New York DEC if nests are located. Additionally, if the licensee identifies an osprey nest in or adjacent to the project boundary, it will notify Interior and New York DEC as well as develop and maintain an Eagle and Osprey Management Plan to define spatial and temporal limits on construction and land-clearing.

New York DEC, in their Section 10(j) recommendation #12, requests that the licensee implements section 2.13 of the Settlement.

Staff Analysis

Bald eagles and osprey favor high nesting sites with clear views of the surrounding landscape (Tesky, 1994; USFWS, 2007; Vana-Miller, 1987). In the project area, tall trees are generally selected for these birds' nests. Removing a tree with an eagle or osprey nest would destroy that nest and prevent the breeding pair of birds from raising new chicks that year. Inspecting trees prior to cutting would ensure that no nests are destroyed. The licensee's proposed consultation with Interior and New York DEC prior to tree-clearing would provide agency expertise on methods for tree clearing and nest protection.

Eagles and osprey are sensitive to disturbance from increased industrial and recreational activities, especially during their egg incubation periods (Tesky, 1994; Vana-Miller, 1987). The licensee's development of an Eagle and Osprey Management Plan to define spatial and temporal limits on construction and land-clearing near eagles and ospreys would limit nesting failures by minimizing activity around nests during critical nesting times.

3.3.3.3 Unavoidable adverse impacts

Vegetation clearing associated with the licensee's construction of improvements, such as recreational facilities and fish passage structures, could cause minor but long-

lasting unavoidable adverse impacts such as the destruction of plant and wildlife habitat. Appropriate design, planning, and agency consultation could minimize disturbance.

3.3.4 Threatened and Endangered Species

3.3.4.1 Affected Environment

According to the website maintained by the FWS (2011), the endangered Indiana Bat (*Myotis sodalis*) is the only Federally-listed species with the potential to occur in the project vicinity. None of this project's developments are less than 40 miles from the nearest known nesting areas, which are in Jefferson County. There are no designated critical habitats in the project area (FERC, 2011).

Indiana bat

The Indiana bat is currently listed as endangered under the Endangered Species Act of 1973. The Indiana bat is a migratory species found throughout much of the eastern half of the United States, with the greatest concentrations in the Midwestern states. In 2005, it was estimated that there were 457,000 bats in the U.S., with about 42,000 in New York. These bats eat flying insects, and can consume up to half their body weight in insects each night. Females give birth to just one pup each summer (USFWS, 2006). Indiana bats can live up to 14 years (USFS, 2010).

Indiana bats hibernate colonially in caves, mines, and other underground areas through the winter. These winter colonies can have up to 500 bats per square foot (USFWS, 2006). Summer habitat requirements include: (1) dead or live trees and snags with peeling or exfoliating bark, split tree trunks or braches, or cavities that may be used as maternity roost areas; (2) live trees such as shagbark hickory and oaks which have exfoliating bark; and (3) stream corridors and riparian areas (USFS, 2010).

Indiana bats are susceptible to disturbance during hibernation by human activity in or near the entrances of their caves, loss or fragmentation of summer forest habitat, and by pesticide usage that reduces the number of flying insects and that can lead to the accumulation of toxins in the bats. Their low reproductive rate compounds their susceptibility to disturbance. Recovery actions include protection of summer habitat areas and caves, as well as education and outreach (USFWS, 2006).

3.3.4.2 Environmental Effects

The licensee does not propose any measures for the protection of Indiana bats. No agency recommendations were received regarding Indiana bats. Interior commented that no Federally-listed or proposed endangered or threatened species are known to exist in the project area, and that no habitat in the project area is designated or proposed as

“critical habitat.”

Staff Analysis

Indiana bats are not expected to use habitat in the project area and it is unlikely that the project would have any impact on them. Even if these bats were present in the project vicinity, it is doubtful that the continued operation of the project would negatively affect them because project operations would not have any expected effect on their habitat or food availability. Based on this information, we conclude that relicensing the Oswegatchie River Hydroelectric Project would have no effect on Indiana bats.

3.3.5 Land Use and Recreation

3.3.5.1 Affected Environment

Land Use

Land use in the vicinity of the project’s four upstream developments¹² consists mainly of Adirondack State Park lands and forestry activities, as well as a small percentage of agricultural use. All four upstream developments are located within the Northern Appalachian eco-region which includes the Adirondack Mountains and the Tug Hill Plateau, an area that receives a greater yearly snowfall than anywhere in the contiguous United States east of the Rocky Mountains. This eco-region is comprised of a mix of boreal and hardwood forests as well as large-scale wetlands and remote pond and stream complexes. In the vicinity of the two downstream developments, land use consists of rural and residential development, along with a substantial amount of agricultural use and dairy farming. The Heuvelton and Eel Weir Developments are located within the Lower St. Lawrence-Champlain Valley eco-region. This lowland area has limited mountainous terrain and is dominated by streams, deltas, and marshes along the St. Lawrence River.

A shoreline permitting program is included as part of Erie’s overall existing Land Use Policy. Activities which require an annual permit include, but are not limited to:

- Deployment and construction of individual docks and piers (private and commercial), common or group docks, piers, fences, walkways, landscape plantings, hunting blinds, retaining walls, and bulkheads;
- Excavation, dredging, and erosion control activities;
- Riprap placement;

¹² The project’s four upper developments are Browns Falls, Flat Rock, South Edwards, and Oswegatchie. The two lower developments are Heuvelton and Eel Weir.

- Water withdrawals; and
- Motorized vehicle access.

According to the Exhibit G figures included in the license application, Erie owns approximately 1,242.09 acres of land within the project boundary.¹³ No federal lands exist within nor are adjacent to the proposed project boundary.

Regional Recreation

Opportunities for fishing, boating, hiking, camping, and snowmobiling are available throughout the project area and region. The three upstream developments (i.e. Browns Falls, Flat Rock, and South Edwards) are located within the western portion of Adirondack State Park (Park). The Park is the largest designated wilderness area east of the Mississippi River, and encompasses approximately six million acres which consists of a mix of public and private lands. These lands are protected as “forever wild” by the New York State Constitution (for further details, see *Regional History* below). The Adirondack Park Agency is the state agency responsible for maintaining the protection of the forest preserve, as well as overseeing development proposals for privately-owned lands within the Park. The New York DEC manages Adirondack Forest Preserve lands within the Park’s boundaries. The Adirondack Region consists of over 3,000 lakes, 30,000 miles of rivers and streams, and 2,000 peaks. The Park is home to approximately 130,000 permanent residents in 105 towns and villages, and host to over 200,000 seasonal homes. These communities provide facilities and services for approximately nine million visitors each year, making tourism a major component of the region’s economy.

Notable wilderness, primitive, and wild forest areas in the project vicinity include Five Ponds Wilderness Area (FPW), Lows Lake, Wanakena primitive area, and Cranberry Lake. FPW consists of 117, 978 acres across St. Lawrence, Herkimer, and Hamilton counties just southeast of the project area. This wilderness area includes approximately 58 miles of foot trails, 14 lean-tos, and 99 bodies of water. Lows Lake, fed by the Bog River, is located in the Town of Colton within St. Lawrence County east of the Oswegatchie River headwaters. Lows Lake is a popular wilderness canoe, kayak, and camping area within 1,042 acres of state land. A long 3.5-mile portage connects the western edge of Lows Lake to the upper reach of the Oswegatchie River main branch. This area is an integral part of the Lows Lake – Bog River – Oswegatchie River wilderness canoe route and continues water access to the western portion of FPW. The main branch of the Oswegatchie River flows north through the Wanakena primitive

¹³ The acreage for each project development is: 504.5 acres at Browns Falls, 190.69 acres at Flat Rock, 151.3 acres at South Edwards and Oswegatchie (combined), 151.3 acres at Heuvelton and 186.5 acres at Eel Weir.

corridor where the river flows north into Cranberry Lake. Cranberry Lake, the third largest lake in the Adirondacks, is located in southern St. Lawrence County in the towns of Clifton, Colton, and Fine. The western outlet of Cranberry Lake is located approximately 15 River Miles (RM) upstream from the Browns Falls Development.

The main branch of the Oswegatchie River originates within FPW at Partlow Mill Dam inside the Park (Paddling.net, Inc., 2011). From its headwaters in the Adirondack Mountains, the river flows for over 130 miles before joining the St. Lawrence River in the City of Ogdensburg, New York. Several sections of the Oswegatchie River are designated as wild, scenic, and recreational rivers by New York DEC. All designated sections are located upstream of the project area or on separate branches of the river. However, boating and fishing are popular recreational activities enjoyed throughout the entire river, including the project area. Available species in the area for angling include walleye, catfish, some largemouth bass, and brook and brown trout stocked by New York DEC in the spring in Clifton and Fine (New York DEC, 2011).

The four upper developments are located within the middle section of the main branch of the Oswegatchie River, a 35-mile reach from Newton Falls to Gouverneur. This section is heavily wooded and offers challenging boating experiences with numerous waterfalls, rapids, and hydroelectric dams throughout the 970-foot vertical drop in elevation. Approximately 75 RMs and nine additional hydroelectric projects,¹⁴ separate the project's upper and lower developments. The two lower developments are situated 12 RMs and 5.1 RMs from the confluence of the St. Lawrence River within the lower 67-mile section of the Oswegatchie River, spanning from Gouverneur to Ogdensburg. This section is wider, milder and slower moving, with a total vertical drop in elevation of only 200 feet. The 7-mile downstream reach between the Heuvelton and Eel Weir Developments offers a stretch of flat-water boating which flows along pasture lands, wooded areas, and Eel Weir State Park (Paddling.net, Inc., 2011).

Two state designated scenic byways, Black River Trail and Olympic Trail, intersect at Route 812 just south of the Oswegatchie River in the project vicinity. These byways are maintained by the New York Department of Transportation. The Black River Trail runs south to north along the western edge of the Adirondacks, connecting the cities of Rome and Ogdensburg over 111 miles of beautiful and historic scenery. The Olympic Trail, encompassing 170 miles of continuous scenic and recreational attractions, traverses the northern Adirondacks connecting Lake Champlain and Lake Ontario from east to west. Both byways cross the main branch of the Oswegatchie River within the 91.8 RM span between the upper-most and lower-most developments.

Existing Project Recreational Facilities

¹⁴ These nine hydroelectric projects are not owned or operated by Erie.

Erie currently owns and maintains designated recreational facilities at three of the six project developments, as described below. These facilities provide for boating and fishing access upstream and downstream of the following project developments, as well as picnicking at certain sites. The recreation season typically begins on Memorial Day and extends through Labor Day. Most existing facilities are available throughout the recreation season depending on the weather conditions.

Browns Falls

No formal recreational facilities currently exist at this development. However, the Browns Falls impoundment can be accessed by means of the Lower Newton Falls river access put-in,¹⁵ located approximately 2.5 RMs upstream from Browns Falls dam. The Browns Falls tailrace area can currently be accessed for angling via the Flat Rock boat launch located about 1.5 RMs downstream.

Flat Rock

The Flat Rock boat launch and day-use area are located on the western shoreline, or river-left,¹⁶ of the Flat Rock impoundment, approximately 195 feet upstream from the Flat Rock dam. This site includes a concrete boat ramp, picnic tables, cooking grills, trash receptacles, and a parking area. The boat launch and picnic area are typically open to the public Memorial Day through the end of the fall foliage season. Erie posts signs to indicate when the site is open for public use. Erie maintains the boat launch and picnic area through the project's existing license.

Heuvelton

Erie also maintains a day-use area at the Heuvelton Development through the project's existing license. This area is located on the river-left shoreline of the Heuvelton impoundment, adjacent to the development's powerhouse. This site includes picnic tables, cooking grills, and a parking area. Erie posts signs at the day-use area to indicate when it is open to public use, typically from Memorial Day to Labor Day.

Eel Weir

The project's lower-most development includes a portage route that runs along the

¹⁵ This recreational facility is owned and maintained by Erie under the license associated with the Newton Falls Project (P-7000).

¹⁶ River-left refers to the left side of the river when the viewer is looking downstream. River-right refers to the right side of the river when looking downstream.

east side, river-right, of the Eel Weir powerhouse. The take-out is located immediately upstream of the powerhouse and the put-in is situated just downstream of the powerhouse in the tailrace area. Signage exists along the portage route to guide boaters. Erie constructed and maintains the portage in support of an annual Boy Scout canoe event. The portage route is not a condition of the project's existing license.

Additional (Non-Project) Existing Recreational Facilities

In addition to the existing project-related recreational facilities discussed above, several other recreational facilities are located within the immediate vicinity of the project's two lower developments. These facilities are owned and maintained by different municipal entities, as described below.

The Village of Heuvelton owns and maintains a boat launch and day-use area immediately downstream from the Heuvelton Development. This boat launch provides boat access to the Heuvelton tailrace and the Eel Weir impoundment, located approximately 7 RMs downstream. This facility is open to the general public seasonally, typically from Memorial Day to Labor Day. Based on correspondence with the Village of Heuvelton, the dock associated with the boat launch is generally removed in late October or early November, depending on the weather conditions.

The New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) operates Eel Weir State Park, located approximately 6 RMs downstream of the Heuvelton Development and 1 RM upstream of the Eel Weir Development. Eel Weir State Park consists of 32 camping sites, a boat launch, and picnic and general recreational areas. The park is open to public use during the summer recreation season, from May through September. The boat launch associated with the park provides boat access to both the Heuvelton tailrace and the Eel Weir impoundment. Based on information received from the NYSOPRHP, a total of 4,407 people used the Eel Weir Park facilities from April 1, 2009 through February 15, 2010. Of this total, 3,154 recreationists used the facility for camping, while the remaining individuals used the facility for vehicle use or other purposes.

The outlet of Black Lake joins the Oswegatchie River just upstream from Eel Weir State Park. Popular recreational activities in this area include camping, picnicking, all-terrain vehicle use, sightseeing, hunting, fishing, biking, hiking, boating, and snowmobiling. The City of Ogdensburg owns and maintains a boat launch, located approximately 5 RMs downstream from the Eel Weir Development, which provides boat access to the Eel Weir tailrace. The City of Ogdensburg also owns and maintains several private and public boat launches that provide access to Black Lake.

Recreational Use at the Project Developments

On October 23, 2009, Erie and project stakeholders conducted a site visit at each project-related recreational area, as well as access points along the river in the vicinity of the six developments. In addition to the stakeholder site visit, a series of recreation surveys were conducted throughout the 2009 study season as part of a recreational resources study. Results of the study indicate that fishing is the primary activity for recreationists throughout all project recreational facilities. Fishing, by boat and shoreline, accounted for 73 percent of recreational use out of the total 274 recreational users observed across all six developments during the study. Use of the picnic areas was a secondary activity for many recreationists. The Flat Rock boat launch was the most heavily used recreational facility across all six developments, with a total of 141 users observed at this site during the study.

3.5.5.2 Environmental Effects

Proposed Project-Wide Recreational Enhancements and Management Measures

Erie proposes to implement a Recreation Management Plan (RMP) that includes a description of existing recreational facilities, proposed measures for enhancing recreational opportunities at the project, and includes operation and maintenance measures for project recreational facilities at all six developments. The RMP is consistent with Section 3.8 of the Settlement.

Through implementation of the RMP, Erie proposes to allow public access to all lands within the project boundaries of the six developments, with the exception of lands and facilities specifically related to hydroelectric generation¹⁷ where public safety and security issues are a concern. Erie also proposes to construct a portage route (from take-out to put-in) at all six developments. Under Erie's proposal, shoreline fishing would be permitted within the project boundaries unless access is specifically restricted, and indicated by signage. Appendix A of the RMP includes the locations of the existing and proposed recreational facilities at each of the six project developments. These Figures are included in Appendix C of this EA.

As part of the RMP, Erie proposes to post signs to guide recreationists and indicate portage trail take-out/put-in locations, trail routes, designated fishing access areas, boat launch locations, and areas restricted from public access. Other proposed signage would include maps to show the general layout of recreational facilities at each development. Erie proposes to consult with the New York DEC and Adirondack Mountain Club to determine the exact locations of the proposed recreational signage by

¹⁷ Lands and facilities where public access would be prohibited include, but are not necessarily limited to, dams, dikes, gates, intake structures, water conveyance structures, powerhouses, substations, transmission lines, and fenced in areas.

conducting a project-wide site visit. Erie also proposes to post invasive species signage at all portage route take-outs and put-ins, as well as boat launches. Signs regarding invasive species would be provided by the New York DEC. Conceptual recreational signage is included in Appendix B of the RMP, and potential signage locations are depicted on the six figures included in Appendix C of this EA.

Erie proposes to continue standard operation and maintenance of existing and proposed recreation facilities on a seasonal basis. The summer recreation season is typically from Memorial Day to Labor Day, and during this time Erie proposes to deploy seasonal signage at the Flat Rock, South Edwards, and Heuvelton Developments. Erie also proposes to create an online and/or paper brochure that would describe available recreational opportunities at each of the project developments. As indicated in section 3.8.2 of the Settlement, Erie does not propose to monitor the use of the project's recreational facilities beyond the requirements of the Commission's Form 80 process.

Lastly, Erie proposes to develop all proposed recreational enhancements within 36 months of any license issued for the project. Erie expects some recreational enhancements to require limited grading and fill activities. Ground disturbing activities are expected to be minimal due to the locations of the proposed recreation areas (i.e. along existing roads and existing informal recreation areas). To minimize impact during construction, Erie proposes to follow Best Management Practices consistent with the New York State Standards for Erosion and Sediment Control, as defined by the New York State "Blue Book". Appendix C of the RMP describes the potential erosion and sedimentation control measures that would be implemented during construction activities at each project development during the term of any license issued for the project.

Browns Falls - Portage Route

The take-out for the proposed portage route at Browns Falls would be located on river-left of the Browns Falls impoundment, immediately upstream of the dam. The route would be constructed along existing access roads and terminate at a put-in located on river-left, immediately downstream of the Browns Falls powerhouse. The put-in would be located in a previously disturbed area that has historically been used for fishing access. The total length of the proposed portage route would be approximately 6,710 feet long, with slopes ranging from 3 to 12 degrees. The approximate lengths and slopes of each segment along the route, from take-out to put-in, are as follows:

- 1st segment: 2,638-foot section ranges from 2 to 5 degrees (relatively flat)
- 2nd segment: 965-foot section is 3 degrees (relatively flat)
- 3rd segment: 664-foot section is 12 degrees (sloping downward)
- 4th segment: 507-foot section is 3 degrees (relatively flat)
- 5th segment: 1,936-foot section is 3 degrees (relatively flat)

Browns Falls – Additional Recreational Enhancements

Erie proposes to formalize the existing informal parking area located on river-left near the Browns Falls dam, adjacent to the development's impoundment. The proposed parking area would have capacity for four cars. Erie also proposes to formalize the parking area on river-left near the Browns Falls powerhouse adjacent to the development's tailrace. Both parking areas would be designated with appropriate signage. Erie also proposes to provide fishing access and associated signage downstream of the Browns Falls powerhouse on river-left near the canoe portage put-in, as well as provide a picnic table in this same area.

Flat Rock - Portage Route

The take-out for the proposed portage route at Flat Rock would be located on river-left at the existing boat launch facility within the Flat Rock impoundment, immediately upstream from the dam. The portage route would utilize an existing service road and be constructed through previously disturbed wooded areas. The put-in would be located approximately 100 feet downstream of an U.S. Geological Survey (USGS) gaging station, situated on river-left immediately downstream of the Flat Rock powerhouse. To the extent that the route can be located on Erie's property, Erie proposes to provide a portage route around the boulder field located in the river downstream of the Flat Rock powerhouse. The total length of the proposed portage route would be approximately 814 feet long, with slopes ranging from 7 to 23 degrees. The approximate lengths and slopes of each segment along the route, from take-out to put-in, are as follows:

- 1st segment: 190-foot section is 10 degrees (sloping upward)
- 2nd segment: 305-foot section is 21 degrees (sloping upward)
- 3rd segment: 149-foot section is 7 degrees (relatively flat)
- 4th segment: 170-foot section is 23 degrees (sloping downward)

Flat Rock - Additional Recreational Enhancements

Erie proposes to modify the existing day-use parking area to provide a parking space compliant with the Americans with Disabilities Act (ADA) and post corresponding signage. Erie also proposes to place signs indicating the availability of fishing access upstream of the Flat Rock dam at the existing boat launch and picnic area. The existing Flat Rock picnic and day-use area would also be modified to include an ADA-compliant picnic table. Further, Erie proposes to deploy a seasonal ADA-compliant floating dock upstream of the Flat Rock dam at the existing boat launch and picnic area. A tri-sided educational and historical kiosk would also be installed at the site's existing day-use area.

South Edwards - Portage Route and Take-Outs

Erie proposes to provide two take-out locations on the South Edwards impoundment. For boaters who prefer to take out prior to reaching the South Edwards dam, a take-out (Alternative A) would be located on river-right approximately 0.3 mile upstream from the South Edwards dam, adjacent to Route 58 (see Figure 10 in Appendix C). To accommodate through-boaters, a second take-out (Alternative B) would be located on river-left, just upstream from the South Edwards dam. The Alternative B take-out would follow a portage route utilizing an existing access road to a put-in located on river-left near the bend at the top of the road, approximately 75 yards upstream of the South Edwards powerhouse. The total length of the proposed Alternative B portage route would be approximately 2,492 feet long, with slopes ranging from 2 to 34 degrees. The approximate lengths and slopes of each segment along the Alternative B portage route, from take-out to put-in, are as follows:

- 1st segment: 1,862-foot section is 2 degrees (relatively flat)
- 2nd segment: 449-foot section is 12 degrees (sloping downward)
- 3rd segment: 181-foot section is 34 degrees (sloping downward)

A three-mile long stretch of rapids, Cotton Rapids, is located approximately 0.5 RM downstream from the Oswegatchie Development (Paddling.net, Inc., 2011). Erie proposes to post warning signs at both proposed take-out locations (Alternative A and Alternative B) to inform recreationists that continuing downstream of the South Edwards and Oswegatchie Developments would require considerable boating skill. The signs would advise recreationists to take out at the Alternative A take-out on river-right upstream of the South Edwards dam if they are not experienced paddlers.

South Edwards – Additional Recreational Enhancements

Erie proposes to construct a day-use area adjacent to Route 58 on river-right that can be accessed from Route 58 by vehicle, as well as by boat from the Alternative A take-out location via a foot trail. This day-use area would consist of a parking area with capacity for four vehicles, two picnic tables, and a foot trail leading to the Alternative A take-out for boating and shoreline fishing access. If determined through further design of the day-use area that the area adjacent to Route 58 proves infeasible for development, Erie proposes to construct a parking area and install picnic tables on the river-left shoreline of the South Edwards impoundment in the immediate vicinity of the proposed Alternative B take-out.

Oswegatchie – Portage Route

The take-out for the proposed portage route at Oswegatchie would be located on river-left of the Oswegatchie impoundment, just upstream from the dam. The portage route would follow a path along previously disturbed areas and existing access roads to a

put-in located immediately downstream of the Oswegatchie powerhouse on river-left. The total length of the proposed portage route would be approximately 539 feet long, with slopes ranging from 4 to 18 degrees. The approximate lengths and slopes of each segment along the route, from take-out to put-in, are as follows:

- 1st segment: 68-foot section is 18 degrees (sloping upward)
- 2nd segment: 255-foot section is 4 degrees (relatively flat)
- 3rd segment: 216-foot section is 14 degrees (sloping downward)

Erie proposes to post additional signage at the Oswegatchie Development to warn boaters of Cotton Rapids located approximately 0.5 RM downstream.

Heuvelton – Portage Route

The take-out for the proposed portage route at Heuvelton would be located on river-left approximately 75 yards upstream from the dam within the Heuvelton impoundment. The portage route would follow a path across the existing driveway to the powerhouse as well as previously disturbed areas that have historically been used by anglers. The route would terminate at a put-in on river-left immediately downstream of the Heuvelton powerhouse. The total length of the proposed portage route would be approximately 561 feet long, with slopes ranging from 2 to 10 degrees. The approximate lengths and slopes of each segment along the route, from take-out to put-in, are as follows:

- 1st segment: 449-foot section is 2 degrees (relatively flat)
- 2nd segment: 112-foot section is 10 degrees (sloping downward)

Heuvelton – Additional Recreational Enhancements

Erie proposes to continue to maintain the existing picnic area adjacent to the Heuvelton powerhouse. Erie also proposes to develop a boat launch and a parking area with capacity for three cars with trailers. These facilities would provide for trailered boat access and be located on river-left, approximately 100 yards upstream from the Heuvelton powerhouse and immediately upstream of the existing day-use area.

Eel Weir – Portage Route

Erie proposes to formalize the existing portage route located on river-right of the Eel Weir impoundment. As part of its proposal, Erie either would relocate the existing take-out outside of the existing boat restraining barriers¹⁸ or relocate the boat restraining

¹⁸ The boat restraining barriers in the Eel Weir impoundment are described as “boat balls” in the RMP.

barriers. The portage route would follow the existing informal trail to the existing put-in, located on river-right just downstream of the Eel Weir powerhouse. The total length of the portage route is approximately 605 feet long, with slopes ranging from 1 to 11 degrees. The approximate lengths and slopes of each segment along the route, from take-out to put-in, are as follows:

- 1st segment: 97-foot section is 6 degrees (relatively flat)
- 2nd segment: 195-foot section is 1 degree (relatively flat)
- 3rd segment: 313-foot section is 11 degrees (sloping downward)

Erie proposes to post additional signage indicating the distance to the next put-in or take-out downstream of the project's lower-most development, between the Eel Weir Development and the City of Ogdensburg, located approximately 5 RMs downstream.

Staff Analysis

Erie's proposed recreational enhancements would improve public access to the Oswegatchie River upstream and downstream of all six project developments and allow through-boaters to easily circumvent the dam structures. By connecting each of the segmented portions of the Oswegatchie River through the construction of portage routes, boating opportunities in the project area would be enhanced by the ability to paddle the length of the Oswegatchie River. Established portage trails would deter boaters from creating their own trails and minimize adverse effects to surrounding vegetation and wetland areas and wildlife habitat.

The proposed portage routes at Browns Falls, Oswegatchie, Heuvelton, and Eel Weir would all traverse terrain with mild to moderate slopes, ranging from 1 to 18 degrees. The majority of the proposed portage routes at Flat Rock and South Edwards would also traverse terrain with mild to moderate slopes; however, some sections would be constructed through steep terrain. Specifically, the 2nd and 4th sections of the proposed Flat Rock portage route, as well as the 3rd section of the proposed South Edwards portage route would be steep and lengthy. The proposed slopes of these three sections would be 21, 23, and 34 degrees, respectively, and span 170 to 305 feet in length. While the majority of the six proposed portage routes would be easy for boaters to traverse, these three steeper sections of Flat Rock and South Edwards Developments would be difficult for paddlers to safely negotiate while transporting their boats and associated gear. Providing a means to safely transport a boat along the steep sections of these portage routes, such as parallel boat slides, could increase boater safety and the user experience at the Flat Rock and South Edwards developments.

Proposed enhancements to existing and proposed parking, picnic, and day-use areas at Browns Falls, Flat Rock, South Edwards, and Heuvelton would also improve public access and could attract additional recreational use. Installing picnic tables would

enhance the user experience at the associated project developments by providing convenient amenities. Further, installing an ADA-compliant parking space, picnic table, and seasonal floating dock at Flat Rock would be in the interest of individuals with disabilities. Improving access for individuals with disabilities at the project would be consistent with the Commission's policy on providing recreational facilities at licensed projects¹⁹ whereby licensees are expected to consider the needs of individuals with disabilities in the design and construction of recreational facilities.

Installation of signage, as proposed by Erie, indicating portage trail take-out/put-in locations, trail routes, designated fishing access areas, and boat launch locations would guide anglers and boaters to recreational access points and limit disturbance to vegetation and wildlife habitat. Further, posting signage to indicate areas restricted from public access would inform recreationists of the availability of areas permissible and safe for fishing, boating, and picnicking at the project developments. Erie also proposes to post warning signs at the South Edwards and Oswegatchie Developments to inform boaters of Cotton Rapids, a three-mile long stretch of rapids, located approximately 0.5 RM downstream of the Oswegatchie Development. Deploying warning signs would notify boaters of the difficulty of this three-mile reach, containing class I to IV rapids, and provide adequate warning for boaters to exit the river and avoid or bypass this challenging section.

Creating an online and/or paper brochure would provide additional means for public information regarding available recreational opportunities at the project developments, and could attract additional recreational use. As indicated in section 3.8.2 of the Settlement, Erie proposes to monitor the use of the project's recreational facilities through the Commission's Form 80 process. Recreational use monitoring would provide a means to assess use levels in the project area and the opportunity to adjust recreational facility development and management over the term of any subsequent license as needed. Submittal of FERC Form 80 reports would provide the mechanism for this monitoring, and additional measures could be required in the future, as deemed necessary by the Commission.

3.5.5.4 Unavoidable Adverse Effects

None.

3.3.6 Cultural Resources

3.3.6.1 Affected Environment

¹⁹ See 18 CFR section 2.7(b).

Area of Potential Effect

The Advisory Council on Historic Preservation defines an area of potential effect (APE) as the geographic area or areas in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE for the Oswegatchie River Hydroelectric Project includes (a) lands enclosed by the project boundary; and (b) lands or properties outside the project boundary where project operations or future project-related recreational development may cause changes in the character or use of historic properties, if any exist.

Regional History

Archaeological evidence suggests that Paleoindian hunter-gatherers first entered the New York region at least 11,300 years ago. Further evidence indicates that cultural groups present in New York during the Late Archaic period (4000 – 1000 BC) shared certain traits that linked them to a larger Laurentian Tradition, specific to the St. Lawrence River Valley, that became widespread across the northeast during this period. Intensified land use in the Adirondack region occurred during the Early Woodland period, around 1550 AD. During this time, long-term camps may have been established in resource-rich areas of the region, including major rivers, wetlands, and the outlets of ponds and lakes. Large, centralized, semi-permanent Iroquoian settlements were originally located along floodplains, river terraces, or coastlines. Although Iroquoian sites have been documented in the St. Lawrence River Valley, it appears that the Adirondack region was not intensively utilized by Iroquois tribes during the Late Woodland period.

Before the arrival of Europeans, the Oswegatchie River served as the boundary between the Mohawk and Oneida tribes of the Iroquois confederacy. Transient contact between Native Americans and Europeans along the Atlantic Coast of North America may have begun as early as the 1490s. In 1524, Italian explorer Giovanni da Verrazzano made the first documented contact with Native Americans along the Atlantic seaboard. Shortly after Verranno's encounter, French explorer Jacques Cartier traveled inland along the St. Lawrence River to present-day Montreal and made contact with St. Lawrence Iroquoian groups that occupied the region.

The 17th and 18th centuries were periods of tremendous social and political turmoil across the New York region. Sustained contact in the vicinity of the APE began with Samuel de Champlain's exploration of the region in 1609. Jesuit missionaries and French trappers that followed Champlain encountered indigenous populations inflicted with epidemic diseases brought from Europe. Territorial expansion also created conflict between Native Americans and European colonists pressing inland up the St. Lawrence and Champlain river valleys. Regional conflicts such as King Williams's War (1689 – 1697) devastated both native and colonial communities. European settlers and their

indigenous allies also attacked other colonial settlements the New York region in an attempt to gain political control of the region. These conflicts were primarily motivated by access to trade goods and European rivalries. As a result, defenses rose at sites along the Champlain Valley as the French and British struggled for control of waterways that provided for transportation of furs and other trade items.

Although the project area remained largely isolated from large-scale regional conflict during the 17th century, Lake Champlain and Lake George on the eastern edge of the Adirondacks became hotbeds of military activity during the French and Indian War (1754 – 1763). The Oswegatchie River was a frequently used route for war parties traveling north during the French and Indian Wars (Paddling.net, Inc., 2011). The upper Oswegatchie River across much of the Adirondack region was settled during the mid-19th century, driven primarily by the demand for timber. At sites such as the Browns Falls and Oswegatchie Developments, mills were developed to harness the power of the Oswegatchie River for the purpose of processing timber cut from the Adirondack forests. In addition to providing power to mills, the Oswegatchie and other river systems served as the primary transportation channels for the Adirondack logging industry. These rivers were vital to moving logs to downstream mills and markets.

Starting in the late 1800s, the Adirondack region began to attract tourists who sought the “wilderness experience”. Stagecoaches and hotels were established to cater to the emergence of tourism. The impressive Adirondack “Great Camps” of the period offered a testament to the region’s growing significance as a seasonal retreat. However, by the end of the 19th century, many New Yorkers were becoming increasingly concerned by the large-scale destruction of the Adirondack forests. The timber industry significantly reduced the topsoil’s ability to retain water which resulted in runoff and erosion and contributed to the degradation of regional waterways. Individuals with both conservation and commercial interests soon recognized that the extensive timber harvest in the Adirondack region were not sustainable, economically nor environmentally. These parties petitioned state officials to create a park to conserve the Adirondack forests and protect the regional waterways. In response to growing concern, the New York State Legislature created the Adirondack Park in 1892. In 1895, the New York State Constitution was amended to protect state-owned lands within the Adirondack Park as “forever wild” (as discussed above in *Land Use and Regional Recreation*).

On May 5, 2007, Erie sent a Pre-Application Document questionnaire to seven federally recognized Indian tribes (The St. Regis Mohawk Tribe, Oneida Indian Nation, Onondaga Nation, Cayuga Nation, Seneca Nation of Indians, Tonawanda Seneca Nation, and Tuscarora Nation), the New York State Office of Parks, Recreation, and Historic Preservation (New York SHPO), the National Parks Service (NPS), and the United States Department of the Interior Bureau of Indian Affairs. The purpose of the questionnaire was to provide an overview of the proposed project and request additional information from the recipients. In a response to the questionnaire dated May 29, 2007, the St. Regis

Mohawk Tribe deferred their interest in the project to the Onondaga Indian Nation and the Oneida. The Seneca Nation of Indians declined to participate in consultation by letter dated September 11, 2008. By letter dated July 27, 2007, the Oneida responded to the questionnaire and stated that the nation knew of nothing culturally significant in the project's vicinity. No other responses or additional correspondence from the other Indian tribes was received.

Due to their historical presence and use, Commission staff contacted five Indian tribes (The Onondaga Nation, Tuscarora Nation, Cayuga Nation, Tonawanda Seneca Nation, and the Seneca Nation of Indians) to determine their interest in the proposed project by letters issued January 23, 2008. No responses were filed.

Archeological Resources

As part of the historical and cultural resources assessment, Erie retained HAA, Inc. to conduct a series of cultural sources studies of the project APE. HAA, Inc. conducted a Phase IA literature review, archeological sensitivity assessment, and architectural assessment for the project. The completed Phase IA report was circulated to the project's cultural resources consultation list on January 15, 2010. The Phase IA study also employed an extensive field visit at each of the project's six developments that included geomorphological assessments at sites of ongoing erosion, as well as locations where future shoreline erosion would most likely occur.

The Phase IA's geomorphological analyses identified 14 areas where erosion was active or which possessed the potential for erosion. These locations were termed Slope Stability Areas (SSAs) and mapped on associated U.S. Geological Survey and orthoimagery maps. Of the 14 areas identified, all but three were steeply sloped, had embankment fill from nearby road construction, and had concrete walls or bedrock outcroppings. Accordingly, the Phase IA concluded that these areas have little or no archeological potential and no additional archeological testing was recommended by HAA, Inc. One archaeologically sensitive SSA was identified around Eel Weir (EW1), and two archaeologically sensitive SSAs were reported near Heuvelton (HU4 and HU5).

EW1 is a narrow area of naturally eroded sand and silt sediments along the upstream shoreline of Eel Weir State Park. A known archeological site is located at the state park, and a chert biface was found at the EW1 SSA during a site visit. A New York SHPO Prehistoric Archaeological Site Inventory Form was completed for this isolated find. Although cultural material was identified at this SSA, HAA, Inc. did not recommend further archeological testing because the site was previously documented and there was no evidence to suggest that the Eel Weir Development's run-of-river operational is contributing to erosion at this shoreline location. HU4 and HU5 are located upstream of the Heuvelton Development in sections of the shoreline adjacent to private property, and consist mainly of fill. HU4 is located near the confluence of Lisbon

Creek and the Oswegatchie River, and HU5 is situated approximately 2,000 feet upstream from the Heuvelton Development. HAA, Inc. determined that the erosion appeared to be very minor and occurred only on moderately sloped banks near the edge of the impoundment. Archeological testing was not recommended at either HU4 or HU5 as no archeological material was observed at either SSA.

Historic Properties

As another component of the Phase IA study, Erie completed an architectural assessment of the project's facilities to determine the developments' eligibility for inclusion in the National Register. As part of the study, HAA, Inc. collected technical information, photographs, and other documentation of the various structures and facilities associated with the developments. HAA, Inc. used this information to complete and submit New York SHPO Historic Archaeological Site Inventory Forms for Browns Falls, Flat Rock, South Edwards, Heuvelton, and Eel Weir.

Browns Falls, Flat Rock, South Edwards, Heuvelton, and Eel Weir all have similar historical significance. These five developments are good representative examples of early twentieth century hydroelectric facilities and all retain most or all of their principle original engineering components and equipment. The engineer behind the Browns Falls Development, J.P. Brownell, was also responsible for the design of many facilities on the Beaver and Oswegatchie rivers. The differential surge tank at the Browns Falls site was cited as exemplary of its type by a leading authority of the day. The Flat Rock Development was designed by William Pitcher Creager, a recognized master of hydropower design of the period. All aspects of the Flat Rock site retain the integrity of the 1924 original construction date. South Edward's design incorporated innovations recognized by professionals at the time and it also retains all of its original equipment and principal features. Recent alterations to the Heuvelton Development have not materially impacted the original fabric of its principal features. Lastly, Eel Weir was considered to be a key element in the industrial development of the City of Ogdensburg, New York, located 5.1 RMs downstream, when initially contemplated in 1914.

The Phase IA study led to the identification of two new historic sites within the project's APE. The Browns Falls Mill Complex, located along the bypassed reach of the Browns Falls Development, and the Flat Rock House Historic Site, which is situated at a picnic area near the Flat Rock Development boat launch.

The Browns Falls Mill Complex consists of a sprawling mill complex that evolved from the mid-19th century through the early-20th century. The study reported that the archeological features of this site are largely protected by the ongoing operation of the project, as the Browns Falls dam and penstock control flooding on the bypassed reach that would likely destroy much of the remaining elements. The Flat Rock House Historic Site consists of the concrete foundation of a small house, or portion of a house. The

study reported that this site likely dates to the mid-20th century. No artifacts or other features were located in the vicinity. The Phase IA report concluded that project activities do not appear to affect that archeological integrity of the site.

3.3.6.2 Environmental Effects

On February 22, 2008, the Commission designated Erie as a non-federal representative for section 106 consultation responsibilities under the NHPA. Pursuant to section 106, and as the Commission's designated non-federal representative, Erie consulted with the New York SHPO, the Oneida Indian Nation, and NPS to locate, determine National Register eligibility, and assess potential adverse effects to historic properties associated with the project.

Erie prepared a draft HPMP that provides measures for the protection and management for historic properties within the project's APE. On August 3, 2010, Erie circulated the draft HPMP to the New York SHPO, Oneida, and NPS for review and comment. In an email correspondence dated September 30, 2010, the Oneida stated that they had no additional comments after reviewing the draft HPMP. By letter dated October 4, 2010, the New York SHPO stated that they had no concerns with the draft HPMP. In this letter, the New York SHPO also concurred that the Browns Falls, Flat Rock, South Edwards, Heuvelton, and Eel Weir hydroelectric facilities are individually eligible for inclusion in the National Register of Historic Properties (National Register). Erie included a final HPMP, dated December 2010, within its license application filed on December 30, 2010.

Staff Analysis

Relicensing the project is not likely to have an effect on the identified historic resources because the proposed project would not involve any new construction, other than the proposed new recreational facilities. At this time, there is no evidence to suggest that proposed project operations would contribute to shoreline erosion at the known historic sites and SSAs at the project. However, in order to mitigate the effects of any future modification or activities that could potentially affect the characteristics of the Oswegatchie Project, the HPMP, dated December 2010, would be implemented. As recommended by HAA, Inc., the HPMP includes measures for conducting routine monitoring of the EW1, HU4, and HU5 SSAs to assess whether archaeological resources are being exposed or threatened at these locations due to shoreline erosion throughout the term of any license. Therefore, pursuant to the National Historic Preservation Act, Section 106 (16 U.S.C. § 470f (2006) and 36 CFR § 800.5(b) (2008), we have determined that the proposed project would not have an adverse effect on historic properties located at the project conditioned on implementing the HPMP dated December 2010, filed December 30, 2010. The HPMP would ensure that appropriate consultation occurs prior to any future activity that may affect the historic features of the project.

The Commission intends to execute a PA with the New York SHPO, and invite Erie and the Oneida Indian Nation to concur, that would include a stipulation to implement the HPMP. The HPMP includes guidelines for maintaining the project's facilities and addresses any inadvertent discoveries resulting from other activities involving project operation and maintenance for the term of any new license.

3.3.6.4 Unavoidable Adverse Effects

None

4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the Oswegatchie River Hydroelectric Project's use of the Oswegatchie River for hydropower purposes to see what effect various environmental measures would have on the project's costs and power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,²⁰ the Commission compares the current project cost to an estimate of the cost of obtaining the same amount of energy and capacity using a likely alternative source of power for the region (cost of alternative power). In keeping with Commission policy as described in *Mead Corp.*, our economic analysis is based on current electric power cost conditions and does not consider future escalation of fuel prices in valuing the hydropower project's power benefits.

For each of the licensing alternatives, our analysis includes an estimate of: (1) the cost of individual measures considered in the EA for the protection, mitigation and enhancement of environmental resources affected by the project; (2) the cost of alternative power; (3) the total project cost (i.e. for construction, operation, maintenance, and environmental measures); and (4) the difference between the cost of alternative power and total project cost. If the difference between the cost of alternative power and total project cost is positive, the project produces power for less than the cost of alternative power. If the difference between the cost of alternative power and total project cost is negative, the project produces power for more than the cost of alternative power. This estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

²⁰ See *Mead Corporation, Publishing Paper Division*, 72 FERC ¶ 61,027 (July 13, 1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel is the largest component of the cost of electricity.

4.1 POWER AND ECONOMIC BENEFITS OF THE PROJECT

Table 13 summarizes the assumptions and economic information we use in our analysis. This information was either provided by Erie in the license application or estimated by staff. We find that the values provided by Erie are reasonable for the purposes of our analysis. Cost items common to all alternatives include: taxes and insurance costs; net investment (the total investment in power plant facilities remaining to be depreciated); estimated future capital investment required to maintain and extend the life of plant equipment and facilities; relicensing costs; normal operation and maintenance cost; and administrative fees.

Table 13. Staff parameters for economic analysis of the Oswegatchie Hydroelectric Project. (Source: Staff)

Parameters	Values	Sources
Period of analysis	30 years	Staff
Term of financing	20 years	Staff
Escalation rate	0 percent	Staff
Federal and State tax	\$1,111,300	License Application (2010)
Net investment	\$31,357,900	License Application (2010)
Cost of license application	\$2,600,000	License Application (2010)
Operation and maintenance	\$3,688,700	License Application (2010)
Composite annual energy rate (\$/MWh) ^a	41.73	License Application (2010)
Capacity rate (\$/kilowatt-year) ^b	159	Energy Information Administration
Dependable Capacity (MW)	27.25	License Application (2010)
Total rate (composite + capacity) ^c	75.29	Staff

Parameters	Values	Sources
Interest rate	10.0	License Application (2010)
Discount rate	8.0	Staff

^a Based on Erie's estimate of on-peak energy Market price (\$42.34/MWh) which occurs 42% of the year and off-peak energy market price (\$33.50/ MWh) which occurs 58 % of the year.

^b Based on the Energy Information Administration's Annual Outlook for 2011 at <http://www.eis.doe.gov/oiaf/aeo/index.html>.

^c Based on Erie's estimate of the project's dependable capacity of 27.25 MW, the capacity rate of \$159/kWh, and the composite rate of \$41.73/MWh.

4.2 COMPARISON OF ALTERNATIVES

Table 14 summarizes the installed capacity, annual generation, cost of alternative power, estimated total project cost, and difference between the cost of alternative power and total project cost for each of the alternatives considered in this EA: no-action, the applicant's proposal, and the staff alternative.

Table 14. Summary of the annual cost of alternative power and annual project cost for the three alternatives for the Oswegatchie Hydroelectric Project. (Source: Staff)

	No Action	Erie's Proposal	Staff Alternative
Installed capacity (MW)	28.56	28.56	28.56
Annual generation (MWh)	129,096	128,113	128,113
Annual cost of alternative power (\$/MWh)	\$9,719,600 75.29	\$9,645,600 75.29	\$9,645,600 75.29
Annual project cost (\$/MWh)	\$8,278,600 64.13	\$9,089,000 70.95	\$9,091,000 70.96
Difference between the cost of alternative power and project cost (\$/MWh)	\$1,441,000 11.16	\$556,600 4.34	\$554,600 4.33

4.2.1 No-Action Alternative

Under the no-action alternative, the project would continue to operate as it does

now. The project would have an installed capacity of 28.56 MW, and generate an average of 129,096 MWh of electricity annually. The average annual cost of alternative power would be \$9,719,600, or about \$75.29/MWh. The average annual project cost would be \$8,278,600, or about \$64.13/MWh. Overall, the project would produce power at a cost which is \$1,441,000, or \$11.16/MWh, less than the cost of alternative power.

4.2.2 Proposed Action

Erie proposes to: (1) maintain the impoundment elevations at Browns Falls and Flat Rock between the top of the crest control devices and 4 feet below the top of the crest control devices or between the top of the spillway crests and 4 feet below the top of the spillway crests, if the crest control devices fail during high flow events from July 15 through March 14; (2) maintain the impoundment elevations at Browns Falls and Flat Rock between the top of the crest control devices and 2 feet below the top of the crest control devices or between the top of the spillway crests and 2 feet below the top of the spillway crests, if the crest control devices fail during high flow events from March 15 through July 14; (3) maintain the South Edwards impoundment elevation between the top of the crest control devices and 6 feet below the top of the crest control devices or between the top of the spillway crest and 6 feet below the top of the spillway crest, if the crest control devices fail during high flow events from July 15 through March 14; (4) maintain the South Edwards impoundment elevation between the top of the crest control devices and 2 feet below the top of the crest control devices or between the top of the spillway crest and 2 feet below the top of the spillway crest, if the crest control devices fail during high flow events from March 15 through July 14; (5) maintain the impoundment elevations at Heuvelton and Eel Weir between the top of the Heuvelton tainter gates or the top of the Eel Weir spillway crest and 0.5 feet below the top of the Heuvelton tainter gates and the top of the Eel Weir spillway crest, respectively; and (6) maintain a minimum flow of 60 cfs in the Brown Falls bypassed reach.

In addition to the above operation changes, Erie proposes to: (1) replace the existing 2-foot-high flashboards at Browns Falls and South Edwards with permanent crest control devices; (2) construct and operate fishways for upstream and downstream passage at Heuvelton and Eel Weir; (3) install trashracks with 1-inch clear spacing or seasonal overlays at each development except Oswegatchie; (4) and implement plans to manage invasive species, improve access and enhance recreation at each development, protect common loons, and manage historic properties. The project would have a total capacity of 28.56 MW and an average annual generation of 128,113 MWh. As proposed by Erie, the average annual cost of alternative power would be \$9,645,600, or about \$75.29/MWh. The average annual project cost would be \$9,089,000, or about \$70.95/MWh. Overall, the project would produce power at a cost which is \$554,600, or \$4.33/MWh, less than the cost of alternative power.

4.2.3 Staff Alternative

The staff alternative includes Erie's proposal and, therefore, would have the same capacity and energy attributes. Table 17 shows the staff recommended additions and modifications to Erie's proposed environmental protection and enhancement measures and the estimated cost of each. Based on a total installed capacity of 28.56 MW and an average annual generation of 128,113 MWh, the cost of alternative power would be \$9,645,600, or about \$75.29/MWh. The average annual project cost would be \$9,091,000, or about \$70.96/MWh. Overall, the project would produce power at a cost which is \$554,600, or \$4.33/MWh, less than the cost of alternative generation.

4.3 COST OF ENVIRONMENTAL MEASURES

Table 15 gives the cost of each of the environmental enhancement measures considered in our analysis for each development. We convert all costs to equal annual (levelized) values over a 30-year period of analysis to give a uniform basis for comparing the benefits of a measure to its cost.

Table 15. Cost of environmental mitigation and enhancement measures considered in assessing the environmental effects of continuing to operate the Oswegatchie River Hydroelectric Project (Source: Erie and Staff). A number in parenthesis denotes that the measure would result in an increase of the project's power value, instead of an annual cost.

Measures	Entity	Capital cost	Annual cost ^a	Levelized annual cost ^b
Geology and Soils Resources				
Develop and implement an Erosion and sedimentation plan	Staff	\$14,000	\$0	\$1,430
Aquatic Resources				
Replace the existing 2-foot-high flashboards at Browns Falls with a year-round crest control device	Erie, Interior, New York DEC, Staff	\$450,000	(\$11,520) ^c	\$34,600
Replace the existing 2-foot-high flashboards at South Edwards with a crest control device	Erie, Interior, New York DEC, Staff	\$210,000	(\$13,330) ^d	\$8,190
Maintain the Browns Falls impoundment between elevations 1,349 feet msl and 1,345 feet msl or between elevations 1,347 feet msl and 1,343 feet msl if the crest control devices fail during high flow events from March 15 through July 14; and between elevations 1,349 feet msl and 1,347 feet msl or between elevations 1,347 feet msl and 1,345 feet msl if the crest control devices fail during high flow events from July 15 to March 14	Erie, Interior, New York DEC, Staff	\$0	\$1,960 ^e	\$1,960

Measures	Entity	Capital cost	Annual cost ^a	Levelized annual cost ^b
Maintain the Flat Rock impoundment between elevations 1,080 feet msl and 1,076 feet msl from March 15 through July 14; and between elevations 1,080 feet msl and 1,078 feet msl from July 15 to March 14	Erie, Interior, New York DEC, Staff	\$0	(\$52,780) ^f	(\$52,780)
Maintain the South Edwards impoundment between elevations 845.2 feet msl and 839.2 feet msl or between elevations 843.2 feet msl and 837.2 feet msl if the crest control devices fail during high flow events from March 15 through July 14; and between elevations 845.2 feet msl and 843.2 feet msl or between elevations 843.2 feet msl and 841.2 feet msl if the crest control devices fail during high flow events from July 15 to March 14	Erie, Interior, New York DEC, Staff	\$0	(\$4,370) ^g	(\$4,370)
Maintain the Oswegatchie impoundment between elevations 758.6 feet msl and 758.2 feet msl	Erie, Interior, New York DEC, Staff	\$0	\$0 ^h	\$0
Maintain the Heuvelton impoundment between elevations 287.6 feet msl and 287.1 feet msl	Erie, Interior, New York DEC, Staff	\$0	\$0 ^h	\$0
Maintain the Heuvelton impoundment between elevations 287.6 feet msl and 287.1 feet msl	Erie, Interior, New York DEC, Staff	\$0	\$0 ^h	\$0
Maintain a year-round minimum flow of 30 cfs in the Browns Falls bypassed reach	Erie, Interior, New York DEC,	\$0	\$83,200 ⁱ	\$83,200

Measures	Entity	Capital cost	Annual cost ^a	Levelized annual cost ^b
	Staff			
Maintain a year-round minimum flow of 60 cfs in the South Edwards bypassed reach	Erie, Interior, New York DEC, Staff	\$0	\$0 ^j	\$0
Maintain a year-round minimum flow of 40 cfs in the Oswegatchie bypassed reach	Erie, Interior, New York DEC, Staff	\$0	\$0 ^j	\$0
Maintain a minimum base flow of 160 cfs, or inflows, whichever is less, in the Flat Rock tailrace	Erie, Interior, New York DEC, Staff	\$0	\$0 ^j	\$0
Maintain a minimum base flow of 160 cfs, or inflows, whichever is less, in the Oswegatchie tailrace	Erie, Interior, New York DEC, Staff	\$0	\$0 ^j	\$0
Maintain a minimum base flow of 275 cfs, or inflows, whichever is less, in the Heuvelton tailrace	Erie, Interior, New York DEC, Staff	\$0	\$0 ^j	\$0
Maintain a minimum base flow of 325 cfs, or inflows, whichever is less, in the Eel Weir tailrace	Erie, Interior, New York DEC, Staff	\$0	\$0 ^j	\$0
Develop and implement a Stream Flow and Water Level Monitoring Plan with gages and equipment to monitor headpond elevations and bypassed reach flows	Erie, Interior, New York DEC, Staff	\$60,000	\$15,000	\$21,100
Develop and implement a trashrack installation and	Erie, Interior, New	\$1,520,000 ^k	\$34,410 ^l	\$190,000

Measures	Entity	Capital cost	Annual cost ^a	Levelized annual cost ^b
monitoring plan for each development except Oswegatchie that includes installation of trashracks with 1-inch clear spacing over the full length and height of the existing intake or overlays from March 15 through November 30 of each year	York DEC, Staff			
Implement Trout Stocking and Monitoring Plan with measures to establish a viable trout population in the Brown Falls bypassed reach	Erie, Interior, New York DEC, Staff	\$16,000	\$0	\$1,640
Continue to maintain a minimum flow of 40 cfs through the notch in the Oswegatchie spillway for downstream fish movement	Erie, Interior, New York DEC, Staff	\$0	\$0	\$0
Construct and operate fishways for upstream and downstream passage of lake sturgeon, American eel, and other fish species from March 15 through November 30 at Heuvelton	Erie, Interior, New York DEC, Staff	\$2,500,000	\$24,350 ^m	\$280,400
Construct and operate fishways for upstream and downstream passage of lake sturgeon, American eel, and other fish species from March 15 through November 30 at Eel Weir	Erie, Interior, New York DEC, Staff	\$2,500,000	\$22,090 ⁿ	\$278,000
Develop and implement a Fishway Effectiveness Plan to evaluate the effectiveness of the upstream and downstream fish passage facilities at Heuvelton and Eel Weir	Erie, Interior, New York DEC, Staff	\$100,000	\$0	\$10,200

Measures	Entity	Capital cost	Annual cost ^a	Levelized annual cost ^b
Terrestrial Resources				
Survey work areas for eagle and osprey nests prior to any tree clearing activities and develop and implement an Eagle and Osprey Management Plan to set limits on the size and timing of construction and land clearing activities near any nests that are identified	Erie, Interior, New York DEC, Staff	\$6,000 ^o	\$0	\$610
Implement invasive species management plan	Erie, Interior, New York DEC, Staff	\$0	\$1,000	\$1,000
Implement Common Loon Nesting Platform Installation and Monitoring Plan	Erie, Interior, New York DEC, Staff	\$25,000	\$0	\$2,560
Recreation and Land Use Resources				
Implement Recreation Management Plan	Erie, Interior, New York DEC, Staff	\$136,500	\$10,500	\$24,500
Modify the Recreation Management Plan to include installation of parallel boat slides at the Flat Rock and South Edwards portage routes	Staff	\$6,000	\$0	\$600
Cultural Resources				
Implement the proposed Historic Properties Management Plan	Erie, Staff	\$0	\$4,000	\$4,000

^a Annual costs typically include operational and maintenance costs and any other cost which occur on a yearly basis.

^b All capital costs and annual costs are converted to equal annual costs over a 30-year period to give a uniform basis for comparing all costs.

^c Based on Erie's estimated average annual energy gain of 153 MWh at Browns Falls for replacing the existing 2-foot-high flashboards with a year-round crest control device.

^d Based on Erie's estimated average annual energy gain of 177 MWh at South Edwards for replacing the existing 2-foot-high flashboards with a year-round crest control device.

^e Based on Erie's estimated average annual energy loss of 26 MWh at Browns Falls for limiting fluctuation in the impoundment to 4 feet and 2 feet below the spillway crest (1,347 feet msl) (or crest control device if installed, 1,349 feet msl) from July 15 through March and from March 15 through July 14, respectively.

^f Based on Erie's estimated average annual energy gain of 701 MWh at Flat Rock for limiting fluctuation in the impoundment to 4 feet and 2 feet below the spillway crest (1,080 feet msl) from July 15 through March 15 and from March 15 through July 14, respectively.

^g Based on Erie's estimated average annual energy gain of 58 MWh at South Edwards for limiting fluctuation in the impoundment to 6 feet and 2 feet below the spillway crest (843.2 feet msl) (or crest control device if installed, 845.2 feet msl) from July 15 through March and from March 15 through July 14, respectively.

^h Based on the existing fluctuations at Oswegatchie, Heuvelton, and Eel Weir.

ⁱ Based on Erie's estimated average annual energy loss of 1,105 MWh at Browns Falls for increasing flows in the bypassed reach from 15 to 30 cfs between October 1 and May 31, for a total year-round minimum flow of 30 cfs.

^j Based on the existing minimum flow requirements in the South Edwards and Oswegatchie bypassed reaches; and the existing base flow requirements in the Flat Rock, Oswegatchie, Heuvelton, and Eel Weir tailraces.

^k Based on Erie's estimated capital costs for developing plans and installing trashracks with 1-inch clear spacing over the full length and height of the existing intake or overlays from March 15 through November 30 of each year at Brown Falls (\$270,000), Flat Rock (\$340,000), South Edwards (\$390,000), Heuvelton (\$240,000), and Eel Weir (\$380,000).

^l Based on Erie's estimated average annual energy loss for installing the seasonal trashracks at Brown Falls (66 MWh), Flat Rock (40 MWh), South Edwards (5 MWh), Heuvelton (60 MWh), and Eel Weir (286 MWh).

^m Based on Erie's estimated annual operational and maintenance cost of \$5,000 and average annual energy loss at Heuvelton of 257 MWh from operating fishways for upstream and downstream passage.

ⁿ Based on Erie's estimated annual operational and maintenance cost of \$5,000 and average annual energy loss at Eel Weir of 227 MWh from operating fishways for upstream and downstream passage.

^o The cost of this measure includes the cost of surveying work areas at each development for eagle and osprey nests prior to any tree clearing activities. We assume no cost for developing and implementing an Eagle and Osprey Management Plan since the need for the plan depends on future survey results.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPARISON OF ALTERNATIVES

In this section we compare the development and non-developmental effects of proposal, Erie's proposal as modified by staff, and the no-action alternative. Table 16 summarizes the environmental effects of the different alternative.

Table 16. Comparison of alternatives for the Oswegatchie Hydroelectric Project (Source: Staff).

Resource	No-action Alternative	Proposed Action	Staff Alternative
Annual Generation (MWh)	129,096	127,130	127,130
Geology and Soils Resources	No changes to geology and soils.	Implement best management practices to control erosion and sedimentation during construction of the proposed upstream and downstream fish passage at Eel Weir and Heuvelton and during construction of the proposed recreation enhancements.	Develop and implement an erosion and sediment control plan with specific measures to limit erosion and sedimentation during project construction, including detail regarding, actual site conditions, an implementation schedule, and any necessary monitoring maintenance programs.
Aquatic Resources	No change to project operations; Erie would continue to operate the project with the existing impoundment fluctuations, flashboards, tailrace base flows, and bypassed reach flows. No provisions for fish passage other than the existing 40 cfs release	Limit daily impoundment fluctuations as described in section 2 to provide stable littoral habitat. Continue existing base flows in the project tailraces to maintain habitat downstream of the developments. Release a year-round minimum flow in the Browns	The measures and effects would be the same as the Proposed Action.

Resource	No-action Alternative	Proposed Action	Staff Alternative
	<p>through the spillway notch at Oswegatchie for downstream fish movement; and no additional protection from fish entrainment or impingement.</p>	<p>Falls bypassed reach of 30 cfs, and continue the existing minimum flows in the South Edwards and Oswegatchie bypassed reaches to maintain or enhance habitat in the bypassed reaches.</p> <p>Replace existing 2-foot-high flashboards at Browns Falls and South Edwards with crest control devices to reduce the occurrence of unplanned drawdowns.</p> <p>Implement a stream flow and water level monitoring plan to ensure compliance with impoundment fluctuation limits and minimum flows.</p> <p>Implement a trout stocking and monitoring plan in the Browns Falls bypassed reach to maintain the quality of the recreational fishery in this area.</p> <p>Implement a plan to provide</p>	

Resource	No-action Alternative	Proposed Action	Staff Alternative
		<p>permanent trashracks or seasonal trashrack overlays with 1-inch clear spacing from March 15 through November 30 of each year to reduce entrainment of fish in at project intakes.</p> <p>Construct and operate upstream and downstream fishways at Heuvelton and Eel Weir to provide lake sturgeon, American eel, and other fish species with access to habitat upstream of these developments.</p> <p>Develop and implement a fishway effectiveness study plan to ensure that the passage facilities are operating effectively.</p>	

Resource	No-action Alternative	Proposed Action	Staff Alternative
Wildlife Resources	<p>No change to project operations; and no measures would be implemented to protect eagles and ospreys during tree clearing activities. Eagle and osprey nests would not be protected.</p> <p>No loon nesting platforms or nest monitoring on the Browns Falls, Flat Rock and Oswegatchie impoundments. Loons would not be encouraged to nest at the project, and loon nesting attempts would not be recorded.</p> <p>Operate and maintain all developments and perform major construction or</p>	<p>Prior to tree clearing activities, survey for eagle and osprey nests; and develop and implement an Eagle and Osprey Management Plan to set limits on the size and timing of construction and land clearing activities near the nest. This would protect eagle and osprey nests from destruction.</p> <p>Implement the Common Loon Nesting Platform Installation and Monitoring Plan to mitigate for effects of impoundment fluctuation and recreation on loon nesting success. This would encourage loon nesting at the project impoundments by providing stable nesting locations that are unaffected by water level fluctuations.</p> <p>Notify the New York DEC if any state-listed species are identified during operation,</p>	<p>The measures and effects would be the same as the Proposed Action.</p>

Resource	No-action Alternative	Proposed Action	Staff Alternative
	<p>maintenance activities regardless of the effects on state-listed species. State-listed species would not be protected.</p>	<p>maintenance, or construction activities and consult with New York DEC prior to any major construction or maintenance activities to avoid effects on state-listed species. This would protect state-listed species and minimize any potential project effects on these species.</p>	

Resource	No-action Alternative	Proposed Action	Staff Alternative
Terrestrial Resources	No change to project operations; and no measures would be implemented to address invasive species. Invasive species could spread in the project area, and the public would not be informed about invasive species.	Develop and implement an Invasive Species Management Plan (ISMP) to control the introduction and spread of invasive plant species in the project area and educate recreationists about invasive species. This would prevent the spread of invasive plants in project areas and raise public awareness of invasive species.	The measures and effects would be the same as the Proposed Action.
Recreation	Existing project recreational facilities at the Browns Falls, Flat Rock, Heuvelton, and Eel Weir developments would continue to be maintained.	Recreation experience would be enhanced by implementing a recreation management plan, which includes: constructing or formalizing a canoe portage route at each development; posting signage to designate fishing access areas, boat launch locations, and areas restricted from public access; creating an online and/or paper brochure to describe available recreational opportunities at each project	Same as the proposed action with modifications to the recreation management plan, to include: Installing parallel boat slides (wooden or metal) along two long and steep-sloped sections of the Flat Rock portage route and one long steep-sloped section of the South Edwards portage route in order to improve the safety and user experience of these portage routes.

Resource	No-action Alternative	Proposed Action	Staff Alternative
		<p>development; formalizing the existing informal parking areas at Browns Falls; modifying the existing parking lot at Flat Rock to include an ADA-compliant space; modifying the existing day-use area at Flat Rock to include an ADA-compliant picnic table; installing an interpretive kiosk at Flat Rock; deploying an ADA-compliant seasonal floating dock; constructing a day-use area at South Edwards on river-right adjacent to Route 58 or next to the portage route; constructing a boat launch and parking area at Heuvelton with capacity for three cars with trailers and; relocating the existing boat barriers in the Eel Weir impoundment when formalizing the existing portage route.</p>	

Resource	No-action Alternative	Proposed Action	Staff Alternative
Cultural Resources	The continued operation of the project could affect cultural resources through shoreline erosion resulting from drawdowns.	Implementation of the HPMP dated December 2010 would ensure that procedures are in place in the event that any planned future activities could affect cultural resources.	Same as the proposed action, with execution of a PA which would require implementation of the HPMP dated December 2010.

5.2 Comprehensive Development and Recommended Alternative

Section 4(e) and 10(a) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The section contains the basis for, and a summary of, our recommendations for relicensing the Oswegatchie River Hydroelectric Project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

Based on our independent review of agency and public comments filed on this project and our review of the environmental and economic effects of the proposed project and economic effects of the project and its alternatives, we selected the proposed project with staff-recommended modifications as the preferred alternative. We recommend this alternative because: (1) issuing a new license for the project would allow Erie to continue to operate their project and provide a beneficial and dependable source of electric energy; (2) the 28.56 MW of electric capacity comes from a renewable resource which does not contribute to atmospheric pollution; (3) the public benefits of this alternative would exceed those of the no-action alternative; and (4) the recommended measures would protect and enhance fishery resources and would improve public recreation opportunities at the project.

In the following section, we make recommendations as to which environmental measures proposed by Erie or recommended by agencies or other entities should be included in any new license issued for the project. In addition to Erie's proposed environmental measures, we recommend additional staff-recommended environmental measures to be included in any new license issued for the project, and we describe these requirements in the draft license articles in Appendix A.

5.2.1 Measures Proposed by Erie

Based on our environmental analysis of Erie's proposal in section 3, and the costs presented in section 4, we conclude that the following environmental measures proposed by Erie would protect and enhance environmental resources and would be worth the cost. Therefore, we recommend including these measures in any license issued for the project.

Aquatic Resources – All Six Developments

- Develop and implement a Stream Flow and Water Level Monitoring Plan with gages and equipment to determine headpond elevations and minimum

flows (where applicable). The plan would include binary staff gages to permit independent verification by New York DEC, Interior and the Adirondack Park Agency (section 3.9 of the Settlement).

Aquatic Resources - Browns Falls

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Maintain a year-round 30-cfs minimum flow in the bypassed reach, as described in section 2.2.2, to enhance aquatic habitat in the bypassed reach during the winter.
- Replace the existing seasonal 2-foot-high flashboards with crest control devices (section 3.4 of the Settlement).
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement.
- Implement the Trout Stocking and Monitoring Plan with measures to establish a viable trout population in the bypassed reach between the Browns Falls dam and tailrace (section 3.7 of the Settlement).

Aquatic Resources - Flat Rock

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a minimum a year-round minimum flow to the tailrace of 160 cfs, as described in section 3.2.2 to the tailrace to maintain aquatic habitat in the tailrace downstream of the development.
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement.

Aquatic Resources - South Edwards

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a minimum a year-round minimum flow to the tailrace of 160 cfs, as described in section 2.2.2 to the tailrace to maintain aquatic habitat in the

tailrace downstream of the development.

- Maintain a year-round 60-cfs minimum flow in the bypassed reach, as described in section 2.2.2, to maintain aquatic habitat in the bypassed reach during the winter.
- Replace the existing seasonal 2-foot-high flashboards with crest control devices (section 3.4 of the Settlement).
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement.

Aquatic Resources - Oswegatchie

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a minimum a year-round minimum flow to the tailrace of 160 cfs, as described in section 2.2.2 to the tailrace to maintain aquatic habitat in the tailrace downstream of the development.
- Maintain a year-round 40-cfs minimum flow in the bypassed reach, as described in section 2.2.2, to maintain aquatic habitat in the bypassed reach.

Aquatic Resources - Heuvelton

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a minimum a year-round minimum flow to the tailrace of 275 cfs, as described in section 2.2.2 to the tailrace to maintain aquatic habitat in the tailrace downstream of the development.
- Modify the existing intakes with smaller spaced trashracks as described in section 2.2.1, to reduce fish mortality from entrainment and impingement.
- Construct and operate fishways for upstream and downstream passage of lake sturgeon, American eel and other fish species from March 15 through November 30 (section 3.6 of the Settlement).
- Develop and implement a Fishway Effectiveness Plan to evaluate how effective fishways are in passing fish upstream and downstream of the

development (section 3.6 of the Settlement).

Aquatic Resources - Eel Weir

- Limit impoundment fluctuations as described in Section 2.2.2, to provide stable littoral habitat in the impoundment.
- Release a minimum a year-round minimum flow to the tailrace of 325 cfs, as described in section 2.2.2 to the tailrace to maintain aquatic habitat in the tailrace downstream of the development (section 3.2 of the Settlement).
- Construct an operate fishways for upstream and downstream passage of lake sturgeon, American eel and other fish species from March 15 through November 30 (section 3.6 of the settlement).
- Develop and implement a Fishway Effectiveness Plan to evaluate how effective fishways are in passing fish upstream and downstream of the development (section 3.6 of the Settlement).

Terrestrial Resources – All Six Developments

- Develop an Invasive Species Management Plan (ISMP) to with measures to prevent the introduction or spread of invasive species, and submit the plan to New York DEC and FWS for approval.
- Survey work areas for eagle and osprey nests prior to any tree clearing activities. If a nest is identified, develop and implement an Eagle and Osprey Management Plan to set limits on the size and timing of construction and land clearing activities near the nest (section 2.13 of the Settlement).
- Notify the New York DEC if any New York State-listed species are identified during operation, maintenance, or construction activities and consult with New York DEC prior to any major construction or maintenance activities to avoid effects on state-listed species (section 2.12 of the Settlement).

Wildlife Resources – Browns Falls, Flat Rock, South Edwards and Oswegatchie

- Implement the Common Loon Nesting Platform Installation and Monitoring Plan to mitigate for effects of impoundment fluctuation and recreation on loon nesting success.

Recreation

- Implement the revised draft Recreation Management Plan (RMP) which includes a description of existing recreational facilities, proposes measures for enhancing recreational opportunities at the project, and includes operation and maintenance measures for the existing and planned project recreational facilities. As part of the RMP, the applicant proposes to develop an online and/or paper brochure to describe recreational opportunities available at the project developments. The applicant also proposes to monitor existing and proposed recreational facilities through the Commission Form 80 process.

Cultural Resources

- Implement the proposed HPMP that includes assurances that appropriate consultation occurs prior to any future activity that may affect the historic and archaeological features of the project, guidelines for maintenance and operation activities as they relate to historic properties, and guidelines for handling any inadvertent discoveries resulting from activities involving project operation and maintenance.

5.2.2 Additional Measures Recommended by Staff

Erosion and Sediment Control Plan

Construction activities associated with improvements to recreational facilities and installation of fish passage facilities at Heuvelton and Eel Weir could cause soil erosion and sedimentation. To address the effects of erosion and sedimentation from the construction activities associated with the recreational improvements, Erie proposes to implement best management practices, such as erosion control measures. However, Erie's proposal lacks detail and does not include any measures to control erosion and sedimentation during construction of the fish passage facilities. Therefore, we recommend that Erie develop and implement an erosion and sediment control plan that includes site-specific measures to limit erosion and sedimentation during construction of the proposed recreation and fish passage facilities. The plan should be developed in consultation with the agencies and include details regarding the actual site conditions, implementation schedules, and any necessary monitoring or maintenance programs. This plan would have an estimated annual cost of \$1,400 and we recommend this plan be required for any new license issued for the project (see draft article 008).

Modifications to the Recreation Management Plan

Under the revised draft RMP, Erie proposes to construct a portage route (from take-out to put-in) at all six project developments. The proposed portage routes at Browns Falls, Oswegatchie, Heuvelton, and Eel Weir would traverse terrain with mild to moderate slopes, ranging from 1 to 18 degrees. The majority of the proposed portage routes at Flat Rock and South Edwards would also traverse terrain with mild to moderate slopes; however, some sections would be constructed through steep terrain. Specifically, the 2nd and 4th sections of the proposed Flat Rock portage route, as well as the 3rd section of the proposed South Edwards portage route would be located in considerably steep areas. The slopes of these three sections would be 21, 23, and 34 degrees, respectively, and span 170 to 305 feet in length. While the majority of the six proposed portage routes would be easy for boaters to traverse, the three steeper sections of the proposed Flat Rock and South Edwards portage routes would be difficult for paddlers to safely negotiate while transporting their boats and associated gear. Providing a means to safely transport a boat along the steep sections of these portage routes would increase boater safety and the user experience at the Flat Rock and South Edwards developments.

Therefore, we recommend that Erie revise the RMP to include installation of parallel boat slides (wooden or metal) along the 2nd and 4th sections of the portage route at the proposed Flat Rock portage route, and along the 3rd section of the proposed South Edwards portage route. We recommend that the boat slides be designed and installed based upon standards in the NPS's Logical Lasting Launches (LLL) Chapter X, Portages Around Dams (NPS 2004; see Photo 10I on page 102. The measure would have an estimated annual cost of \$600 and we recommend this measure in any new license issued for the project (see draft article 014)

5.2.3 Conclusion

Based on our review of the agency and public comments filed on the project and our independent analysis pursuant to sections 4(e), 10(a)(1), and 10(a)(2) of the FPA, we conclude that licensing the Oswegatchie River Hydroelectric Project, as proposed by Erie with the additional staff-recommended measures, would be best adapted to a plan for improving or developing the Oswegatchie River.

5.3 UNAVOIDABLE ADVERSE EFFECTS

The reduced spacing of Erie's proposed overlays or permanent trashracks would reduce fish entrainment; however, some smaller fish are likely to continue to be entrained and pass through the turbines. While approximately 60 to 80 percent the entrained fish would be expected to survive and contribute to the downstream fish communities, the remaining portion would likely experience mortality or injury and would be lost from the fishery.

Impoundment fluctuations at Browns Falls, Flat Rock, and South Edwards would

continue to have some ongoing adverse effects on littoral habitat and associated fish species. In addition, some short-term and temporary disturbances to habitats may result from construction of the upstream and downstream fishways at Heuvelton and Eel Weir.

Vegetation clearing associated with the licensee's construction of improvements, such as recreational facilities and fish passage structures, could cause minor but long-lasting unavoidable adverse impacts. Appropriate design, planning, and agency consultation could minimize disturbance.

5.4 FISH AND WILDLIFE AGENCY RECOMMENDATIONS

Under the provisions of section 10(j) of the FPA, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project.

Section 10(j) of the FPA states that whenever the Commission finds that any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, the Commission and the agency shall attempt to resolve such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of the agency.

In response to our REA notice, Interior filed eight section 10(j) recommendations for the Oswegatchie River Hydroelectric Project on June 16, 2011. New York DEC filed thirteen section 10(j) recommendations on June 20, 2011. Table 17 lists Interior's and New York DEC's recommendations filed pursuant to section 10(j), and indicates whether the recommendations are included under the staff alternative. We consider all of the measures to be within the scope of section 10(j) and we recommend adopting all measures.

Table 17. Fish and Wildlife Agency Recommendations for the Oswegatchie River Hydroelectric Project. A number in parenthesis denotes that the measure would result in an increase of the project's power value, instead of an annual cost.

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
(1) Operate the project with the following limits on impoundment fluctuations as described in section 3.1.1 of the Settlement:	Interior New York DEC	Yes	\$(55,200)	Yes
(a) Browns Falls: 4 feet measured downward from top of spillway crest (1,347 feet msl) (or flashboards or rubber dam if installed, 1,349 feet msl) from July 15 through March 15; 2 feet measured downward from top of spillway crest (or flashboards or rubber dam if installed) from March 15 through July 14. ^a				
(b) Flat Rock: 4 feet measured downward from top of spillway crest (1,080 feet msl) from July 15 through March 15; 2 feet measured downward from top of spillway crest from March 15 through July 14.				

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
<p>(c) South Edwards: 6 feet measured downward from top of spillway crest (843.2 feet msl) (or flashboards or rubber dam if installed, 845.2 feet msl) from July 15 through March 15; 2 feet measured downward from top of spillway crest or other crest control device from March 15 through July 14.</p>				
<p>(d) Oswegatchie: 0.4 feet measured downward from top of spillway crest (758.6 feet msl).</p>				
<p>(e) Heuvelton: 0.5 feet measured downward from top of tainter gated crest or equivalent (272 feet msl).</p>				
<p>(f) Eel Weir: 0.5 feet measured downward from top of spillway crest (272 feet msl).</p>				
<p>(2) As described in section 3.4.1 of the Settlement, by December 31, 2016, and in consultation with Interior, New York DEC,</p>	<p>Interior New York DEC</p>	<p>Yes</p>	<p>\$42,800</p>	<p>Yes</p>

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
<p>and the Adirondack Park Agency, replace the existing 2-foot-high flashboards at Browns Falls and South Edwards with crest control devices (e.g., 2-foot-high rubber dams and/or 2-foot-high flashboards intended to remain in place year-round). If installed, year-round flashboards will be designed to fail when overtopped in excess of 2 feet of river flow.</p>				
<p>(3) Implement the Common Loon Nesting Platform Installation and Monitoring Plan described in section 3.5.1 of the Settlement, including deployment and monitoring of seasonal nesting platforms at Browns Falls, Flat Rock, South Edwards, and Oswegatchie. If loons use the platforms for nesting during the 5-year period identified in the plan, the licensee shall continue seasonal deployment of the platforms</p>	<p>Interior New York DEC</p>	<p>Yes</p>	<p>\$2,560</p>	<p>Yes</p>

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
according to the plan.				
<p>(4) As described in section 3.2.1 of the Settlement, maintain the following minimum base flows in the project's tailraces, or inflows to the respective impoundments, whichever is less:</p> <p>Flat Rock – 160 cfs</p> <p>South Edwards – 160 cfs</p> <p>Oswegatchie – 160 cfs</p> <p>Heuvelton – 275 cfs</p> <p>Eel Weir – 325 cfs</p>	<p>Interior New York DEC</p>	Yes	\$0	Yes
<p>(5) As described in section 3.5.1 of the Settlement, maintain the following minimum bypassed reach flows, or inflows to the respective impoundments, whichever is less:</p> <p>South Edwards – 60 cfs</p>	<p>Interior New York DEC</p>	Yes	\$0	Yes

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
Oswegatchie – 40 cfs				
(6) As described in section 3.3.1 of the Settlement, upon issuance and acceptance of the new license, or by April 1, 2013, maintain a minimum flow of 30 cfs in the Browns Falls bypassed reach.	Interior New York DEC	Yes	\$83,200	Yes
(7) Implement the Trout Stocking and Monitoring Plan described in section 3.7.1 of the Settlement, including stocking brook trout (unless New York requests a change to brown trout or a mixture of both species) into the Browns Falls bypassed reach, continuous seasonal water temperature monitoring in the bypassed reach from 2013 through 2017, and monitoring the success of the trout stocking by conducting sampling in 2014, 2016, and 2018.	Interior New York DEC	Yes	\$1,640	Yes
(8) Develop a Stream Flow and	Interior	Yes	\$21,100	Yes

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
Water Level Monitoring Plan as described in section 3.9.1 of the Settlement, including all gages and/or equipment to determine head pond elevations, determine bypass flows, determine tailrace base flows, and provide a means of independent verification by Interior and New York DEC.	New York DEC			
(9) As described in section 3.6.1.1 of the Settlement, modify the existing trashracks for each development, except Oswegatchie, to provide trashracks with 1-inch clear spacing year-round, or seasonally from March 15 through November 30 of each year.	New York DEC	Yes	\$190,000	Yes
(10) As described in section 3.6.1.2 of the Settlement, install fishways as follows:	New York DEC	Yes	\$568,200	Yes
(a) Browns Falls, Flat Rock, and South Edwards: no required				

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
<p>fishways for upstream or downstream passage.</p> <p>(b) Oswegatchie: continue to maintain a 40 cfs flow through a notch in the spillway for downstream fish movement.</p> <p>(c) Heuvelton and Eel Weir: by December 31, 2017, construct a rock ramp or vertical slot fishway for upstream and downstream passage of lake sturgeon, American eel, and other fish species, operated annually from March 15 through November 30, designed in consultation with Interior and New York DEC.</p>	New York DEC	No	\$0	Yes
<p>(11) The licensee shall notify New York DEC when encountering state-listed endangered, threatened, or species of special concern during project operation, construction, or maintenance activities described in section 2.13 of the</p>	New York DEC	No	\$0	Yes

Recommendation	Agency	Within the scope of section 10(j)	Annual Cost	Recommend Adopting?
Settlement.				
(12) Protect eagles and ospreys from project operation, construction, or maintenance activities by implementing measures consistent with section 2.13 of the Settlement, including nest surveys prior to any tree clearing activity.	New York DEC	Yes	\$610	Yes
(13) Develop an Invasive Species Management Plan, consistent with section 2.14 of the Settlement, and submitted to Interior and New York DEC for review and approval.	New York DEC	Yes	\$1,000	Yes

^a Interior’s recommendation for this development is worded slightly differently than New York DEC’s. Interior states that the 2 foot fluctuation limit for the period from March 15 through July 14 should be measured from the top of the spillway crest “or other crest control device.” This minor difference in wording has no significance; therefore, we have treated Interior’s and New York DEC’s recommendations as being the same.

5.5 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C., § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We reviewed eight qualifying comprehensive plans that are applicable to the Oswegatchie River Hydroelectric Project, located in New York. No inconsistencies were found.

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6.0 FINDING OF NO SIGNIFICANT IMPACT

If the Oswegatchie River Hydroelectric Project is issued a new license as proposed with the additional staff-recommended measures, the project would continue to operate while providing enhancements to aquatic and terrestrial resources, access to recreation facilities, and protection of cultural and historic resources in the project area.

Based on our independent analysis, we find that the issuance of a new license for the Oswegatchie River Hydroelectric Project, with our recommended environmental measures, would not constitute a major federal action significantly affecting the quality of the human environment.

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8.0 LIST OF PREPARERS

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APPENDIX A

LICENSE CONDITIONS RECOMMENDED BY STAFF

Interior has included the effectiveness testing and the fish passage measures for Oswegatchie, Heuvelton, and Eel Weir as part of their section 18 prescriptions. Additionally, we anticipate that the New York DEC will include conditions defining impoundment fluctuation limits, minimum tailrace base flows, minimum bypassed reach flows, streamflow and water level monitoring, and trashrack replacement in any 401 water quality certification that they issue. Therefore, because no articles would be necessary for these mandatory conditions in any license that may be issued for the Oswegatchie River Hydroelectric Project, draft 400 series articles for these measures are not provided below.

We recommend including the following license articles for any license issued for the project:

Draft Article 001. *Administrative Annual Charges.* The licensee shall pay the United State annual charges, effective the first day of the month in which the license becomes effective, and as determined in accordance with provisions of the Commission's regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 28.56 megawatts.

Draft Article 002. *Exhibit F Drawings.* Within 45 days of the effective date of this license, the licensee shall file the approved exhibit drawings in aperture card and electronic file formats.

(a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number (i.e., P-2713-1 through P-2713-13) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office.

(b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be

filed with the Commission's Division of Dam Safety and Inspections New York Regional Office. Exhibit F drawings must be identified as Critical Energy Infrastructure Information (CEII) material under 18 CFR § 388.113(c). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-2713-1, F-1, Description, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file
 FILE TYPE – Tagged Image File Format (TIFF), CCITT Group 4
 RESOLUTION – 300 dpi desired (200 dpi min)
 DRAWING SIZE FORMAT – 24” X 36” (min), 28” X 40” (max)
 FILE SIZE – less than 1 MB desired.

Draft Article 003. *Exhibit G Drawings.* Within 90 days of the effective date of the license, the licensee shall file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary all principal project works including lands necessary for operation and maintenance of the project. The Exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission’s regulations.

Draft Article 004. *Contract Plans and Specifications.* At least 60 days prior to the start of any construction, the licensee shall submit one copy of the final contract plans and specifications and supporting design document to the Commission's Division of Dam Safety and Inspections (D2SI)- New York Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, D2SI). The submittal to the D2SI-New York Regional Engineer must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Erosion and Sediment Control Plan as required by Article 007. The licensee may not begin construction until the D2SI-New York Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Draft Article 005. *Cofferdam Construction Drawings and Deep Excavations.* Before starting construction, the licensee in consultation with New York DEC shall review and approve the design of contractor-designed cofferdams and deep excavations and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy of the approved cofferdam construction drawings and specifications and the letters of approval to the Commission's Division of Dam Safety and Inspections (D2SI)-New York Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, D2SI).

Draft Article 006. *As-built Drawings.* Within 90 days of completion of

construction of the facilities authorized by this license, the licensee shall file for Commission approval, revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy shall be filed with the Commission's Division of Dam Safety and Inspections (D2SI)-New York Regional Engineer, the Director, D2SI, and the Director, Division of Hydropower Administration and Compliance.

Draft Article 007. *Project Modification Resulting from Environmental Requirements.* The planning and design of any permanent or temporary modification which affects the project works or operation resulting from environmental requirements shall be coordinated as early as feasible with the Commission's Division of Dam Safety and Inspections (D2SI) New York Regional Engineer. Within 90 days of receipt of the license, a letter is to be sent to the D2SI New York Regional Engineer providing a plan and schedule of any proposed modifications to the water retaining features of the project in the planning and design phase resulting from environmental requirements of the license. The schedule is to allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect project works, dam safety or project operations.

Draft Article 008. *Erosion and Sediment Control Plan.* At least 90 days before the start of any ground-disturbing activities, the licensee shall prepare and file for Commission approval, an erosion and sediment control plan. The plan shall include, but not be limited to:

- (a) a description of the actual site conditions;
- (b) a description of measures that will be used to control erosion and minimize the quantity of sediment entering project waters during project construction and operation;
- (c) detailed descriptions, design drawings, and specific locations of all control measures;
- (d) a description of any methods that may be used for revegetating disturbed areas, including a description of native plant species used, planting densities, temporary soil stabilization techniques, and fertilization procedures or other requirements;
- (e) requirements for inspection and maintenance of erosion and sediment control measures to ensure proper operations; and
- (f) an implementation schedule.

The licensee shall prepare the erosion and sediment control plan after consultation with the New York State Department of Environmental Conservation and the U.S. Fish

and Wildlife Service. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the resource agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the erosion and sediment control plan. No land-disturbing activities or land-clearing activities shall begin at the project until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Draft Article 009. *Reservation of Authority to Prescribe Fishways.* Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Draft Article 010. *Browns Falls Bypassed Reach Trout Stocking and Monitoring Plan.* Upon effective date of this license, licensee shall implement the Browns Falls Bypassed Reach Trout Stocking and Monitoring Plan, included as Appendix B of the Settlement filed with the Commission on February 18, 2011

Draft Article 011. *Invasive Species Management Plan.* Within 6 months of the effective date of this license, the licensee shall file with the Commission, for approval, an invasive species management plan for the project. The plan shall include, but not be limited to, measures to prevent the introduction and/or spread of invasive species during construction, maintenance, and operational activities. The licensee shall also install and maintain signage to be provided by the New York State Department of Environmental Conservation (New York DEC) regarding invasive species.

The licensee shall prepare the plan following the recommendations of the New York DEC and have the plan approved by the U.S. Department of the Interior Fish and Wildlife Service and the New York DEC.

The Commission reserves the right to require changes to the plan. Implementation of any invasive species management plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensee shall implement the provisions of the plan, including any changes required by the Commission.

Draft Article 012. *Eagle and Osprey Management Plan.* Within 6 months of the

effective date of this license, the licensee shall file with the Commission, for approval, an eagle and osprey management plan. The plan shall include, but not be limited to, the following measures to avoid the destruction or disturbance of eagle and osprey nests:

(a) a protocol for notifying the New York State Department of Environmental Conservation (New York DEC) and U.S. Fish and Wildlife Service (FWS) if any eagle or osprey nests are identified in or adjacent to the project boundary at any time during the license term;

(b) descriptions of methods for surveying for eagle and osprey nests prior to any tree clearing activities within the project boundary;

(c) procedures for consulting with New York DEC and FWS prior to any tree clearing activities if a nest is identified in or adjacent to areas proposed for tree clearing, and

(d) descriptions of any spatial or temporal restrictions for construction and land clearing activities that may occur near identified nests.

The plan shall be developed in consultation with the New York DEC and FWS. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the resource agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement then plan, including any changes required by the Commission.

Draft Article 013. *Common Loon Nesting Platform Installation and Monitoring Plan.* Within one year of the effective date of this license, the licensee shall implement the common loon nesting platform installation and monitoring plan for the project included as Appendix A of the Settlement filed with the Commission on February 18, 2011.

Draft Article 014. *Recreation Management Plan.* Within six months of the effective date of this license, the licensee shall file with the Commission, for approval, a final Recreation Management Plan (RMP). The plan shall include the measures described in the revised draft RMP, filed on April 1, 2011, and plans for installing three separate parallel boat slides (wooden or metal): (1) along the 21-degree upward-sloped, 305-foot-long section of the Flat Rock portage route; (2) along the 23-degree downward-sloped, 170-foot-long section of the Flat Rock portage route and; (3) along the 34-degree downward-sloped, 181-foot-long section of the South Edwards portage route. The three

boat slides shall be designed and installed using the standards and designs presented in the National Park Service's Logical Lasting Launches (2004) Chapter X, Portages Around Dams.

Draft Article 015. *Historic Properties Management Plan.* The Licensee shall implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the New York State Office of Parks, Recreation, and Historic Preservation for Managing Historic Properties that may be Affected by a Issuing a License to Erie Boulevard Hydropower, L.P. for the Continued Operation of the Oswegatchie Hydroelectric Project in St. Lawrence County, New York (FERC No. 2713)", executed on [date to be inserted], including but not limited to the Historic Properties Management Plan (HPMP) for the Project dated December 2010 (filed December 30, 2010). In the event that the Programmatic Agreement is terminated, the Licensee shall continue to implement the provisions of its approved HPMP. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated, the Licensee shall obtain approvals from or make notifications to the Commission and the New York SHPO where the HPMP calls upon the Licensee to do so.

Draft Article 016. *Use and Occupancy.* (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads,

retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or

public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

APPENDIX B

Project Development Site Plans

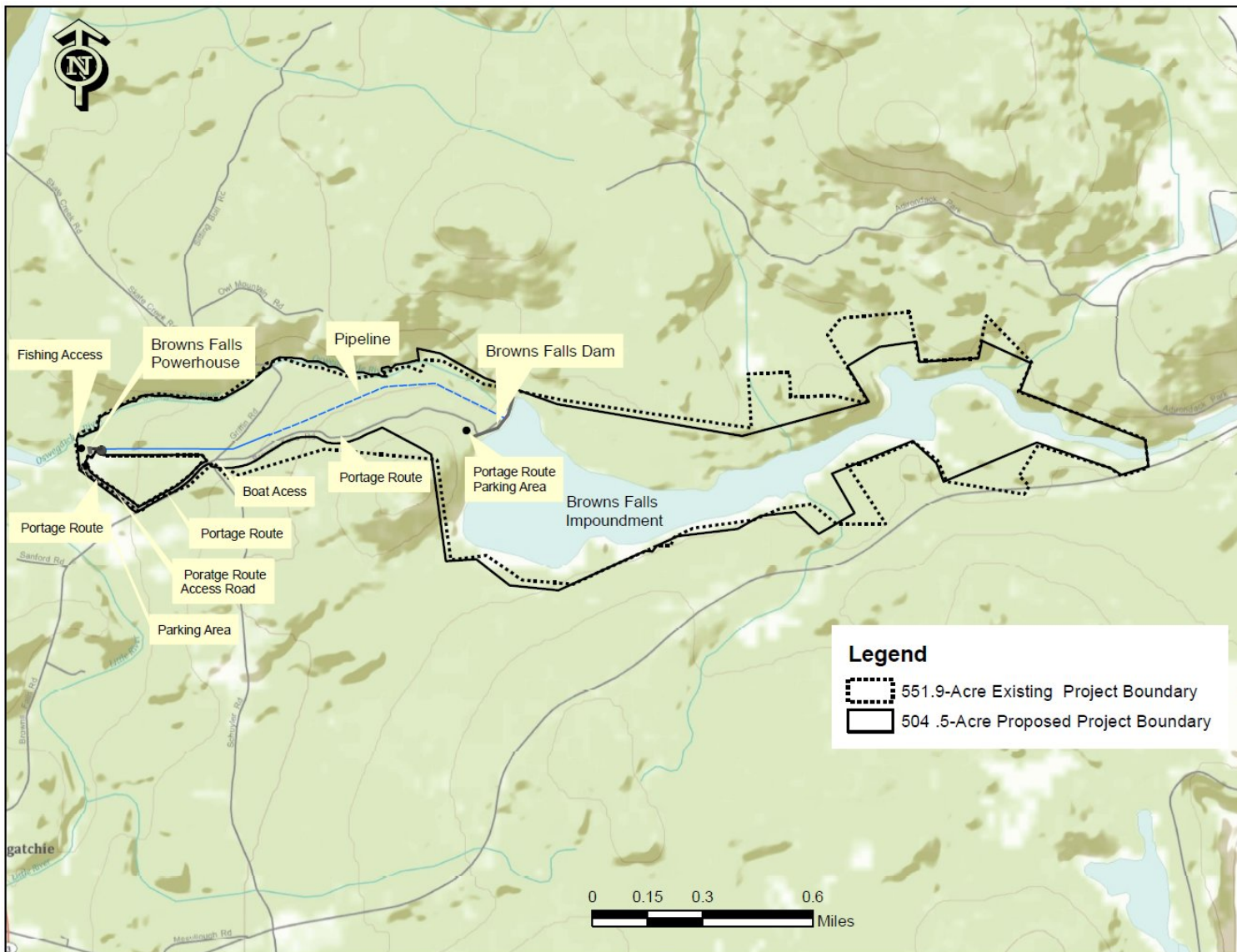


Figure 2. Location of project features for the Browns Falls Development (Source: Staff).

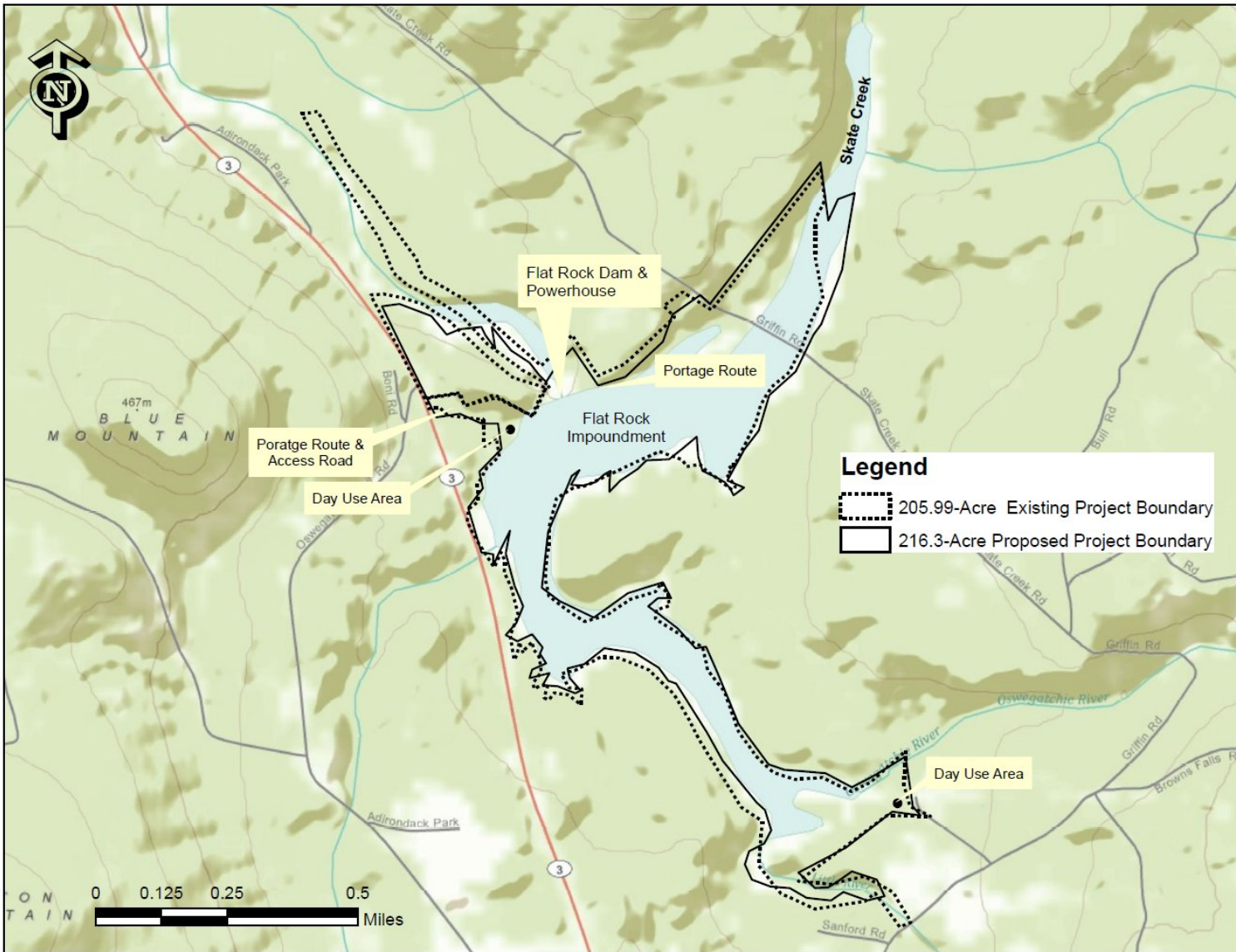


Figure 3. Location of project features for the Flat Rock Development (Source: Staff).

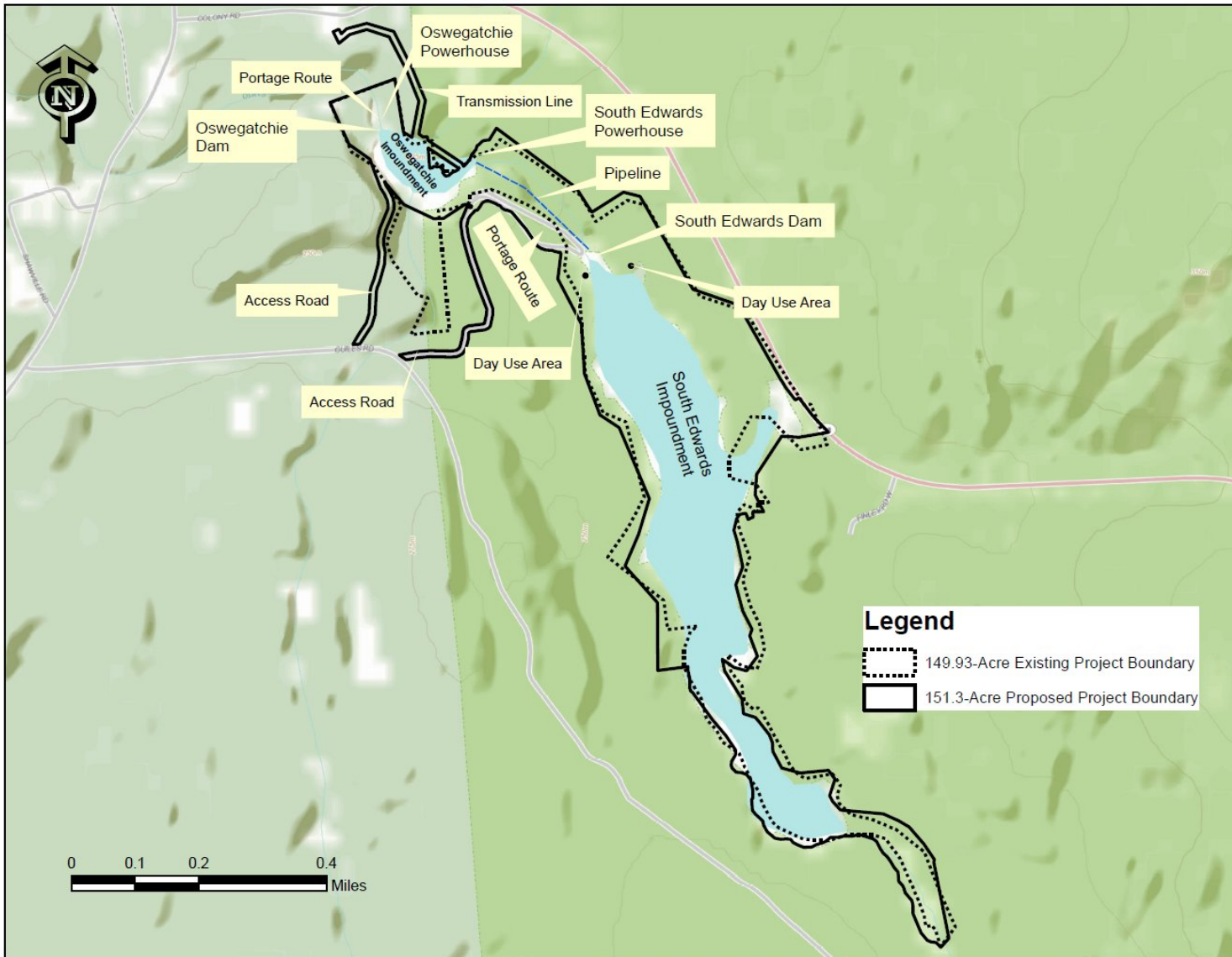


Figure 4. Location of project features for the South Edwards and Oswegatchie Developments (Source: Staff).

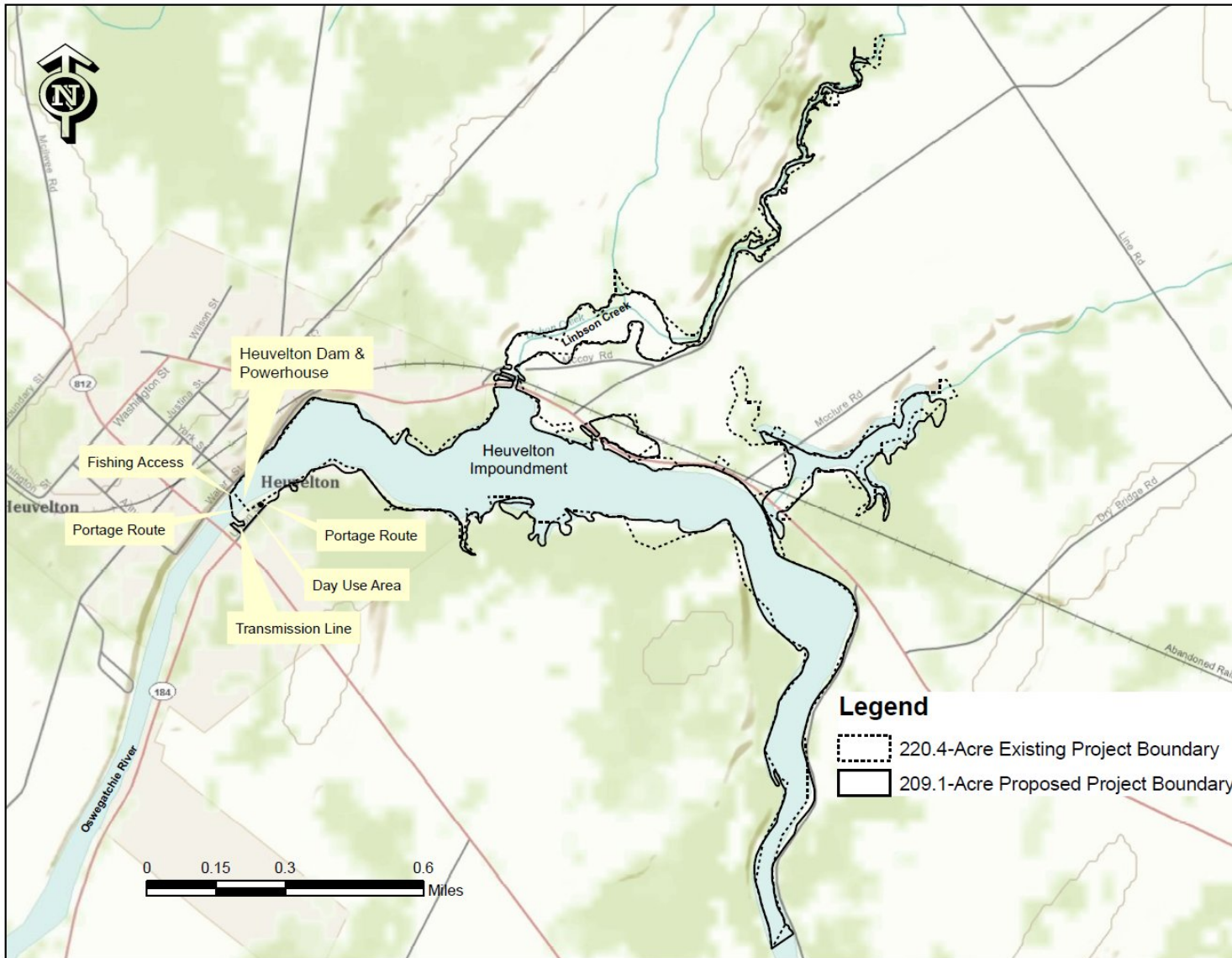


Figure 5. Location of project features for the Heuvelton Development (Source: Staff).

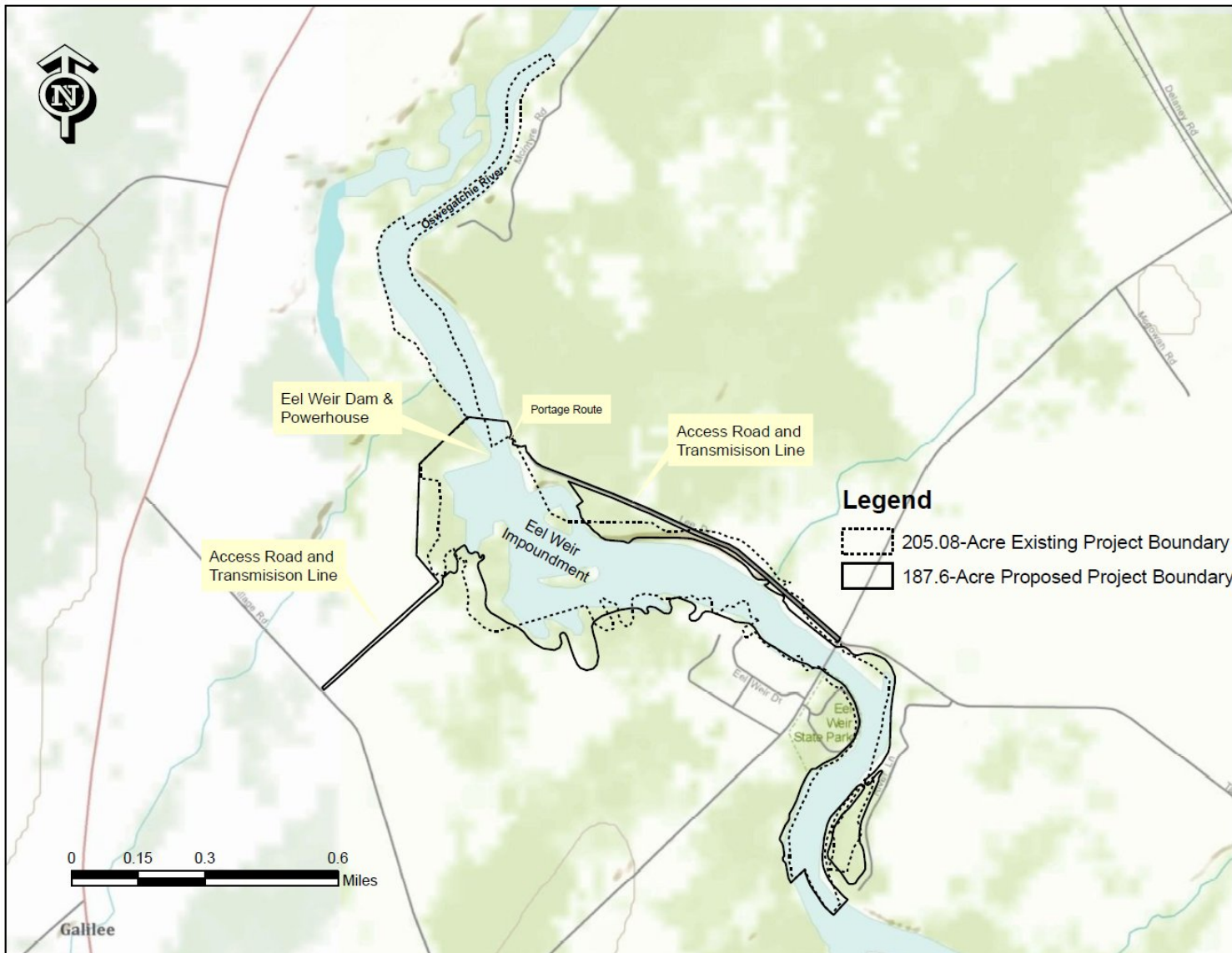


Figure 6. Location of project features for the Eel Weir Development (Source: Staff).

APPENDIX C

**Location of Existing and
Proposed Recreation Facilities**

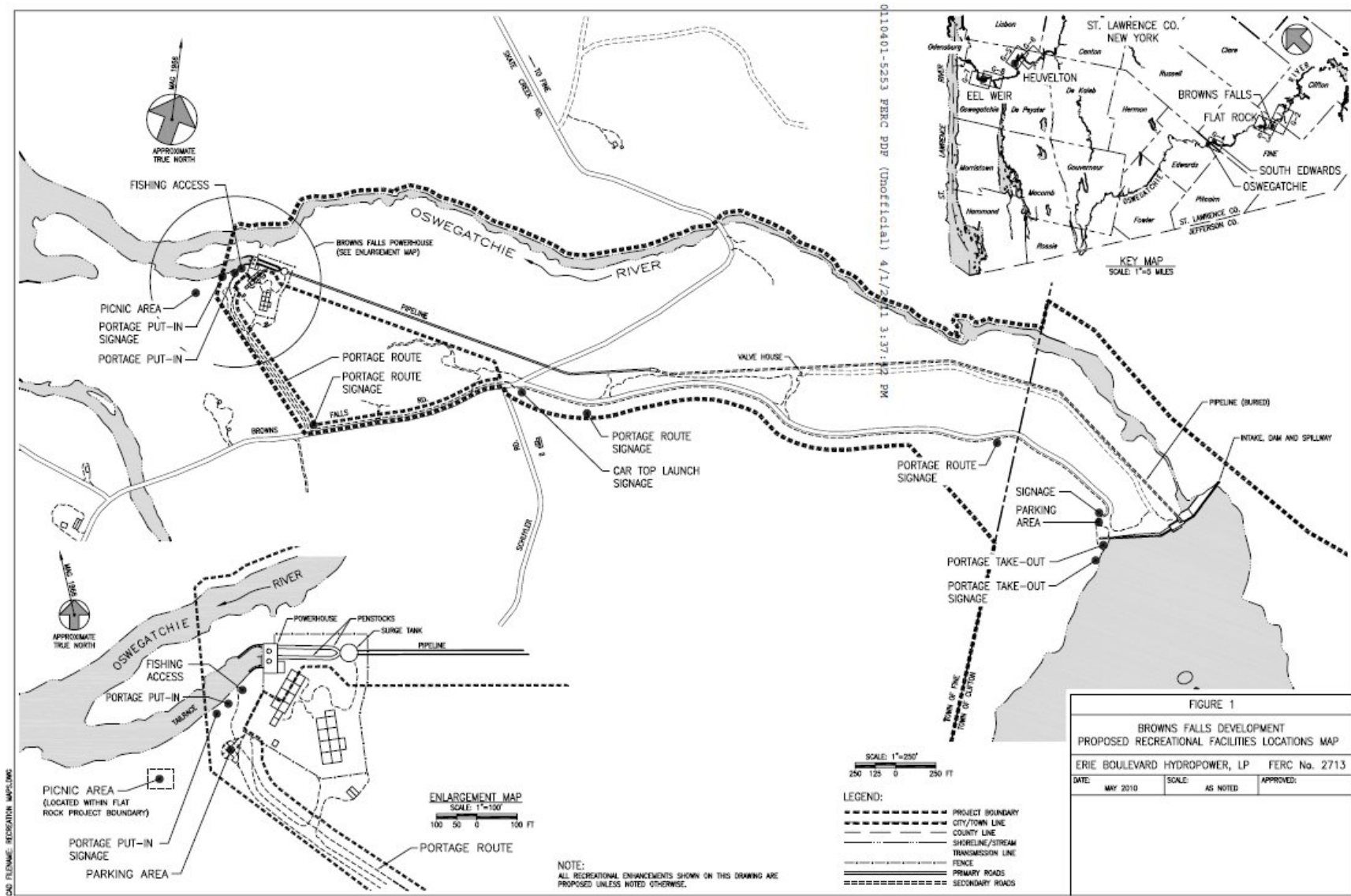


Figure 7. Browns Falls Development Proposed Recreational Facilities Map (Source: RMP).

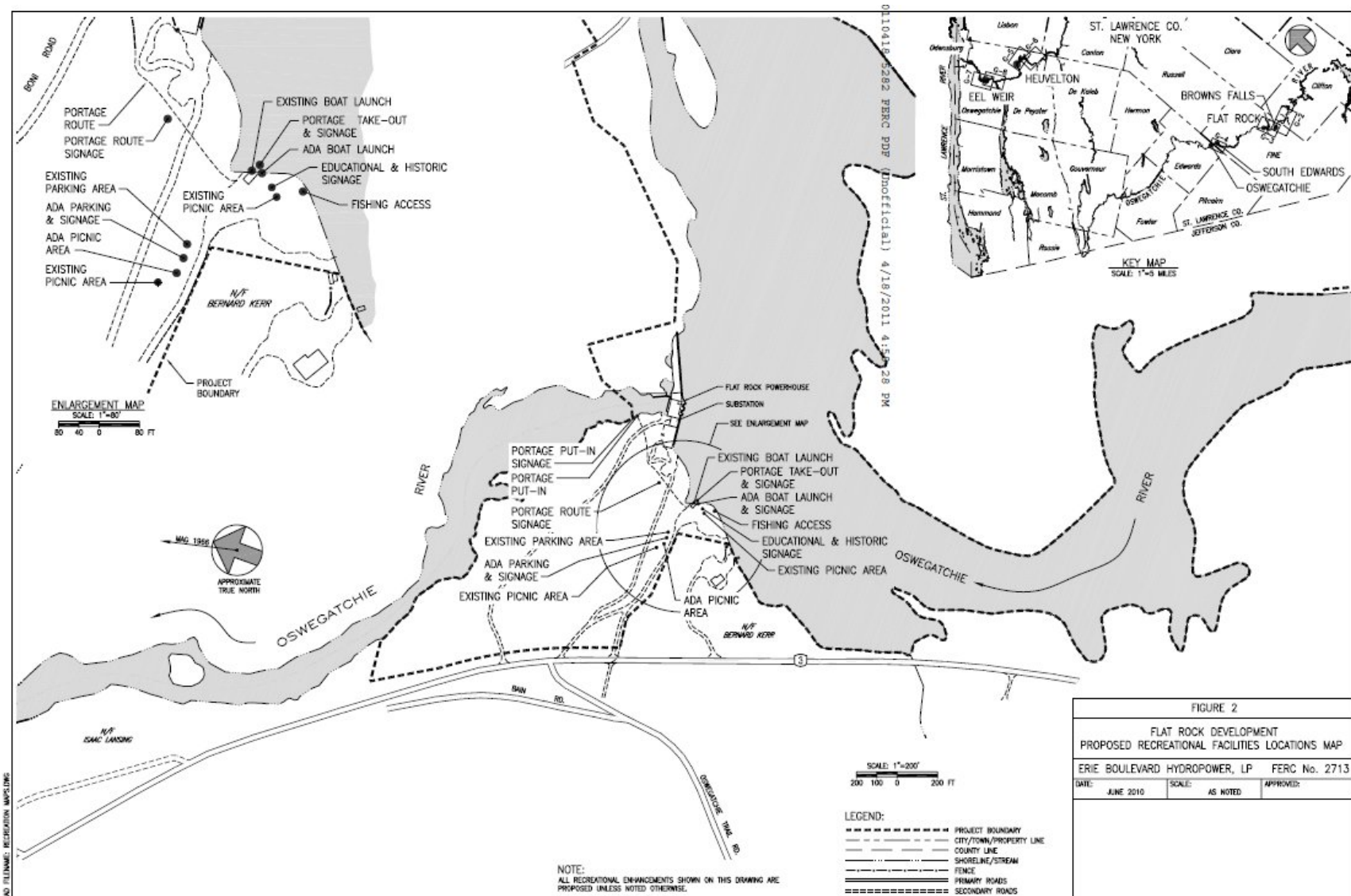


Figure 8. Flat Rock Development Proposed Recreational Facilities Map (Source: April 18, 2011 Errata).

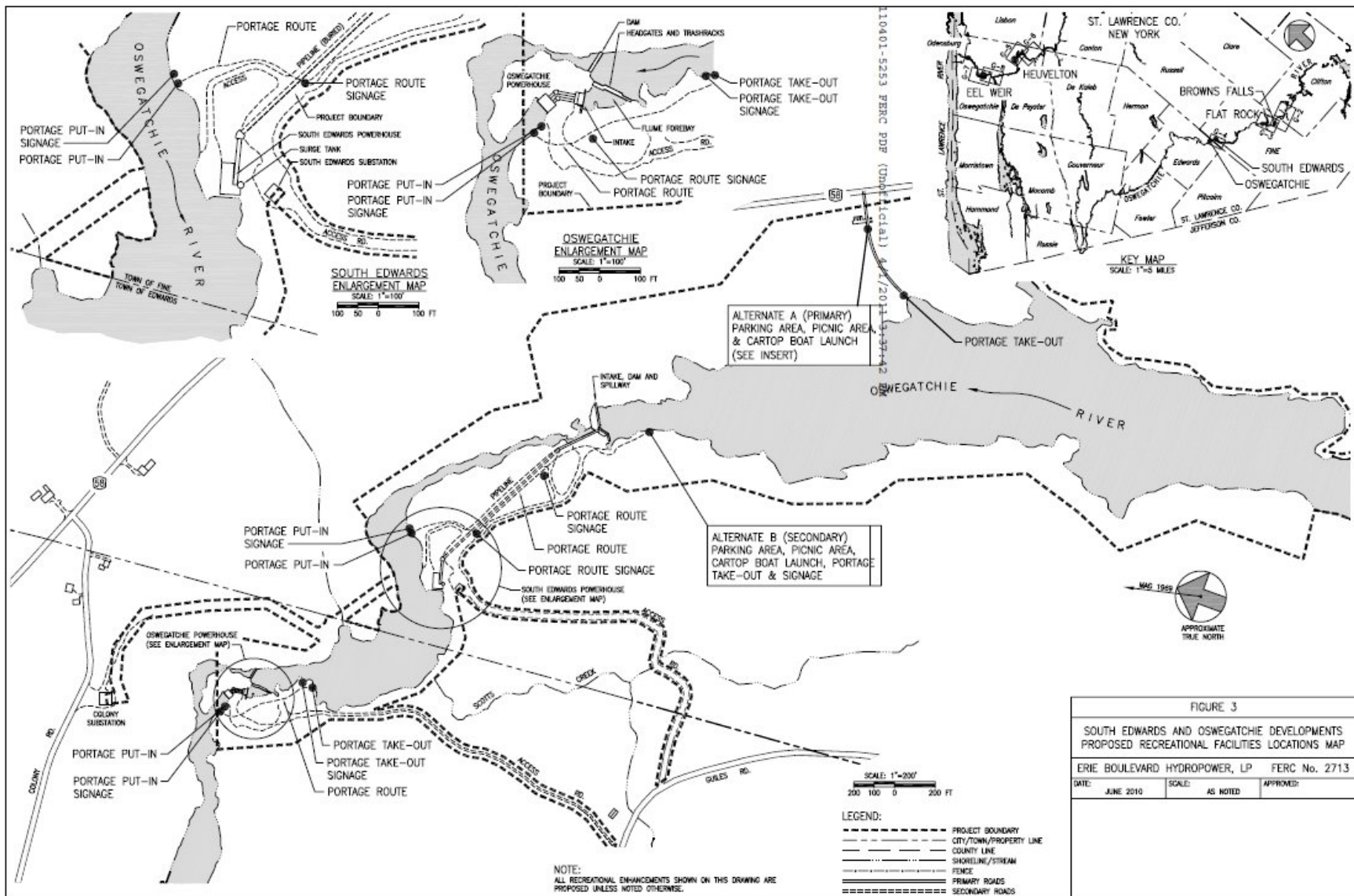


Figure 9. South Edwards and Oswegatchie Developments, Proposed Recreational Facilities Map (Source: RMP).

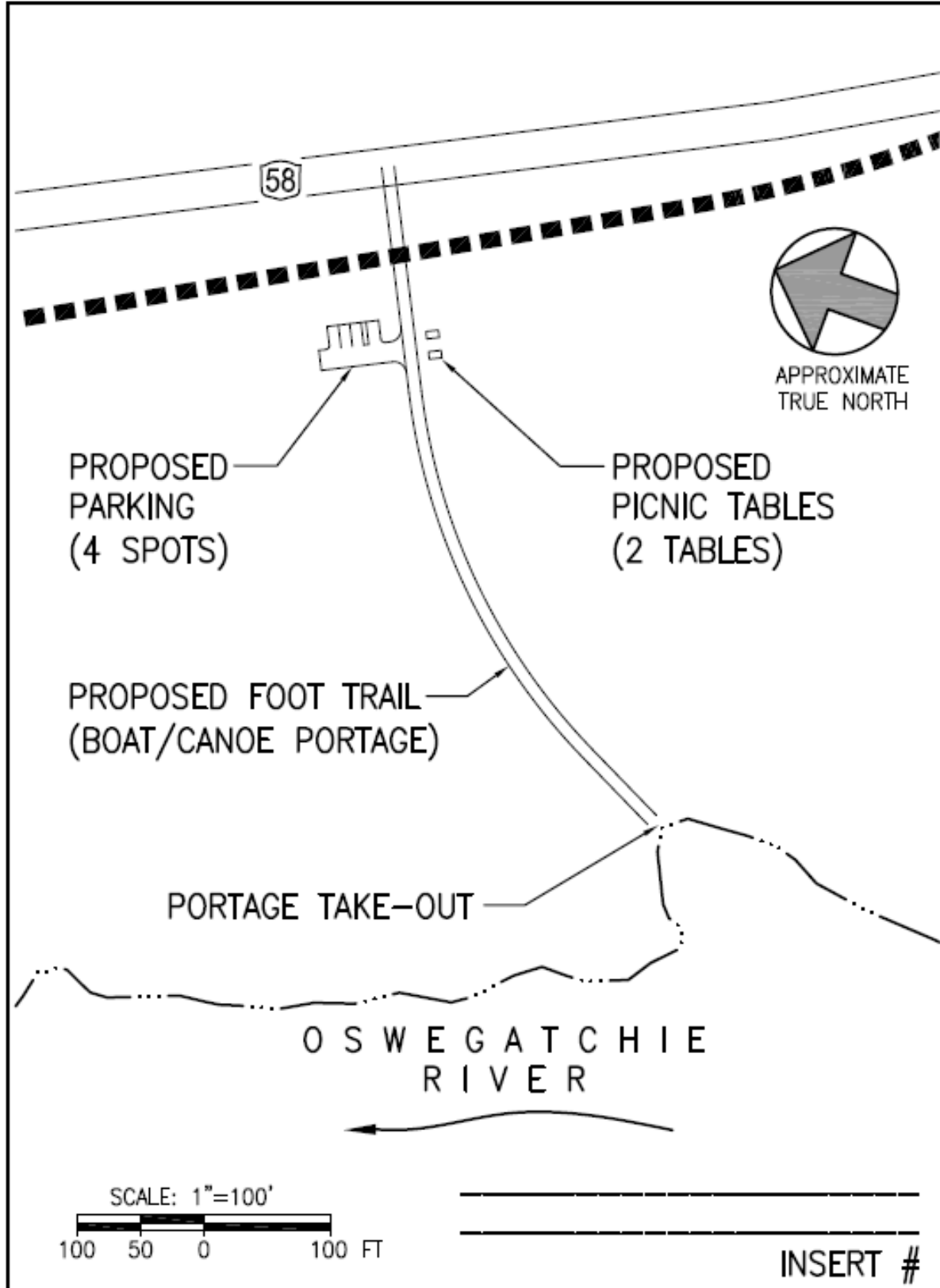


Figure 10. Alternative A, South Edwards Development (Source RMP)

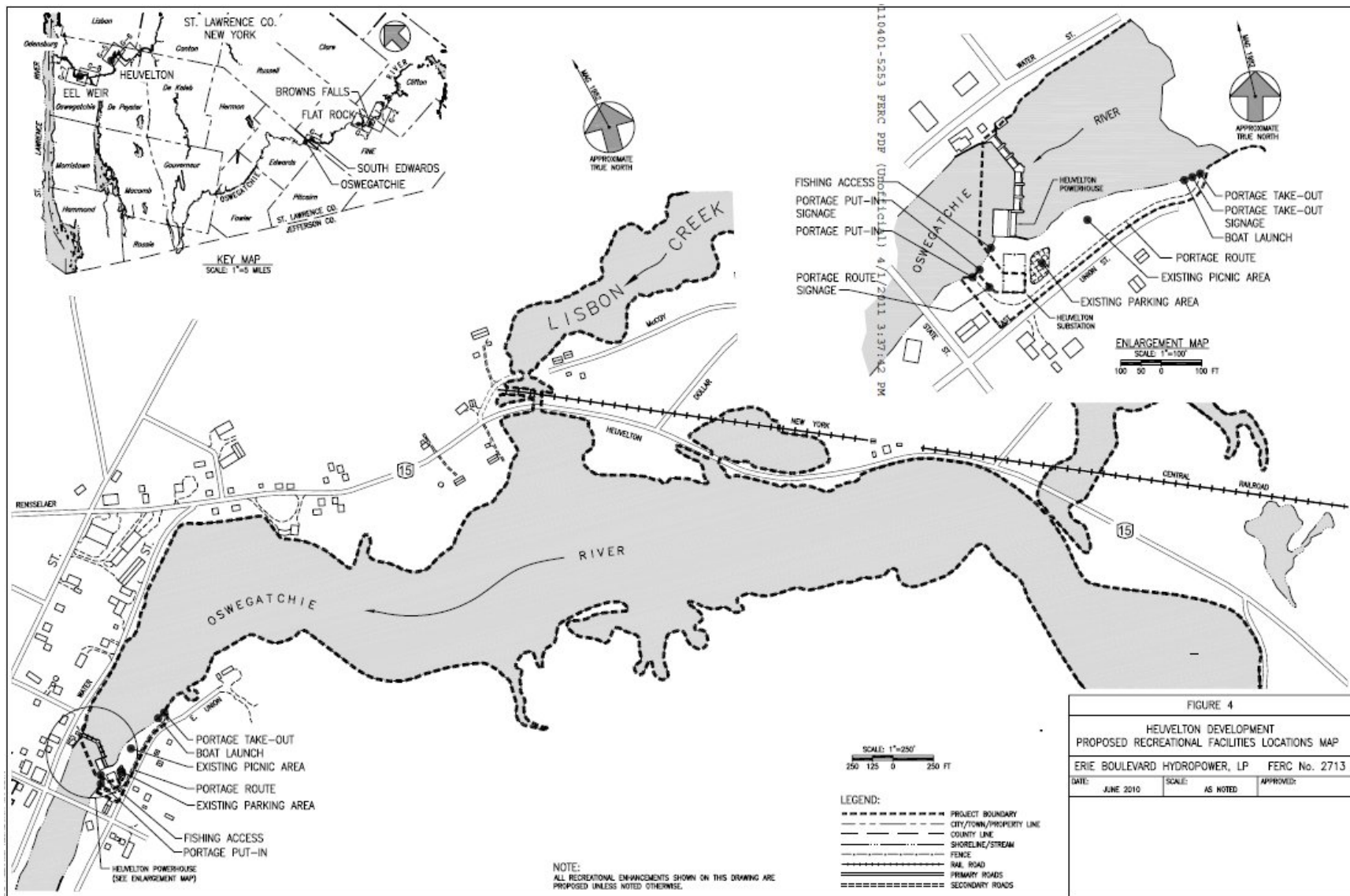


Figure 11. Heuvelton Development Proposed Recreational Facilities Map (Source: RMP).

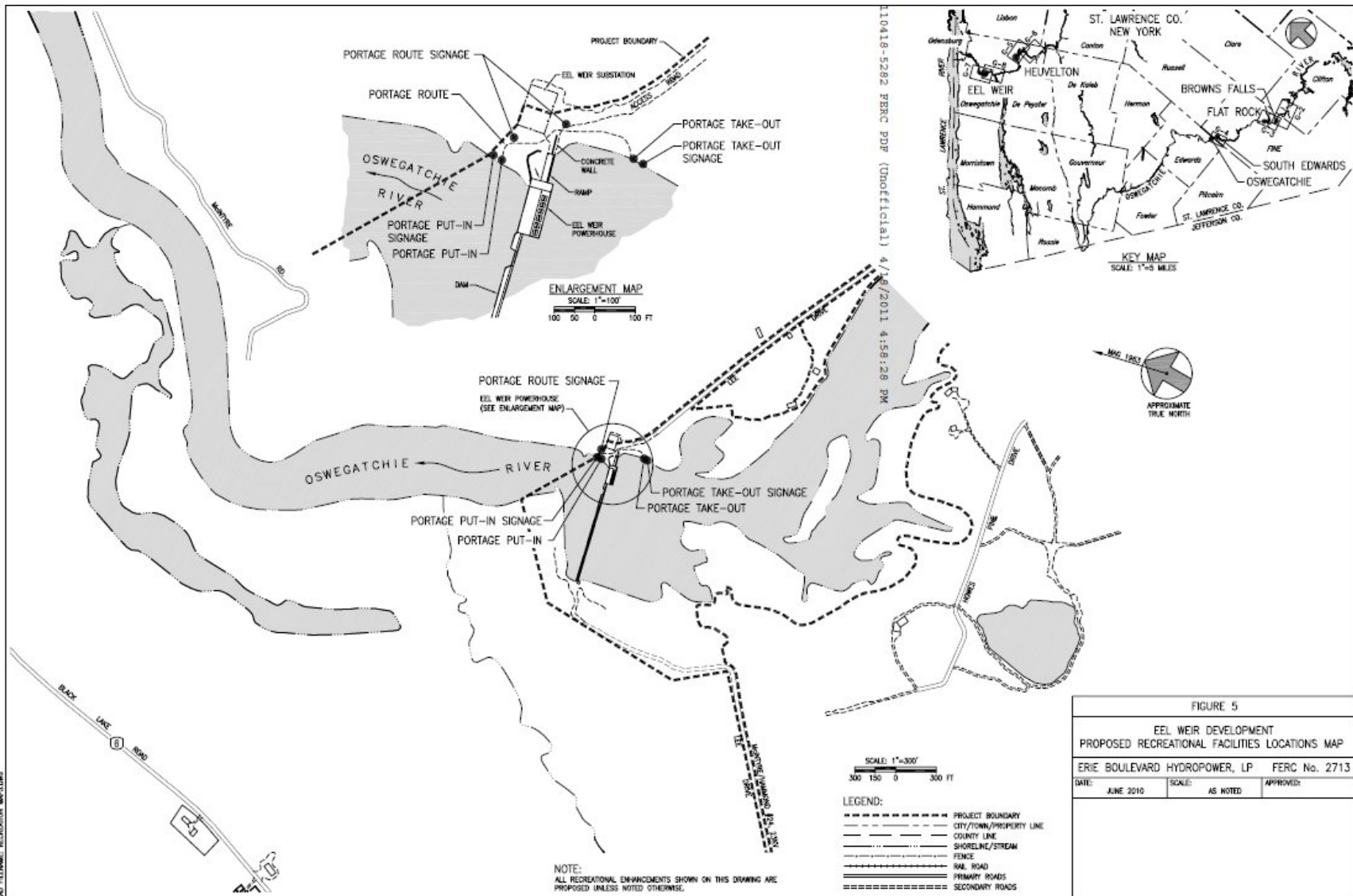


Figure 12. Eel Weir Development Proposed Recreational Facilities Map (Source: April 18, 2011 Errata).

Document Content(s)

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