



January 20, 2015

Kimberly Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

**Re: Blenheim-Gilboa Pumped Storage Project, FERC Project No. 2685-026
Filing of Revised Study Plan**

Dear Secretary Bose:

The New York Power Authority (Power Authority) is relicensing the Blenheim-Gilboa Pumped Storage Project (FERC No. 2685) (Project) using the Federal Energy Regulatory Commission's (Commission) Integrated Licensing Process (ILP). Pursuant to the ILP, the Power Authority filed its Notice of Intent and Pre-Application Document on April 10, 2014. Following an opportunity for resource agencies and stakeholders to submit comments and study requests, the Power Authority filed its Proposed Study Plan (PSP) on September 22, 2014. The Power Authority held a meeting on October 16, 2014, to provide a presentation on each study proposed and receive comments and answer questions related to the proposed studies. Several resource agencies and stakeholders provided comments on the Power Authority's PSP.

The Power Authority appreciates the contribution of resource agencies and stakeholders, through their participation at the PSP meeting and submission of comments. In response to these comments and the Commission's Scoping Document 2 issued September 18, 2014, the Power Authority has made significant revisions and improvements to its study plans. These changes are reflected in the enclosed Revised Study Plan (RSP). Pursuant to Section 5.13(a) of the Commission's regulations, 18 C.F.R. § 5.13(a), the Power Authority hereby submits the RSP for the Commission's review and approval.

In accordance with Section 5.13(b) of the Commission's regulations, 18 C.F.R. § 5.13(b), and the Commission's relicensing schedule for the Project, any comments on the RSP must be filed with the Commission by February 4, 2015—within 15 days of this filing. The Director of the Commission's Office of Energy Projects will issue a Study Plan Determination on February 19, 2015.

The Power Authority is filing the RSP with the Commission electronically. Participants may access the RSP on the Commission's website (<http://www.ferc.gov>) by going to the "eLibrary" link and entering the docket number, P-2685. The Power Authority is also making the RSP available on the Project relicensing website (www.bg.nypa.gov).

If you have any questions regarding the RSP, please direct them to me at (914) 681-6659 or Mark.Slade@NYPA.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Slade". The signature is written in a cursive style with a prominent flourish at the end.

Mark E. Slade
Director, Licensing



**BLenheim-GILBOA PUMPED STORAGE
POWER PROJECT RELICENSING**

FERC No. 2685

REVISED STUDY PLAN

JANUARY 20, 2015

P-2685-026



**New York Power
Authority**

Generating more than electricity

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APPENDIX B. SHPO CORRESPONDENCE

LIST OF ABBREVIATIONS

ADCP	Acoustic Doppler Current Profiler
AWWA	American Whitewater Association
APE	Area of Potential Effect
B-G or Project	Blenheim-Gilboa Pumped Storage Power Project
CFR	Code of Federal Regulations
cfs	cubic feet per second
DCC	Dam Concerned Citizens
DEM	Digital Elevation Model
DO	dissolved oxygen
DOE	Department of Energy
EA	Environmental Assessment
EAP	Emergency Action Plan
ESA	Endangered Species Act
FERC or Commission	Federal Energy Regulatory Commission
FPA	Federal Power Act
FPC	Federal Power Commission
ft.	feet
FWOS	Flood Warning Operating System
GIS	Geographic Information System
HABS/HAER	Historic America Building Survey/Historic American Engineering Record
HAER	Historic American Engineering Record
HEC	USACE Hydrologic Engineering Center
HEC-HMS	USACE Hydrologic Engineering Center's Hydrologic Modeling System
HEC-RAS	Hydrologic Engineering Center River Analysis System
HPMP	Historic Properties Management Plan
HSR	Historic Structures Report
ILP	Integrated Licensing Process
LiDAR	Light Detection and Ranging
MCS	Middleburgh Central Schools
NED	National Elevation Dataset
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLEB	Northern Long-Eared Bat
NOI	Notice of Intent
NRHP	National Register of Historic Places

NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYSCC	New York State Canal Corporation
NYISO	New York Independent System Operator
NYNHP	New York Natural Heritage Program
NYPA	New York Power Authority
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYPA	New York Power Authority
OPRHP	New York State Office of Parks, Recreation, and Historic Preservation
O&M	operation and maintenance
PAD	Pre-Application Document
PME	Protection, Mitigation, and Enhancement
PMF	Probable Maximum Flood
PFMA	Potential Failure Mode Analysis
Power Authority	New York Power Authority
PSP	Proposed Study Plan
RSP	Revised Study Plan
RTE	Rare, Threatened, and Endangered
SAV	submerged aquatic vegetation
SCBS	Schoharie County Board of Supervisors
SCORP	State Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Office
STID	Supporting Technical Information Document
T & E Species	Threatened and Endangered Species
U.S.	United States
USACE	United States Army Corps of Engineers
USDOJ	United States Department of Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

The Power Authority of the State of New York (referred to as the Power Authority or NYPA) is relicensing the Blenheim-Gilboa Pumped Storage Project (FERC No. 2685) (Project). The Project is located on Schoharie Creek, a tributary of the Mohawk River, about 40 miles southwest of Albany, New York, in the northern Catskill Mountains. The Power Authority is using the Federal Energy Regulatory Commission's (Commission or FERC) Integrated Licensing Process (ILP) as outlined in 18 C.F.R. Part 5.

In accordance with 18 C.F.R. § 5.5 and 5.6, the Power Authority filed its Notice of Intent (NOI) and Pre-Application Document (PAD) on April 10, 2014, which included the Power Authority's preliminary study plans for the Project. These studies included: 1) Literature-Based Assessment of Fish Entrainment and Turbine Passage Survival; 2) Recreation Use/User Contact Study and Assessment of the Project on Recreation Use; 3) Phase 1A Archaeological Survey; and 4) Historic Structures Survey.

The Commission issued its Scoping Document 1 (SD1) on June 4, 2014, and held scoping meetings on July 7, 2014 at the Gilboa-Conesville Central School in Gilboa, New York, and on July 9, 2014, at the Best Western Inn in Cobleskill, New York, where potential issues were identified by agencies, stakeholders, and the public. Following the scoping meetings, the Commission issued its Scoping Document 2 (SD2) on September 18, 2014.

Subsequently, the Power Authority received comments on the PAD and the study plans as well as requests for additional studies. The Power Authority reviewed these comments and study requests, and developed a Proposed Study Plan (PSP), which served to address and respond to all comments and requests received. The Power Authority filed the PSP with FERC on September 22, 2014. Subsequent to the PSP filing, the Power Authority held a PSP Meeting on October 16, 2014 at the Best Western Inn in Cobleskill, New York. The purpose of the meeting was to provide a presentation on each individual study plan in the PSP and to provide an opportunity for meeting attendees to ask questions related to the proposed studies. FERC and stakeholders attended this meeting.

In accordance with 18 C.F.R. § 5.12, PSP comments were due on December 21, 2014. A list of the submitted comments is provided in Appendix A. Herein contains the Revised Study Plan (RSP), which serves to address the relevant concerns and requests of the PSP comments. The Power Authority believes that these revised studies will enable FERC to meet its obligations under the National Environmental Policy Act to analyze environmental effects of its relicensing action and to ensure that the Project

continues to meet the public interest requirements during a new license term, as required under the Federal Power Act.

According to the Commission's process plan and schedule in Appendix B of SD2, stakeholders may provide comments on the revised study plans by February 4, 2015—within 15 days of this filing. Written comments need to be filed directly with the Federal Energy Commission using the eFiling system at <http://www.ferc.gov/docs-filing/efiling.asp> or by regular mail at Federal Energy Regulatory Commission, 888 First Street, N.E. Washington, DC 20426. According to the process plan and schedule, the Director, Office of Energy Projects, will issue the Study Plan Determination on February 19, 2015.

The RSP is divided into five main sections:

- Revised study plans
- Key issues identified in comment letters and responses and how study plans were modified to address comments as well as reasons why plans were not modified;
- Other comments raised;
- Appendix A containing a listing of proposed study plan comment letters; and
- Appendix B containing SHPO correspondence

2.0 REVISED STUDIES

Based on comments received on the PSP, the Power Authority has revised the six study plans, as appropriate, to address the issues raised. These revised study plans are presented below.

2.1 HISTORIC STRUCTURES SURVEY

2.1.1 GENERAL DESCRIPTION OF PROPOSED SURVEY

The purpose of the historic structures survey is to identify cultural resources that: 1) may be eligible for listing in the National Register of Historic Places (NRHP), 2) were previously determined eligible for listing or 3) are listed in the NRHP. Once the resources are identified, it will be possible to assess any impacts on those resources from Project operations. This will be accomplished through consultation with the New York State Historic Preservation Office (New York SHPO) and other interested stakeholders and preservation groups; site file and background research; and field studies. To accomplish the purpose of this study, the Power Authority proposes to conduct a historic structures survey according to New York SHPO standards in order to gather information on historic architectural resources in the Project Area of Potential Effects (APE). Existing information will be collected from records maintained at the New York SHPO, state and local libraries and historical societies, the Library of Congress, Historic American Building Survey/Historic American Engineering Record (HABS/HAER), and the National Register in Washington, DC.

2.1.2 GEOGRAPHIC SCOPE

The geographic scope of this survey is the Project's Area of Potential Effects (APE). Consistent with National Historic Preservation Act (NHPA) regulations, 36 C.F.R. § 800.16(d), as well as FERC's guidelines, the Power Authority proposed to New York SHPO that the APE be defined as "the lands enclosed by the Project's boundary and lands or properties outside of the Project's boundary where Project construction and operation or Project-related recreational development or other enhancements may cause changes in the character or use of historic properties, if any historic properties exist." (Preparing Environmental Documents: Guidelines for Applicants, Contractors, and Staff at A-9 n.24 (Sept. 2008). By letter dated January 2, 2015, New York SHPO stated it has "no concern with the proposed Area of Potential Effects (APE)." (letter from Dr. Nancy Herter [NYSHPO] to Mr. Robert Panepinto [NYPA] dated January 2, 2015, included in [Appendix B](#) of the RSP). A map of the APE as submitted to the New York SHPO is included herein as [Figure 2.1-1](#).

2.1.3 STUDY GOALS AND OBJECTIVES

The goal of the survey is to assist FERC in meeting its compliance requirements under Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106) by determining whether relicensing of the Project will affect historic properties. The objective of the survey is to identify cultural resources that may be eligible for listing or have been determined eligible for listing or are listed in the NRHP. If it is confirmed that historic properties are present, the Power Authority will identify and assess any potential effects to historic properties from the continued operation and maintenance of the Project.

2.1.4 RELEVANT RESOURCE MANAGEMENT GOALS AND PUBLIC INTEREST CONSIDERATIONS

Section 106 requires that federal agencies, licensees, and those receiving federal assistance take into account the effects of proposed undertakings on any resource that is listed in or is eligible for the NRHP. As the lead agency, FERC is responsible for fulfilling the requirements of Section 106 in its decision to issue a new license for the Project. In SD1, FERC designated the Power Authority as its non-federal representative for carrying out day-to-day consultation under Section 106.

As stipulated by the regulations that implement Section 106 (36 CFR 800), the New York SHPO represents the interests of the State and its citizens, and advises and assists FERC in determining the significance of historic resources within the APE. The New York SHPO administers cultural resource management reviews under Section 106, which involves providing technical guidance and professional advice on the potential impact of the Commission's undertaking of issuing a new license for B-G on the State's historic, architectural, and archaeological resources.

2.1.5 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

Background information on the Lansing Manor Complex was gathered during a file search conducted in May 2012 at the New York SHPO at Peebles Island, New York. Lansing Manor House, built in 1819, along with its outbuildings and service buildings dating from several different time periods, and the surrounding 300-acre property, was listed in the NRHP in 1973 for its significance in the economic, social, and technological history of both the area and the State ([Rennenkampf 1973](#)). Between 1819 and 1836, Lansing Manor was the center of business for the Lansing and Ray families' real estate and commercial ventures in the Schoharie County towns of Blenheim, Gilboa, and Jefferson and the town of Stamford in Delaware County, New York. Owned and operated by four successive families who lived on the property between 1819 and 1972, the farm supported general farming and dairying typical of the

agricultural economy of southern Schoharie County. In 1972, the Power Authority acquired Lansing Manor, by then known as Beechwood Farm, as part of the development of the Project.

Since 1972, the farmland has been fallow, and beginning in 1973 the Lansing Manor Complex has served as the location of the Project's Visitors Center. The former dairy barn was adapted for use as the Visitors Center, with the addition of a large observatory in 1973-74. The manor house was converted from a residence to a historic house museum in 1973-74, when it was opened to the public ([Sherwood rev. 1992: 4](#)). Additional extant buildings on the site include the Tenant House (ca. 1804), Horse Barn (1819), Corn Crib (ca. 1890-1911), Silo (1896-1911), Milk House (1881), Ice House (1896-1911), Land Office or Creamery/Former Laundry (Post-1819, Pre-1861, moved 1975), Privy (1819, moved 1896-1911, moved again in 1975), Well Head (1819), and Shop/Possible Servant's Quarters (1819, rebuilt 1896-1911).

To date, there have been no comprehensive historic architectural surveys conducted within those parts of Blenheim or Gilboa within the APE. A Level II Historic American Engineering Record (HAER) Documentation was completed on the Route 30 Bridge over Mine Kill Creek, located approximately one mile west of the Blenheim Gilboa Reservoir, prior to its replacement in 2008 ([LoRusso 2004](#)). The Mattice Family cemetery, which lies within the APE (and inside the FERC Project boundary), was noted as part of the HAER documentation, but to date no NRHP-eligibility evaluation of the cemetery has been conducted.

Two additional potentially NRHP-eligible resources are located in the APE, both of which occur within the FERC Project boundary: the remnants of the "Lansing Turnpike" and the Park Manager's house, a ca. 1860 Greek Revival-style dwelling noted as the Hiram Thomas property on the 1866 *Topographical Atlas of Schoharie County* ([Stone & Stewart 1866](#)). The turnpike is also noted on the 1856 *Schoharie Wall Map* ([Wenia and Lorey 1856](#)) and the 1866 Stone & Stewart Atlas but further research is required to determine the history, significance, and integrity of both of these resources.

The Project, completed in 1973, is less than 50 years old. The NRHP Criteria state that a property normally must be at least 50 years old to be considered for listing in the NRHP. In some instances, however, a property that is less than 50 years old can be eligible for the NRHP if it possesses "exceptional significance," as defined by the National Park Service in NRHP Criteria Consideration G ([National Park Service 1997](#)).

2.1.6 PROJECT NEXUS

The proposed historic structures survey will produce a historic architectural survey report and NRHP evaluation of all structures surveyed within the Project's APE that potentially may be affected by the continued operation and maintenance of the Project. The survey has the following purposes: update the information for previously identified resources; conduct fieldwork and provide evaluations of NRHP eligibility for all surveyed resources, based on their historic significance and integrity; and provide assessments of existing and potential Project-related effects to NRHP-listed and -eligible historic resources.

2.1.7 METHODOLOGY

The Power Authority will conduct the proposed historic structures survey and prepare its survey report in accordance with the professional standards and guidelines established by the New York SHPO as set forth in Standards for Historic Resources Surveys and available at <http://www.nysparks.com/shpo/survey-evaluation/documents/RecommendedStandardsHistoricResourcesSurvey.pdf>. The Power Authority will employ a professionally qualified architectural historian who meets the Secretary of the Interior's Standards (36 CFR, part 61) to conduct the historic structures survey.

Task 1. Consultation

The APE is based on analysis of potential effects to historic resources that may result from FERC's issuance of a new license authorizing continued Project operation. After a review of data provided to the New York SHPO on December 10, 2014, the New York SHPO concluded that it, "has no concerns with the proposed Area of Potential Effects (APE)" for the Project (letter from Dr. Nancy Herter [NYSHPO] to Mr. Robert Panepinto [NYPA] dated January 2, 2015). Additionally, the Power Authority will consult with the New York SHPO and the Schoharie County Historical Society, which operates Lansing Manor House, to establish the requirements to update the 1992 Lansing Manor Historic Structures Report (HSR).

Task 2. Background Research

The Power Authority proposes to examine historic maps and atlases, historic photographs and illustrations, and local histories located at the New York State Archives and other research repositories, such as county and local libraries and historical societies as well as their own archives. Research will include but is not necessarily limited to meeting with the Town Historians for the Towns within the Project boundary (Blenheim [Rebecca Littlejohn] and Gilboa [Richard M. Lewis]); meeting with the Schoharie County Historical Society; conducting research at the local history rooms of the Schoharie,

Gilboa, and Cobleskill Public Libraries; conducting research at the New York State Museum relating to the items on loan to Lansing Manor; researching back issues of engineering journals such as the Engineering News Record held at the Library of Congress; and conducting research at the County courthouse for probate and inventory records for the Lansing family. The Power Authority will use the results of the background research, as well as the HSR and NRHP Nomination for Lansing Manor, to develop historic contexts to guide the field survey and to assist in providing the additional documentation of the Lansing Manor Complex.

Task 3. Field Work

The field survey will include an examination of all above-ground resources within the APE. Architectural historian(s) will visit each of the previously identified resources and document any other resources 50 years or older. The Project, which was constructed between 1969 and 1973, will also be examined to determine whether it is eligible for NRHP listing. Information about the current appearance, including the setting, physical condition, and character-defining architectural features of the surveyed resources will be recorded. High-resolution digital photographs will be taken of each resource. Additional photography will include general context views that show the resources in relation to one another and their surroundings.

Task 4. Additional Documentation of Lansing Manor

The Power Authority proposes to update the 1992 Historic Structures Report for the Lansing Manor Complex to include some or all of the following components after consultation with and input from the New York SHPO and the Schoharie County Historical Society:

- Include historic landscape features, identifying those that retain integrity;
- Provide an inventory, with ownership information, of the interior furnishings and household collections within the Lansing Manor House, including those items on loan from the New York State Museum;
- Provide an inventory and evaluation of the current conditions of all contributing structures;
- Update and revise the interpretive materials including measured drawings;
- Assess the structural code;
- Assess ADA compliance for visitors to the property and appropriate design for historic buildings;
- Develop rehabilitation methods and recommendations; and

- Include a maintenance plan which provides guidance for the historic structures and landscape features (also to be addressed in the Historic Properties Management Plan (HPMP)).

Task 5. Study Report

Upon completion of the field investigations, the Power Authority will analyze all collected data and prepare a historic context that identifies the significant themes, events, and/or people that had an impact on the historical development of the area. The historic context and field notes regarding integrity will serve as the basis for the NRHP-eligibility evaluation of those surveyed resources not already included in the Lansing Manor NRHP nomination. The integrity of the surveyed resources will be evaluated to determine if the properties retain a sufficient amount of their historic appearance to be eligible for listing in the NRHP.

The final report will provide information about the NRHP status of previously identified resources in the Project APE and provide recommendations regarding the potential NRHP-eligibility of resources not previously evaluated. The report will contain a narrative description of the resources identified during the survey, including information about the general setting and current physical condition. The narrative will provide a statement of integrity that addresses changes that have occurred over time. The description will be followed by a historic context statement that will provide information about the general historical development of the resource.

Recommendations will include a narrative statement of significance that will define the applicable National Register criteria, criteria considerations (if any apply), areas of significance, and periods of significance. The narrative will include a summary statement of significance that will establish the level(s), period(s), and areas of significance. Other components of the report will consist of a bibliography of sources consulted and graphical information, including a map of the Project. The map will be prepared in ArcGIS format and will include the scale, north arrow, and legend. An appendix to the report will consist of NY SHPO *Historic Resource Inventory Forms* for all surveyed resources including the buildings and features at Lansing Manor, the Mattice Family Cemetery, the Park Manager's residence, and the Lansing Turnpike. The forms and report will be prepared in accordance with NY SHPO report standards, including GIS mapping and photography.

Following fieldwork and the preparation of a final report with survey findings, New York SHPO will make NRHP eligibility determinations for any resources within the Project APE not previously surveyed and/or evaluated.

2.1.8 PROPOSED DELIVERABLES AND SCHEDULE

- The Power Authority will meet with New York SHPO and the Schoharie County Historical Society at Lansing Manor in late April to early May to discuss the updates to the 1992 Historic Structure Report for the Lansing Manor.
- Background Research (Task 2) will commence in late April to early May and will coincide with the on-site meeting at Lansing Manor. It will continue into the summer of 2015 and will be on-going until the completion of a final report.
- Field survey (Task 3) including the on-site fieldwork at Lansing Manor (measured drawings, conditions assessments, and house inventory), will commence in July 2015 and be completed in the fall of 2015.
- The preparation of NY SHPO *Historic Resource Inventory Forms* for all surveyed resources including the buildings and features at Lansing Manor, the Mattice Family Cemetery, the Park Manager’s residence, and the Lansing Turnpike will occur 2015.
- The completion of the updated Lansing Manor Historic Structure Report (Task 4) will commence in the fall of 2015 and be completed in the spring of 2016.
- The Power Authority will file an Initial Study Report regarding the progress of the Historic Structures Survey within one year of FERC’s Study Plan Determination. The Power Authority will also file an Updated Study Report (USR) with respect to the Historic Structures Survey within two years of FERC’s Study Plan Determination, to the extent a USR is needed. The Power Authority will file a progress report within six months of FERC’s Study Plan Determination letter, containing an update on the status of tasks being conducted as part of the survey.

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Meetings	April – May 2015
Task 2. Background Research	Spring through Winter 2015
Task 3. Field Work	Summer and Fall 2015
Task 4. Additional Documentation of Lansing Manor Complex	Fall 2015 through Spring 2016
Task 5. Initial Study Report Updated Study Report, if needed	Within one year of Study Plan Determination (Likely February 19, 2016) Within two years of Study Plan Determination

2.1.9 LEVEL OF EFFORT AND COST

The estimated cost for the historic structures survey within the Project’s APE and update of the Lansing Manor NRHP Historic Structures Report is approximately \$120,000. The Power Authority believes that

this level of effort is adequate to obtain and update the information on historic resources within the Project's APE.

2.1.10 REFERENCES

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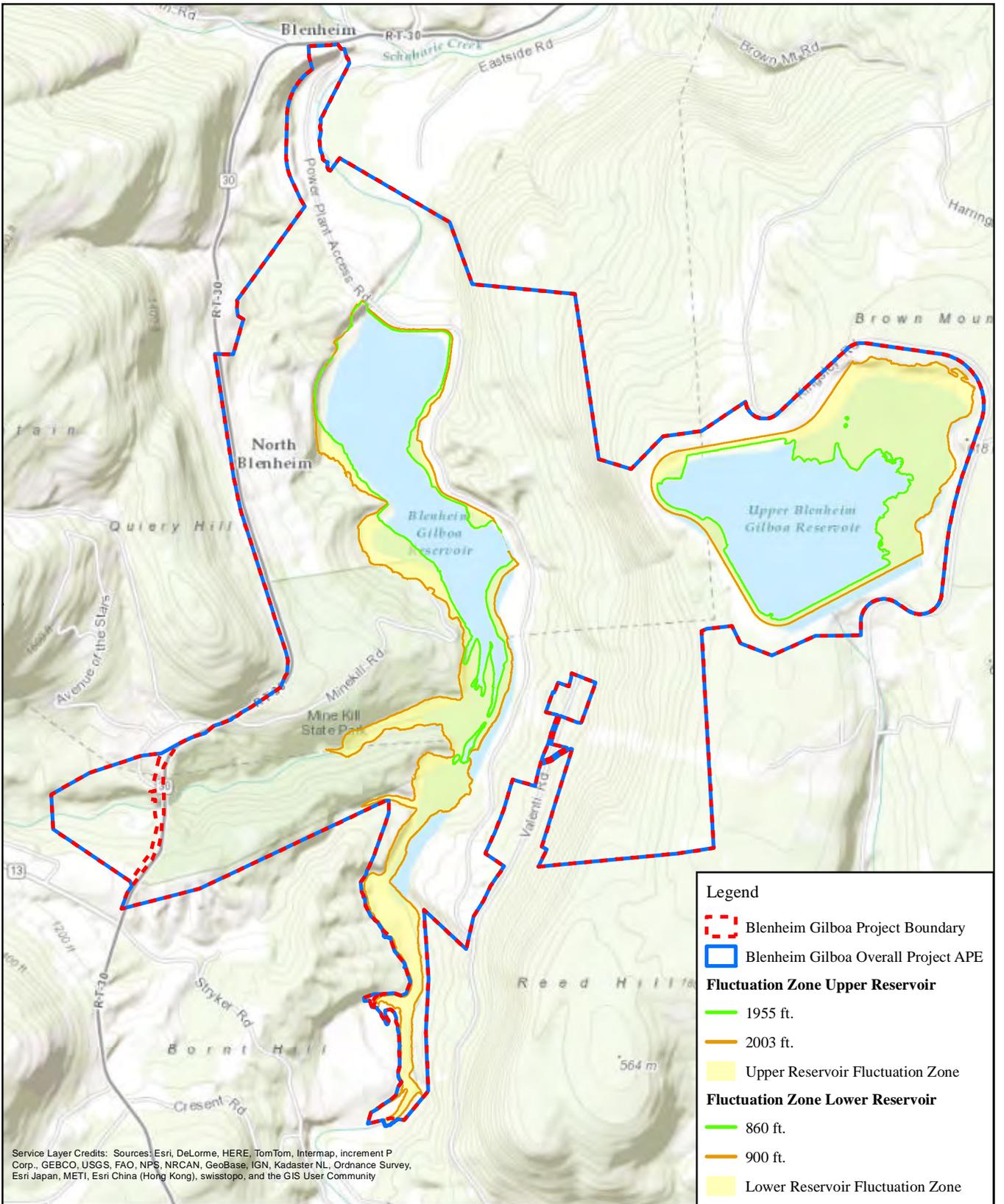
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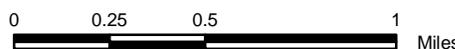
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Blenheim-Gilboa
Pumped Storage Power Project
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REVISED STUDY PLAN

Figure 2.1-1:
Area of Potential Effect

2.2 PHASE 1A ARCHAEOLOGICAL SURVEY

2.2.1 GENERAL DESCRIPTION OF PROPOSED SURVEY

In its Pre-Application Document (PAD), the Power Authority proposed to conduct a Phase IA Archaeological Survey. The Power Authority has consulted with the New York State Historic Preservation Office (SHPO) regarding the identification of the Project's Area of Potential Effect (APE) investigation area, and will consult with the New York SHPO in the identification of known archaeological sites within the APE, and the construction of an archaeological sensitivity model.

The first step in the archaeological resource assessment and management of the Project involves a Phase IA study. The objectives and tasks associated with this initial survey are identified and described below.

2.2.2 GEOGRAPHIC SCOPE

The geographic scope for this survey is the Project's APE. The Federal Energy Regulatory Commission (FERC) has generally determined that a project's APE for the purposes of relicensing includes the lands enclosed by the Project boundary and lands or properties outside of the Project boundary where Project construction and operation or Project-related recreational development or other enhancements may cause changes in the character or use of historic properties, if any historic properties exist. (Preparing Environmental Documents: Guidelines for Applicants, Contractors, and Staff at A-9 n.24 (Sept. 2008). This is consistent with NHPA regulations, 36 C.F.R. § 800.16(d). A review of potential Project activities and effects shows that the Project's potential effects on cultural resources are generally confined to areas within the FERC Project boundary. The New York SHPO reviewed information on the APE that was provided by the Power Authority and concurred with the proposed APE for the Project in a letter dated January 2, 2015, which is contained in [Appendix B](#). A map of the APE as submitted to the New York SHPO is included herein as [Figure 2.1-1](#).

2.2.3 STUDY GOALS AND OBJECTIVES

The objectives of the Phase IA archaeology survey are to: 1) identify known archaeological resources listed in, or potentially eligible for listing in the NRHP within the Project's APE, 2) review archaeological and other related data that are pertinent to the formulation of a sensitivity model for determining where archaeological resources may be located in the Project's APE, and 3) offer a field strategy for archaeological testing to determine whether such properties are present in the Project's APE. The results of the Phase IA will provide guidance on whether additional archaeological investigations, such as a Phase IA and/or Phase II surveys should be conducted.

2.2.4 RELEVANT RESOURCE MANAGEMENT GOALS AND PUBLIC INTEREST CONSIDERATIONS

Section 106 of the NHPA requires federal undertakings, including FERC's issuance of a new license, to take into account the effects of the proposed undertaking on any resource that is listed in, or may be eligible for listing, in the NRHP. As the lead agency, FERC is responsible for fulfilling the requirements of Section 106 in its decision to issue a new license for the Project. The New York SHPO represents the interests of New York State and its citizens, and advises and assists FERC in determining the significance of cultural resources within the Project's APE (Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR 800)). FERC has designated the Power Authority as its non-federal representative for conducting day-to-day consultation under Section 106.

2.2.5 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

The archaeological literature records that Native Americans occupied the region in which the Project is located for at least 12,000 years beginning in the Paleoindian period ([Ritchie 1980](#)). People of this archaeological tradition colonized this temperate region of the New World after retreat of the Laurentide Ice Sheet. To date, there have been no comprehensive, professional archaeological surveys of the Project's APE to identify historic properties. However, records maintained at the New York SHPO in Albany document that five archaeological sites have been identified. One is a Precontact period site that has not been evaluated to determine whether it is eligible for listing to the NRHP. Three Historic period archaeological sites also have preliminary documentation, but also have not been evaluated for eligibility. The last site, Lansing Manor Complex, which is also a standing Historic period farmstead, as well as an archaeological site, is listed in the NRHP. Several local cultural resources management investigations have taken place at Lansing Manor due to on-site projects that involved ground disturbances (e.g., Hartgen Archaeological Associates, Inc. 2005, 2009a, and 2009b).

2.2.6 PROJECT NEXUS

The proposed Phase IA cultural resources technical report will contain information on known archaeological sites and areas where there is a high potential for archaeological sites to exist within the Project's APE. The report will provide guidance on whether additional archaeological studies (Phase IB and Phase II archaeological surveys) are required to identify and assess existing archaeological resources for eligibility and potential inclusion in the NRHP. If such eligible resources are identified through the Phase IB and Phase II surveys, then adverse effects to these resources potentially caused by the continued operation and maintenance of the Project will be identified. If potential adverse effects are expected for

any resource that is listed or eligible for listing in the NRHP, then that information will be used in preparing a Historic Properties Management Plan (HPMP). Guiding the Power Authority's actions relating to Section 106 during the term of the new license, the HPMP will discuss how potential adverse effects to historic properties potentially affected by the Project will be managed, avoided, or mitigated during the new license term.

2.2.7 METHODOLOGY

The Phase IA survey methodology involves five tasks. The Phase IA archaeological survey will be conducted in accordance with the New York SHPO's Phase I Report Standards (<http://www.nysparks.com/shpo/environmental-review/documents/PhaseIReportStandards.pdf>); the New York Archaeological Council (NYAC) Standards for Cultural Resource Investigations (<http://nyarchaeology.org/wp-content/uploads/2013/12/NYACStandards.pdf>); and the NYAC Cultural Resources Standards Handbook (<http://nyarchaeology.org/wp-content/uploads/2013/12/nyachandbook.pdf>). These standards include detailed methodology for conducting a Phase IA survey and requirements for reporting the results of the survey.

Task 1 – Consultation with the New York SHPO and Federally Recognized Tribes

The Power Authority has consulted with the New York SHPO on the appropriate definition of the APE and has received concurrence from the New York SHPO (letter of concurrence is contained in [Appendix B](#)). The Power Authority will consult with the New York SHPO to obtain background archaeological information on the Project area. The environmental variables proposed to construct a sensitivity model to predict archaeological site locations will be discussed with the New York SHPO and the environmental attributes to construct the model will be identified and reviewed with the New York SHPO. The Power Authority will seek advice from the New York SHPO on best practices for consulting with the relevant Nations on this Project. Consultation and communication with the New York SHPO will be ongoing on an as-needed basis. The following federally recognized Indian Nations will also be consulted with: the St. Regis Mohawk Tribe, the Delaware Nation, The Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians, to the extent that they have not previously notified the Power Authority that they would only like to be consulted when new construction is proposed.

Task 2 – Background Research

The Power Authority proposes to examine archaeological site files, cultural resources reports and archives located at the Office of Parks, Recreation, and Historic Preservation (OPRHP) located at Peebles Island

State Park, Waterford, New York. The Power Authority will also consult with the New York SHPO to identify other pertinent data sources (such as the New York State Museum) for archaeological sites that may exist within or nearby the Project's APE. The purpose of this effort is to examine relevant sources that may contain historical and archaeological information on the Project area in order to develop Precontact and Historic period contexts for constructing an archaeological sensitivity model.

Task 3 – Development of a Sensitivity Model

The Power Authority will develop a sensitivity model, based on its consultation with the New York SHPO and background research, to identify locations within the Project's APE investigation area that are likely to contain archaeological resources. The archaeological sensitivity model will identify environmental variables in consultation with the New York SHPO that correlate with the locations of known sites. For example, archaeological research in general has shown that people tended to camp on flat, well-drained areas within 300 feet of water. Variables will be scored, "high" if they are recognized to correlate with archaeological site locations and, "low" if they do not. A correlation matrix will be constructed in which these variables will be mapped onto a map of the Project's APE. The sensitivity model will divide the investigation area into units of high and low sensitivity for archaeological cultural resources. In this fashion, the development of a sensitivity model will aid in identifying the potential locations of Precontact and Historic period archaeological sites. This desktop analysis will be field checked in order to evaluate its applicability to the Project as defined in Task 4.

Task 4 – Field Reconnaissance

The Power Authority proposes to conduct archaeological field reconnaissance of the Project's APE investigation area to calibrate the sensitivity model and eliminate areas from further survey as warranted. The field reconnaissance will consist of visual examination of selected portions of the Project area, focusing primarily on landforms that have the greatest potential to contain archaeological resources, and as well as confirming areas of disturbance, steep slope, and wetlands, which would have little potential to contain *in situ* buried archaeological resources. The model will be fine-tuned as needed with information gathered during the field reconnaissance.

Task 5 – Report Development

The Power Authority will develop a report that contains a description of all of the work that went into the development of the Phase IA study. The report will make recommendations whether additional archaeological survey (Phase IB) is required. A Phase IB is generally recommended when areas with a

high sensitivity for archaeological sites are identified in the Project’s APE. The report will be developed in consultation with the New York SHPO, and copies of it will be made available to the relevant federally recognized Indian Nations for review and comment. Data collection and report writing will comply with the New York Archaeological Council’s *Cultural Resource Standards Handbook* that was adopted by the New York SHPO in 1994. The Power Authority will file an Initial Study Report regarding the progress of the Phase IA archaeological survey within one year of FERC’s Study Plan Determination. The Power Authority will also file an Updated Study Report (USR) within two years of FERC’s Study Plan Determination, to the extent a USR is needed. The Power Authority will file a progress report within six months of FERC’s Study Plan Determination letter, containing an update on the status of tasks being conducted as part of the survey.

2.2.8 PROPOSED DELIVERABLES AND SCHEDULE

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Meeting(s) with the New York SHPO	March – May 2015
Task 2. Background Research	Spring and Summer 2015
Task 3. Development of Sensitivity Model	Summer and Fall 2015
Task 4. Field Reconnaissance	Summer and Fall 2015
Task 5. Initial Study Report Updated Study Report	Within one year of Study Plan Determination (Likely February 19, 2016) Within two years of Study Plan Determination

2.2.9 LEVEL OF EFFORT AND COST

The estimated cost for the Phase IA archaeological survey is approximately \$54,000. The Power Authority believes that the proposed level of effort is adequate to obtain preliminary information available on Precontact and Historic period archaeological resources within the Project’s APE.

2.2.10 REFERENCES

Hartgen Archaeological Associates, Inc. 2005. Archaeological Field Reconnaissance, Electrical Distribution and Communication Facilities Lansing Manor, Blenheim-Gilboa Pumped Storage Power Project. Report on file with the Office of Parks, Recreation, and Historic Preservation, Waterford, New York.

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2.3 FISH ENTRAINMENT/PROTECTION ASSESSMENT STUDY PLAN

2.3.1 GENERAL DESCRIPTION OF PROPOSED STUDY

In its Pre-Application Document (PAD), the Power Authority proposed to conduct a literature-based assessment of Fish Entrainment and Turbine Passage Survival. Also in Scoping Document 1 (SD1), the Federal Energy Regulatory Commission (FERC) identified the effects of fish entrainment and mortality associated with pump-storage operation on fish populations in project reservoirs as an issue to be addressed in the Environmental Assessment (EA) for the Blenheim-Gilboa Project. The U.S. Fish and Wildlife Service (USFWS) and the New York State Department of Environmental Conservation (NYSDEC) requested a Fish Entrainment/Protection Study at the Blenheim-Gilboa Project as part of the FERC relicensing process.

The Power Authority proposes to conduct a literature-based fish entrainment assessment for the Blenheim-Gilboa Project. This desktop analysis, which will include an assessment of fish habitat in the vicinity of the intakes from construction and maintenance photographs, will be supplemented with field data collection of velocity and depth information in the area of the intake structures.

2.3.2 GEOGRAPHIC SCOPE

For the purposes of this study, the study area includes the Lower and Upper Reservoirs of the Blenheim-Gilboa Project. [Figure 2.3-1](#) depicts the location of the pump-turbine intakes in each project reservoir.

2.3.3 STUDY GOALS AND OBJECTIVES

The primary goal of this study is to provide a qualitative analysis of potential fish entrainment at the Project.

The specific objectives of this study are to:

- Characterize the physical and operational characteristics of the Francis type pump-turbines and intake structures of the Project;
- Summarize the fish species present in the Upper and Lower Reservoir based on existing data;
- Evaluate water quality conditions, specifically dissolved oxygen (DO) and temperature, at the intake locations to determine how these factors could affect the potential for fish entrainment;
- Qualitatively evaluate which fish species and life stages have the potential to be entrained during generation and pumping phases of operation, based on habitat preferences and behavior;

- Review entrainment studies conducted at similar pumped storage or large hydroelectric projects for relevance to potential entrainment and turbine passage survival at the Project; and
- Develop an estimate of turbine passage survival based on available information.

2.3.4 RELEVANT RESOURCE MANAGEMENT GOALS AND PUBLIC INTEREST CONSIDERATIONS

The NYSDEC manages the Upper and Lower Reservoirs as a coolwater fishery with an emphasis on Walleye and Smallmouth Bass, supplemented by a put-and-take trout fishery.

2.3.5 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

In the preparation of the PAD, existing information was compiled regarding the physical characteristics of the Blenheim-Gilboa Project. The PAD provides information on Project facilities, including Francis-type turbine specifications and operations in Sections 3.1 and 3.2 of the PAD, respectively.

The fish assemblage within the study area is comprised of both riverine and lacustrine species. The fishery is supplemented by stocking and contains no diadromous or threatened/endangered species in Project waters. For more information regarding the current fish assemblage and fish stocking history in the Lower and Upper Reservoirs of the Blenheim-Gilboa Project, please see Section 4.4 of the PAD. The PAD identified those fish species that are found in the study area and, therefore, may be potentially susceptible to entrainment and turbine mortality.

An evaluation of fish entrainment and turbine passage survival at the Project is needed so the resource agencies can understand the potential effects of Project operation on the fisheries resources.

2.3.6 PROJECT NEXUS

Continued operation of the Blenheim-Gilboa Project could potentially affect riverine and lacustrine fish species that utilize the aquatic habitat within the Project area. This information will provide insight on the effects of continued Project operation on the fisheries resources within the Project's reservoirs.

2.3.7 METHODOLOGY

The proposed study involves the qualitative assessment of entrainment and the probability of turbine passage survival at the Project using a review of relevant biological criteria and analysis of physical Project characteristics. The Power Authority proposes to conduct a literature-based entrainment and turbine survival study to qualitatively assess potential fish entrainment and turbine survival at the Project.

Task 1. Describe Intake and Turbine Configurations

The first step in evaluating the potential for fish entrainment and survival is to consider the physical features of the reservoirs, intake structures, and Francis-type turbines that may affect entrainment and turbine passage survival. Project features and dimensions will be obtained from Power Authority engineering drawings, historical photos taken during construction of the Project, and recent bathymetric surveys of the reservoirs. This information will be used to calculate intake depths and velocities at various flow rates and to determine substrate near the intakes.

Task 2. Field Collection of Intake Velocities

The Power Authority will collect velocity, water depth, and substrate data from the Lower and Upper Reservoirs to confirm the information calculated or determined from existing information in Task 1. Water velocity and depth measurements in the vicinity of the intake structures in both the Upper and Lower Reservoirs will be collected using an Acoustic Doppler Current Profiler (ADCP). Substrate information will also be confirmed with the ADCP methodology. Velocity measurements will be collected along pre-determined transects in front of and adjacent to the intake structures during varying operational conditions. These data will then be used to verify the relative magnitude of calculated intake velocities and flow.

Task 3. Water Level and Water Quality Data Analysis

Water level and water quality data will be analyzed because the potential for fish entrainment and subsequent potential turbine survival can be affected by the following related factors: the reservoir water level (or storage capacity), intake velocities, the vertical temperature profile and location of a thermocline, and the dissolved oxygen (DO) concentration near the intake structures. Reservoir elevation duration curves will be developed on an annual basis for each reservoir based on hourly data collected by the Power Authority from 2001 - 2014. Project operational data will be analyzed to determine trends in timing and duration of pumping/generation cycles.

Bi-weekly water quality measurements collected by the Power Authority in 2012 within the Lower and Upper Reservoirs will be used to evaluate dissolved oxygen and thermal stratification near the intake structures. The profiles will then be analyzed to identify trends in factors, such as the depth of the thermocline compared to the intake elevation, DO concentrations near the intake structures, and how these trends affect the potential for fish entrainment will be discussed.

Task 4. Entrainment Analysis

A summary of the existing fish assemblage in both reservoirs is provided in the PAD. Life history characteristics and habitat preferences of each species at different life stages will be reviewed in relation to reservoir intake configuration and water quality conditions. Based on these considerations, the fish species included in the entrainment analysis will be selected by determining which fish species, and at what life stages, are most likely to be present near the intake structures.

A qualitative scale of entrainment potential ranging from “Low” to “High” will be developed for each resident fish species documented as existing in both the Lower and Upper Reservoirs. The Power Authority will develop a summary of the life history traits and habitat requirements of fish species as they relate to affecting entrainment at the Blenheim-Gilboa Project from standard literature sources. Habitat use, swimming performance, behavior, and life stages, for example, are factors affecting entrainment potential. This process will index species and life stages of resident fish across a range from most to least prone to involuntary entrainment. The potential for involuntary entrainment of the most susceptible species will be assessed by comparing swim speed thresholds to intake velocity.

Based on existing scientific literature and the information compiled in Tasks 1 through 3, comparable projects will be identified, and the results from studies of those projects will be applied, in conjunction with the broader analysis, to estimate the likelihood of fish entrainment and survival at the Project. The sources of background information used to identify comparable projects will begin with the entrainment database ([EPRI, 1997](#)) and a search of the FERC elibrary for relevant entrainment studies comparable to the Project.

Task 5. Assessment of Turbine Passage Survival

Mortality of an individual fish passing through the turbines at the Blenheim-Gilboa Project may result from blade strike, shear stress, and/or pressure changes. The Power Authority proposes to assess turbine survival in several different ways.

Investigations of fish turbine passage survival have been independently conducted at numerous hydroelectric projects throughout the country, providing a considerable data set from which a qualitative approach to assessing turbine passage survival at the Blenheim-Gilboa Project can be applied. Winchell et al. ([2000](#)) summarized turbine passage survival data reported in the EPRI ([1997](#)) database by turbine type, turbine characteristics, and fish size. Based on the consistency of results from numerous studies, it is apparent that fish size rather than species is the primary variable in determining the probability of survival

through turbines, with smaller fish being more likely to survive turbine passage ([Franke et al., 1997](#); [Winchell et al., 2000](#)). Species-specific estimates of fish mortality through Francis-type turbines ([EPRI, 1992](#)) indicate that survival rates across species are generally uniform. To estimate survival of fish that may be entrained and passed through the turbines at the Project, survival studies conducted at similar hydroelectric facilities with similar turbine types and hydraulic capacities to those at the Project will be examined and discussed.

Additionally, calculated estimates of turbine passage survival performed by the Department of Energy (DOE) ([Franke et al., 1997](#)) will be used to estimate the survival rate using a blade-strike model. The model uses various turbine, fish and operations characteristics to calculate a strike and survival probability.

A comparison of the differences in water pressure a fish would experience passing through the Project during both pumping and generating conditions at varying reservoir elevations will also be examined to estimate adverse effects on potentially entrained fish that pass through the turbines due to changes in water pressure.

Task 6. Study Report

Results will be presented in a summary report and discussed in regards to overall entrainment and turbine survival risk.

A tentative table of contents for this study will include:

- Introduction
- Study Objectives
- Project Description
- Velocity Measurements
- Fish Species
- Entrainment Analysis
- Turbine Passage Survival
- Summary/Discussion

2.3.8 PROPOSED DELIVERABLES AND SCHEDULE

The Power Authority proposes to perform this study in 2015. Study reporting will be conducted in accordance with the Process Plan and Schedule (18 CFR § 5.6(d)(1)), as provided in FERC’s SD2. The Power Authority will file a progress report within six months of FERC’s Study Plan Determination letter, containing an update on the status of tasks being conducted as part of the survey.

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Tasks 1, 3-5. Literature Search and Analyses	March – September 2015
Task 2. Collection of Field Velocity Data	May - June 2015
Task 6. Initial Study Report Updated Study Report	Within one year of Study Plan Determination (Likely February 19, 2016) Within two years of Study Plan Determination

2.3.9 LEVEL OF EFFORT AND COST

The Power Authority believes the proposed level of effort will adequately assess fish entrainment at the Blenheim-Gilboa Project. The proposed approach is consistent with methods accepted by FERC at other hydroelectric projects, such as the St. Lawrence-FDR Power Project (P-2000), Niagara Power Project (P-2216), Muddy Run Pumped Storage Project (P-2355), Conowingo Project (P-405), and the Cannonsville Hydroelectric Project (P-13287); the study will provide information necessary to assess potential impacts of entrainment resulting from continued project operation on fisheries resources within the study area. The estimated cost to conduct this study is approximately \$65,000.

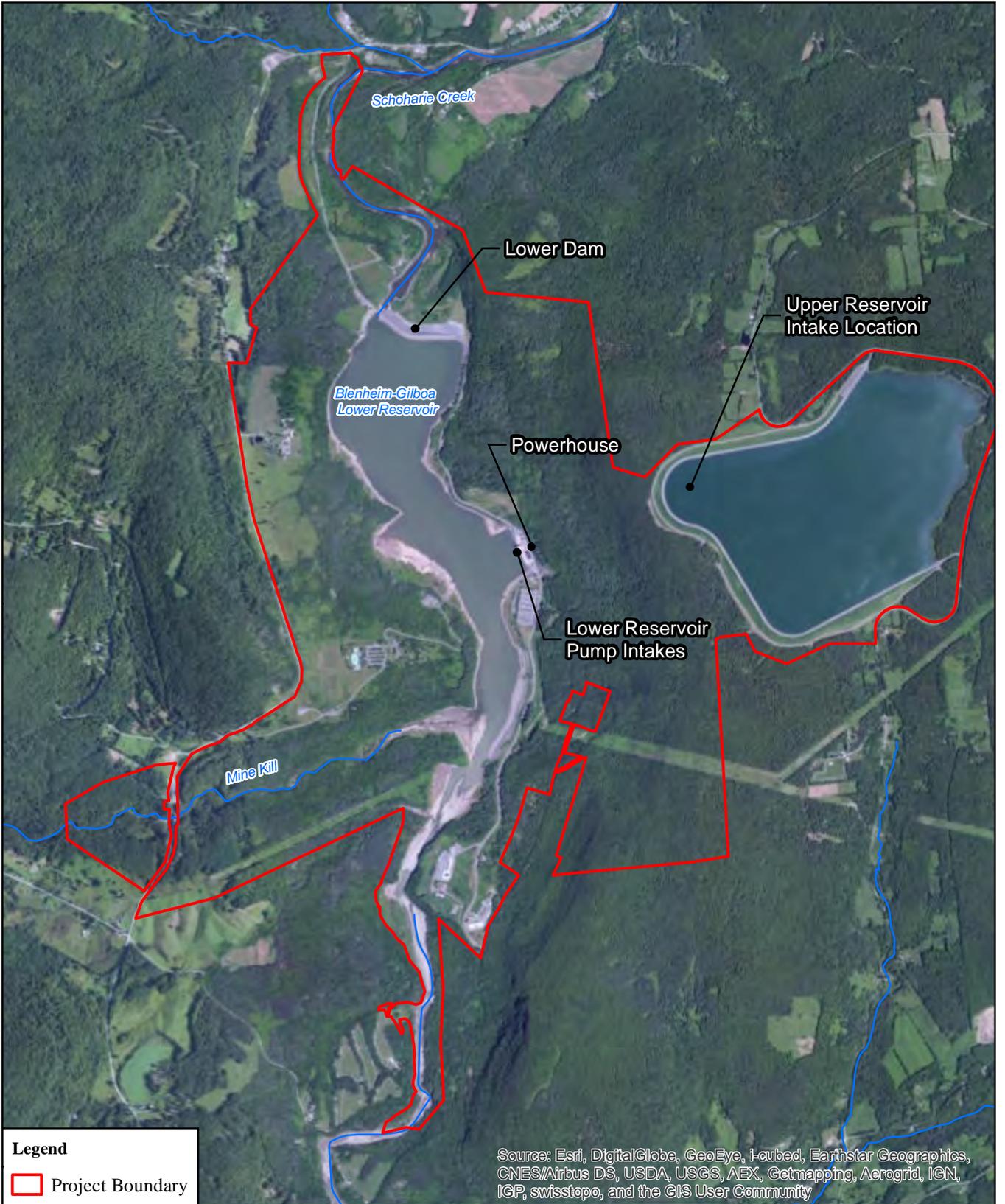
2.3.10 REFERENCES

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Winchell, F., S. Amaral, and D. Dixon. 2000. Hydroelectric turbine entrainment and survival database: an alternative to field studies. Hydrovision 2000: New Realities, New Responses. HCI Publications, Kansas City, MO.



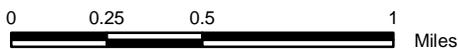
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 Project Boundary

Source: Esri, DigitalGlobe, GeoEye, I-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Blenheim-Gilboa
Pumped Storage Power Project
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REVISED STUDY PLAN

Figure 2.3-1:
Location of Pump Storage
Intakes on the Upper and
Lower Reservoirs

2.4 RECREATION USE/USER CONTACT STUDY AND ASSESSMENT OF EFFECTS THE PROJECT HAS ON RECREATION USE

2.4.1 GENERAL DESCRIPTION OF PROPOSED STUDY

The Power Authority proposes to conduct a Recreation Use/User Contact Study and Assessment of Effects of the Project on Recreation Use for the Blenheim-Gilboa Pumped Storage Project. The study will involve the collection of recreation use information through user counts at the Project recreation sites using traffic counters, calibration counts, spot counts, and registration attendance records. The study will also include a user contact survey to determine their use of the Project for recreation, and their perception of the available recreation opportunities, Project recreation sites and facilities. The survey will also request zip code information to assist with determining user distribution. The Power Authority proposes to use this information to determine recreation use of the Project including Project recreation sites and facilities. In addition, the Power Authority proposes to evaluate the adequacy of existing recreation facilities in meeting recreation needs and demand at the Project. The Power Authority will also use this information to assess the potential impact of continuing operation and maintenance of the Project on recreational use and existing Project recreation sites and facilities. The following Project recreation sites located within the Project boundary will be included in this study: Lansing Manor Complex, which includes the Visitors Center; Minekill State Park; the downstream fishing access; and the three access areas on the Upper Reservoir.

2.4.2 GEOGRAPHIC SCOPE

The study area encompasses lands and waters within the Project boundary that are available for public recreation. See [Figure 2.4-1](#) for a map of the Project boundary and the Project recreation sites included in this study.

2.4.3 STUDY GOALS AND OBJECTIVES

The goal of the study is to evaluate recreational use at the Project and to determine the adequacy of existing Project recreation sites and facilities in meeting recreation needs and demand at the Project.

The objectives of the study are:

- Determine the amount and types of recreation use at the Project;
- Interview the recreating public to determine users' perceptions with regard to their use of Project recreation sites and facilities;

- Evaluate recreational demand at the Project and determine if the existing Project recreation sites and facilities are meeting the current demand; and
- Evaluate the effects of Project operation and maintenance on recreation use at the Project and the usability of Project recreation sites and facilities, including the effects of debris accumulation on recreational access. .

2.4.4 RELEVANT RESOURCE MANAGEMENT GOALS AND PUBLIC INTEREST CONSIDERATIONS

The resource management goals of the agencies, such as New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), are to provide and enhance public recreational opportunities.

2.4.5 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

Existing Information:

Section 4.8 of the Pre-Application Document (PAD) provided information regarding recreation resources within the Project and surrounding area. The Project is located within the Saratoga/Capital District Region, as designated by the OPRHP. This region includes ten state parks, eight state historic sites, and one state park golf course. In addition to the state park facilities, there are pockets of other state lands including Keyserkill State Forest, Blenheim Hill State Forest, Leonard Hill State Forest, High Knob State Forest, and Gates Hill State Forest. This region is located directly north of the Catskill region of New York State. There are also two privately owned campgrounds near the Project. The Country Roads Campground is located just south of the Upper Reservoir and Nickerson Park Campground abuts the Project boundary along the western side of the Lower Reservoir.

In 2012, the Power Authority conducted an inventory of existing Project recreation sites and facilities, and the recreational opportunities found within the Project boundary. The Project provides a variety of recreation opportunities, including fishing, boating, hiking, biking, hunting, snowmobiling, cross-country skiing, snowshoeing, picnicking, and swimming. There are seven recreation sites at the Project which include: Minekill State Park; three public access points on the Upper Reservoir; the Lansing Manor Complex, which includes the Visitors Center; and fishing access downstream of the dam. In addition, bow hunting for deer and turkey is permitted on Project lands during the state-regulated open seasons with a Power Authority archer permit. The Long Path, which extends 343 miles between Fort Lee Historical Park in New Jersey and Route 146 in Altamont, New York, crosses through the western side of the Project through Minekill State Park and the Lansing Manor Complex. The Bluebird Trail extends 2.5

miles between the Visitors Center at Lansing Manor and Minekill State Park ([NYPA, 2012c](#)). Additional information regarding these sites can be found in the PAD.

The 2014-2019 New York State Comprehensive Outdoor Recreation Plan (SCORP) was written by OPRHP to provide a statewide policy direction and to fulfill OPRHP's recreation and preservation mandate. It serves as an overall guidance document for recreation resource preservation, planning and development in New York State through 2019. According to the SCORP, the population of New York is only anticipated to increase by 2% from 2010 to 2030; however, the population is aging. The number of residents over the age of 65 is projected to increase by 38.2%. It is anticipated that recreation needs will shift from active recreation activities such as team sports to more passive recreation activities such as golf, relaxing in a park, and walking. The SCORP states that walking for enjoyment is now the recreation activity enjoyed by most New York residents. This was followed by relaxing in the park, swimming, biking, and boating. A relative index of needs was developed by county utilizing a numerical scale where +10 indicates the highest level of need and +1 indicates the least. Five was considered the statewide average. For Schoharie County the highest level of need was a +7 for local winter activities such as ice skating, sledding, and hockey. This was followed by a +6 for downhill skiing/snowboarding, snowmobiling, fishing, camping, and walking ([OPRHP, 2014](#)).

Need for Additional Information:

Additional information with respect to current recreation use of the Project and Project recreation sites and facilities, and recreational users' perceptions regarding their use of the Project will help inform a decision on whether existing Project recreation sites and facilities are meeting public recreation needs.

2.4.6 PROJECT NEXUS

FERC regulations require that the license application include a statement of the existing recreation measures or facilities to be continued or maintained and the new measures or facilities proposed by the applicant for the purpose of creating, preserving, or enhancing recreational opportunities at the Project and in its vicinity, and for the purpose of ensuring the safety of the public in its use of Project lands and waters. In addition, recreation is a recognized project purpose at FERC-licensed projects under section 10(a) of the Federal Power Act (FPA).

2.4.7 METHODOLOGY

Task 1. Background Research

The Power Authority plans to collect information at Project recreation sites which include: Minekill State Park; three public access points on the Upper Reservoir; the Lansing Manor Complex (including the Visitors Center); and the fishing access downstream of the lower dam. Survey routes will be established to minimize travel time and distance between survey locations. The Power Authority will review existing information, such as the Project's Exhibit R, 2015 FERC Form 80, and Recreation Facilities Summary, Blenheim-Gilboa Pumped Storage Project (FERC No. 2685) to verify Project recreation site locations and determine the appropriate survey routes and locations for counter placement. Existing and historic information on recreation use at the Project recreation sites will also be examined as part of the evaluation of recreation demand and site capacity at existing Project recreation sites. As part of this task, the Power Authority will reach out to OPRHP to determine available recreation use and facility data for Minekill State Park.

Task 2. Field Work

The field work for this study will be conducted between the months of March 2015 and February 2016. Field data collection will involve a combination of spot counts, traffic counters, calibration counts, and actual use numbers recorded by the Power Authority or other recreation site operators. While the primary focus of the field staff will be the user contact survey, field staff will also note any change to Project recreation sites observed over the course of the field season, so that the Project recreation inventory information collected in 2012 can be updated, as needed, at the conclusion of the study effort. Field staff will also collect water depth data at the Minekill State Park boat launch and at the Upper Reservoir carry-in launch.

Spot Counts

Spot counts will be conducted at all Project recreation sites, as identified in Task 1. Spot counts are short duration counts which will be utilized as a snapshot of use at each survey location. Individuals conducting the count will collect data immediately upon arriving at the survey location. Once completed they will travel to the next survey location. Spot counts will be conducted on one weekday and one weekend day a month between the months of March 2015 and February 2016. The number of vehicles parked at each site and any observed recreation use will be recorded on data forms to determine the time-of-day use patterns at the sites. The spot count data will provide information on capacities and types of

use and will be a component in the development of the overall use levels. On the basis of this schedule, a total of 24 spot counts will be conducted at each of the Project recreation sites throughout the study period.

Traffic Counters

Traffic counters will be placed at Project recreation sites where the site is conducive to the effective use of a traffic counter. Counters will be used to estimate the number of vehicles using the site. The traffic counters will be installed by Memorial Day weekend (by May 22, 2015) and will be removed at the end of the fall recreation season (by October 31, 2015). The counters will need to be removed prior to the beginning of snow removal operations to avoid damage to the both the counter and snow removal equipment. Throughout this period counters will be read and reset twice-weekly, typically on Friday afternoons and Monday mornings, to differentiate between weekday and weekend use. Traffic counter data will be used in conjunction with spot count and calibration data in developing recreational use estimates.

Calibration Counts

Calibration counts will be conducted at each of the Project recreation sites, as identified in Task 1. Counts will be conducted on one weekday and one weekend day a month between the months of March 2015 and February 2016. In months containing the following holidays (Memorial Day, 4th of July, Labor Day, Columbus Day, Thanksgiving, New Year's Day, and President's Day), an additional calibration count will be conducted during the holiday or holiday weekend. Collected information will be documented on a data form. These counts will last for at least two hours per site on each calibration day. During a calibration count, data are recorded on information such as the number of people observed, observed activities, number of vehicles and trailers, and time entering and leaving the site (length of stay). With calibration data, recreation parties are recorded individually, unlike spot count data, which counts the total number of people at the site, but does not provide details by party. The calibrations are also used to verify that the traffic counters are functioning properly. Calibration data will be combined with spot count data and, as available, traffic counter data to determine recreational use estimates at facilities. On the basis of this schedule, a total of 31 calibration counts will be conducted at each of the Project recreation sites throughout the study period.

Consistent with standard sampling techniques, all sampling days will be randomly selected and survey routes will be completed on a rotating basis and at different times of day to account for time-of-day use patterns and to eliminate sampling bias.

Actual Use Records

Actual use records to the extent they are readily available for boating in the Upper Reservoir, attendance at Lansing Manor, and attendance at the Blenheim-Gilboa Visitor Center will be utilized as part of this study.

Task 3. User Contact Survey

A proposed user contact survey has been developed, in consultation with OPRHP, to determine users' perceptions with respect to their use of the Project for recreation and the existing Project recreation sites and facilities. See [Figure 2.4-2](#). Among other things, the survey will ask recreationists what recreational activities they are participating in at the Project that day, and for the user's zip code to determine how far users travel to visit the Project for recreational purposes. This survey will also be used to determine length of stay and number of people in a party. Field staff will utilize the contact survey during calibration counts at Project recreation sites.

Task 4. Study Report

With respect to the development of a technical report, information collected as part of the previous tasks will be entered into spreadsheets for statistical analysis. Traffic counter numbers and actual use data, along with the spot count and calibration count data will be analyzed by a statistician to determine the amount of recreation use occurring at the Project and to project future recreational use over the term of a new license. Recreation use data for the Project will be summarized by season and activity type for each Project recreation site. Information from both the use counts and user contact survey will also be analyzed to determine whether Project recreational sites and opportunities are meeting recreation needs. Recreation use information, user contact survey results, water level information and ramp depths, and recreation inventory information will also be used to evaluate Project-related effects on the recreation use at the Project and the usability of Project recreation sites and facilities.

An Initial Study Report will be filed within one year of FERC's Study Plan Determination. The Study Plan Determination is anticipated to be issued in February 2015. Because data collection will continue through February 2016, a technical report will be included as part of the Updated Study Report, which is due two years after the Study Plan Determination. The Power Authority will file a progress report within six months of FERC's Study Plan Determination letter, containing an update on the status of tasks being conducted as part of the survey.

2.4.8 PROPOSED DELIVERABLES AND SCHEDULE

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Background Research	January 2015 – March 2015
Task 2. Field Work	March 2015 – February 2016
Task 3. User Contact Survey	March 2015 – February 2016
Task 4. Initial Study Report Updated Study Report	Within one year of Study Plan Determination (Likely February 19, 2016) Within two years of Study Plan Determination

2.4.9 LEVEL OF EFFORT AND COST

The Power Authority believes that the proposed level of effort is sufficient to determine the adequacy of existing recreation facilities in meeting existing and future recreation needs at the Project. The estimated cost of the Recreation Use/User Contact Study and Assessment of the Effect of the Project on Recreation Use as outlined in this plan is approximately \$160,000.

2.4.10 REFERENCES

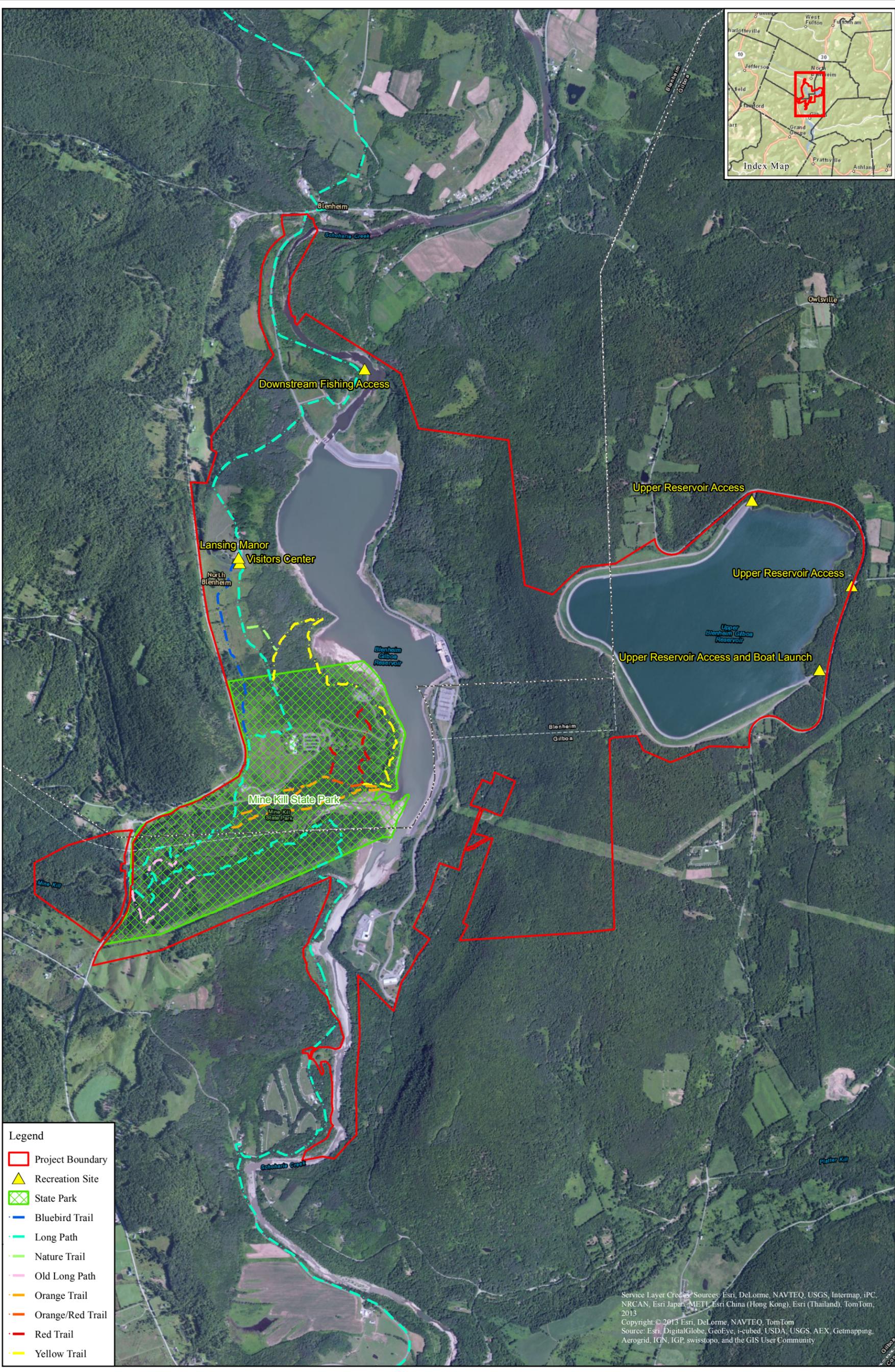
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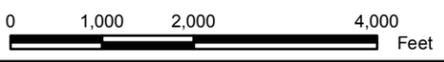


- Legend**
- Project Boundary
 - ▲ Recreation Site
 - State Park
 - Bluebird Trail
 - Long Path
 - Nature Trail
 - Old Long Path
 - Orange Trail
 - Orange/Red Trail
 - Red Trail
 - Yellow Trail

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Blenheim-Gilboa
 Pumped Storage Power Project
 (FERC No. 2685)



REVISED STUDY PLAN

Figure 2.4-1: Recreation Study Area

Blenheim-Gilboa Pumped Storage Power Project

Figure 2.4-2 Proposed Recreation User Survey

Interviewer: _____	Date/Time: _____	Site Location: _____
Weather: _____	Air Temp: _____	Declined Survey: _____
To be determined Post Survey: Pond Elevation: _____ Flow (cfs): _____		

Good Afternoon. My name is _____ and I am conducting a recreation use survey of visitors to the Blenheim-Gilboa Pumped Storage Power Project area for the New York Power Authority (Show location map). Collected information will assist the Power Authority in understanding more about land and water based recreation in this area of Schoharie Creek. Responses from the survey will remain anonymous. Would you mind responding to the survey?

1. Have you participated in this survey effort before?

Yes_____ Thank you for your time. We are only interviewing each person once with this survey.

No_____ Continue with survey

2. How many in your group, including yourself? _____

3. Which of the following best describes your group? (Check One)

- | | | |
|----------------------------------|--|---|
| <input type="checkbox"/> Alone | <input type="checkbox"/> Multiple Families | <input type="checkbox"/> Organized Outing Group |
| <input type="checkbox"/> Family | <input type="checkbox"/> Family & Friends | <input type="checkbox"/> Educational Group |
| <input type="checkbox"/> Friends | | <input type="checkbox"/> Other_____ |

4. How many vehicles did your group use to come here? _____

5. Have you ever visited the Blenheim-Gilboa Project area before? Yes__ No__

If yes, typically, how many times a year do you visit the project area for recreation (please use a number)? _____

6. What is your U.S. Zip Code? _____ or Country of Residency?_____

7. When did you arrive and plan to depart?

Arrived: Date: _____ Time: _____ AM PM

Estimated Depart: Date: _____ Time: _____ AM PM

8. During your visit today what is your perception of the amount of use occurring at this site?

1	2	3	4	5
Not Crowded		Somewhat Crowded		Extremely Crowded

9. Were you aware of changing water levels during your visit today? Yes _____ No _____

If yes, please circle the response that applies:

Upper Reservoir Rising Water Stable Water Dropping Water

Lower Reservoir Rising Water Stable Water Dropping Water

10. Overall, how satisfied were you with the water level during your trip? (circle number) N/A_____

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why?_____

11. Please indicate which of the following activities you participate or have participated in at the Blenheim-Gilboa Project by season over the past year. (Mark all that apply)

Activity	This Trip	Spring (Mar. 1 – May 31)	Summer (June 1 – Aug. 31)	Fall (Sept. 1 - Nov. 30)	Winter (Dec. 1 – Feb. 28)
Backpacking					
Birding					
Boating					
Canoeing					
Kayaking					
Power Boating					
Rowing					
Sailing					
Whitewater Boating					
Camping					
Disc Golf					
Dog Walking					
Driving for Pleasure					
Educational Programs					
Fishing from a Boat					
Fishing from Shore					
Hiking					
Horseback Riding					
Hunting					
Ice Skating					
Mountain Biking					
Nature Observation					
Orienteering					
Painting					
Photography					
Picnicking					
Road Bicycling					
Running					
Sightseeing					
Skiing					
Sledding					
Snowmobiling					
Snowshoeing					
Swimming					
Walking					
Waterskiing/Wakeboarding					
Other: _____					

12. Of the activities listed above, which is your PRIMARY activity on this trip? _____

13. Overall, how satisfied were you with the available number of recreation facilities? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why? _____

14. Please rate the following for this location:

	Poor		Fair		Excellent	
Availability of Parking	1	2	3	4	5	
Site Condition	1	2	3	4	5	
Variety of Facilities/Amenities	1	2	3	4	5	
Amount of Available Access to Project Waters	1	2	3	4	5	

Please explain any poor ratings. _____

15. How would you rate this recreation site as a public recreation opportunity on a scale of 1 to 5?

1	2	3	4	5
No Value At All		Some Value		Highly Value

16. Would you return to this recreation site over the course of the next year? Yes _____ No _____

17. What did you like most about your recreational experience today? _____

18. What did you like least about your recreational experience today? _____

19. What, if anything, enhanced your recreation experience today? _____

20. What, if anything, detracted from your recreation experience today? If you check any of the below, please explain.

Facility location ___ Facility condition ___ Lack of amenities ___ Accessibility ___

Trash/Sanitation ___ Debris on the Water ___ Crowding ___ Noise ___ Other _____

21. What, if anything caused you to modify your recreation plans today? _____

22. Mine Kill State Park Only: Did you pay a fee for use of the recreational site/facility/equipment today? Yes ___ No ___

If yes, for what facility/equipment did you pay a fee? _____

How much did you pay? _____

If yes, what would you consider the cost to be on a scale of 1 to 5? (circle number)

1	2	3	4	5
Too Low		Reasonable		Too High

23. Does this recreation site/facility serve your interests? Yes ___ No ___

If not why? _____

24. Do you have any additional comments regarding recreation opportunities within the Blenheim-Gilboa Project?

Thank you for your time and input.

2.5 EFFECT OF PROJECT OPERATIONS ON DOWNSTREAM FLOODING STUDY

2.5.1 GENERAL DESCRIPTION OF PROPOSED STUDY

The purpose of the study is to investigate the potential effects of the Power Authority's Blenheim-Gilboa Pumped Storage Power Project on downstream flooding as well as reasonable, credible and prudent alternative operations, if any, that could potentially reduce downstream flooding during high-flow events, recognizing the primary purpose of the Project as a pumped storage facility. Alternative operations will consider the Project's availability, purpose, value and public benefit to NYISO and the transmission grid in terms of resiliency, reliability, voltage support and black start capability. During the scoping meetings and commenting phase for the Scoping Document (SD1) and study requests, flooding issues were raised by stakeholders as potential areas for investigation. The Town of Blenheim, the Town of Gilboa, the Town of Fulton, the Town of Schoharie, Schoharie County Board of Supervisors, Schoharie County, Dam Concerned Citizens, Blenheim Long Term Community Recovery Committee, and the Middleburgh Central School District either requested that a study be conducted on the extent to which the Project affects downstream flooding and/or how flooding could be reduced by Project operations. The Power Authority proposes to conduct a study to assess the effect of current Project operations on downstream flooding, as well as identify and analyze potential operational measures, if any, that could reduce downstream flooding during high-flow events.

2.5.2 GEOGRAPHIC SCOPE

The study area for flooding events occurring in the upper Schoharie Creek watershed includes the Schoharie Creek from Gilboa Dam to its confluence with the Mohawk River. The geographic area covered by each of the models utilized within this study is shown on [Figure 2.5-1](#).

2.5.3 STUDY GOALS AND OBJECTIVES

The primary goal of this study is to provide an analysis of the potential effect of the Project on downstream flooding, if any, and provide information on potential operational measures that could alleviate downstream flooding.

The specific objectives of this study are to:

- Estimate streamflows, water surface elevations, and extent of flooding along Schoharie Creek downstream of the Lower Dam for the 10-year, 50-year, 100-year, and 500-year precipitation events for three scenarios, as follows: a.) current operations; b.) instantaneous run-of-river operations (as if the project didn't exist); and c.) alternative operations of the upper and lower reservoirs in anticipation of a flood event.

- Identify the impact of existing operations on downstream water surface elevations, depths, and extent of flooding through a comparison of alternatives (a) and (b).
- Identify a range of reasonable, credible and prudent operational measures, if any, that potentially could reduce downstream flooding during high-flow events, taking into account: a.) the primary purpose of the Project as a pumped storage facility; b.) the Project's availability, purpose, value and public benefit to NYISO and the transmission grid in terms of resiliency, reliability, voltage support and black start capability c) the need to establish and maintain clear and consistent operating protocols; d.) prudent utility practices and the fundamental requirements to maintain Project integrity and public safety; and e.) the ability, as a practical matter, to quickly adapt to dynamic and unpredictable circumstances, such as the accuracy of forecast data, real time precipitation measurements, and other factors.
- For any operational measures determined to be feasible from an operations, engineering, and safety perspective, conduct an operations and hydraulic analysis to determine their effect on flooding on the Schoharie Creek both upstream and downstream of the BG lower reservoir dam.

2.5.4 RELEVANT RESOURCE MANAGEMENT GOALS AND PUBLIC INTEREST CONSIDERATIONS

Several stakeholders have expressed concern that the Project may increase downstream flooding, and/or the Project has the ability to decrease downstream flooding. The goal of this study is to investigate if there are effects from the Project on Schoharie Creek flooding downstream during high flow events and if reasonable, credible and prudent alternative Project operations could alleviate flooding downstream of the Lower Dam.

2.5.5 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

There is existing USGS gage data that can be used to estimate inflows for various flood conditions downstream of the Lower Dam. The modeling will utilize USGS gages data for the four flooding scenarios.

A calibrated hydrologic model was developed as part of the site-specific Probable Maximum Precipitation/Probable Maximum Flood Study ([RJ Associates, 2009](#)) that was performed to comply with the FERC Part 12 regulations. The study and associated hydrologic model were reviewed and approved by both the FERC and an Independent Board of Consultants on November 30, 2009. The hydrologic model was developed using the U.S. Army Corps of Engineers' (USACE) Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) computer program which is used to predict runoff and streamflows.

A hydraulic model was developed by the Power Authority to comply with FERC Part 12 regulations and to support the development of inundation mapping for its Emergency Action Plan (EAP) (GSE, 2014). The Power Authority's Breach Analysis and EAP Inundation Mapping, including the hydraulic model, were approved by FERC in June 2014. The hydraulic model was developed using the USACE's Hydrologic Engineering Center's River Analysis System (HEC-RAS) computer program and is used to predict water depths and velocities for different streamflows. The existing hydraulic model includes over 200 stream cross-sections and extends approximately 58 miles from Gilboa Dam to the confluence of Schoharie Creek with the Mohawk River.

The hydraulic analysis completed in 2014 used the most up to date topographic data available at the time it was developed, which was a combination of bathymetry (2011) and photogrammetry (2011) collected for the Lower Reservoir after Tropical Storm Irene (TVGA, 2012), light detection and ranging (LiDAR) (1998) data, and USGS National Elevation Dataset (NED) Digital Elevation Model (DEM) data (1/3 arcsecond). The United States Geological Survey (USGS) is currently redeveloping LiDAR for Schoharie County.

2.5.6 PROJECT NEXUS

Pursuant to current license requirements, the Project is operated so that releases from the Lower Reservoir to Schoharie Creek equal inflows from Schoharie Creek upstream of the Project. The information gained from this study will provide insight on the effects of the Project on downstream flooding and provide information on potential operational measures that could alleviate downstream flooding.

2.5.7 METHODOLOGY

Task 1. Hydrologic Model

The hydrologic analysis will use a combination of methodologies. The existing hydrologic model (HEC-HMS) will be used as a basis to estimate inflows to the Lower Reservoir and the USGS regression equations (StreamStats) will be used to estimate streamflows downstream of the Lower Dam.

The hydrologic model was previously calibrated to the September 1999 (Hurricane Floyd) and September 2004 (Hurricane Ivan) storms. The HEC-HMS model will be checked utilizing information from the August 2011 (Tropical Storm Irene) storm event. Precipitation for these events will be estimated using the Northeast Regional Climate Center's Interactive Web Tool for Extreme Precipitation Analysis and other available data. The inflow hydrographs produced from this model will be used as the inputs for the Operations Model in Task 2.

USGS regression equations (StreamStats) will be used to estimate incremental inflows for the 10-, 50-, 100-, and 500-year flow events along a number of reaches between B-G and the confluence of Schoharie Creek with the Mohawk River. It is assumed that these inflows will be constant flow hydrographs for use as inputs in the Hydraulic Model in Task 4.

Task 2. Operations Model

An operations model will be developed utilizing the USACE's Hydrologic Engineering Center's Reservoir System Simulation (HEC-ResSim) computer program, which is used to model reservoir operations. This model will include operational capabilities and practices for both the Upper and Lower Reservoir in order to assess downstream releases from the Project. The inflow hydrographs from the HEC-HMS model will be utilized in the HEC-ResSim model to evaluate various operations scenarios in order to estimate the outflow hydrograph from the Project. Alternative operations will investigate initial reservoir water levels, various pump/turbine operations, Tainter gate operations, and timing of these operations in anticipation and during a flood event.

This outflow hydrograph from current operation and alternative operations for a flood event will be used as one of the inputs into the Hydraulic Model in Task 4.

Task 3. Update Hydraulic Model

In the Breach Study (GSE, 2014), topographic information was obtained from a combination of bathymetry (2011), and photogrammetry (2011) after Tropical Storm Irene, LiDAR (1998), and DEM (1/3 arc-second) data. The USGS was scheduled to redevelop LiDAR data for Schoharie County in 2014 and it is assumed that these data will be publicly available through their website by March 2015 when this study is anticipated to begin.

The existing out-of-bank geometry in the HEC-RAS model will be updated with the 2014 USGS LiDAR data. It is assumed that this information will be available in a DEM format. The New York State Canal Corporation (NYSCC) is currently collecting additional bridge information for the Flood Warning Operating System that it is developing. The HEC-RAS model will also be updated with this information if it is available at the start of study.

Calibration of the HEC-RAS model will then be performed utilizing high water marks collected after Tropical Storm Irene (i.e. the flood of record within most of the basin). Additional verification of the HEC-RAS model will be performed utilizing high water marks collected after the January 1996 flood

event. These events represent the two largest floods of record along Schoharie Creek, and each event had a variety of water surface elevation information collected by both the USGS and the New York Power Authority.

Task 4. Hydraulic Model Runs

The flow hydrographs generated from the HEC-ResSim operations model and the USGS gage regression analysis (downstream tributary inflow) for different storm events and scenarios will be routed downstream using the HEC-RAS hydraulic model to estimate water surface elevations and extent of flooding in Schoharie Creek between Gilboa Dam through the downstream communities in Schoharie County. These results will be presented for each of the studied scenarios.

Task 5. Study Report

Study results will be summarized in a report that will include the methodology, results, and conclusions. Appropriate comments will be incorporated into the report and then submitted to FERC in an Initial Study Report. The Power Authority will file a progress report within six months of FERC’s Study Plan Determination letter, containing an update on the status of tasks being conducted as part of the survey.

2.5.8 PROPOSED DELIVERABLES AND SCHEDULE

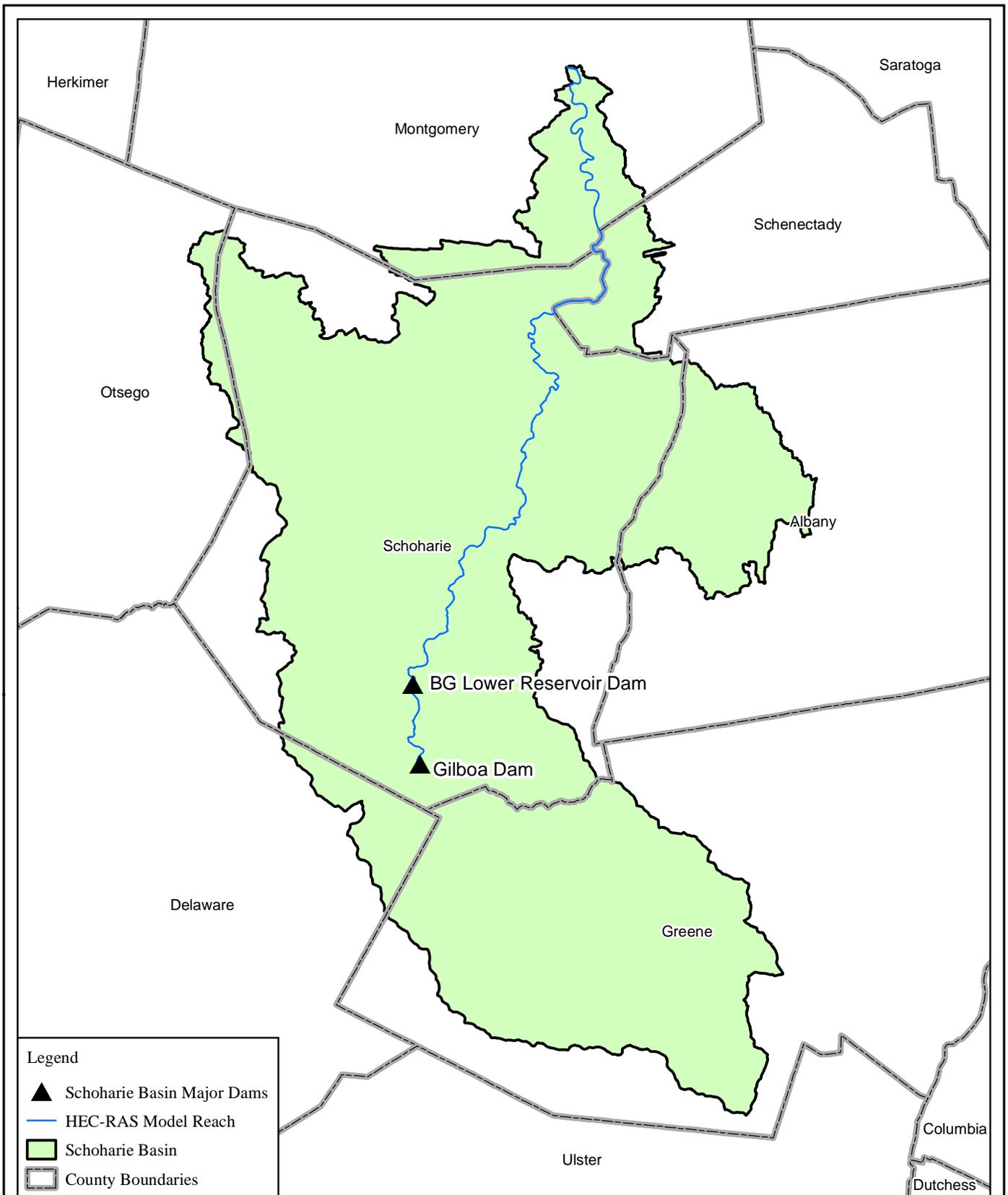
Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Hydrologic Model	June 2015
Task 2. Operations Model	August 2015
Task 3. Update Hydraulic Model	September 2015
Task 4. Hydraulic Model Runs	November 2015
Task 5. Initial Study Report	Within one year of Study Plan Determination (Likely February 19, 2016)
Updated Study Report	Within two years of Study Plan Determination

2.5.9 LEVEL OF EFFORT AND COST

The Power Authority believes that the proposed level of effort is adequate to analyze this issue. The estimated cost for the study outlined in this plan is approximately \$250,000.

2.5.10 REFERENCES

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<https://gis.ny.gov/elevation/documents/In-Progress-LIDAR-Coverage.pdf>. May 29, 2014.
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Legend

- ▲ Schoharie Basin Major Dams
- HEC-RAS Model Reach
- Schoharie Basin
- ▭ County Boundaries



New York Power Authority
Generating more than electricity

Blenheim-Gilboa
Pumped Storage Power Project
(FERC No. 2685)

REVISIED STUDY PLAN

Figure 2.5-1: Geographic Scope



0 3.75 7.5 15 Miles



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2.6 SOCIOECONOMICS

2.6.1 GENERAL DESCRIPTION OF PROPOSED STUDY

In its Pre-Application Document (PAD) for the relicensing of the Blenheim-Gilboa Pumped Storage Project (Project) by the Federal Energy Regulatory Commission (FERC), the New York Power Authority (the Power Authority) described the socioeconomic characteristics (Sec 4.11) of Schoharie County and the Towns of Blenheim and Gilboa. The Power Authority proposes to build upon the socioeconomic information presented in the PAD by studying socioeconomic resources associated with the Project, as presented in this study plan.

2.6.2 GEOGRAPHIC SCOPE

The geographic scope of the proposed socioeconomic study includes the State of New York as a whole, Schoharie County, the taxing-entities in which the Project is located, and adjacent areas, as appropriate. Including the County, the Project lies partially or wholly within four taxing entities. These entities are: the Town of Blenheim, the Town of Gilboa, the Gilboa-Conesville School District, and Schoharie County. Though the jurisdictions of the School District and the County overlap with those of the towns, for purposes of this study each of these jurisdictions will be included in the study area and will be collectively considered the Local Communities. The socioeconomic effects of the Project, however, potentially extend beyond these entities into other communities, which provide support to the Project via first responder services. Therefore, the geographic scope for certain portions of the Socioeconomic Study will be expanded to include those Neighboring Communities that provide first responder services to the Project. For purposes of this study, definitions of these terms are provided as follows:

- **Local Communities** include those taxing entities in which the Power Authority owns Project lands¹. These communities include: Town of Blenheim, Town of Gilboa, Gilboa-Conesville School District, and Schoharie County.
- **Neighboring Communities** include those taxing entities which support the Blenheim-Gilboa Project by providing first responder service through fire departments, rescue squads, and emergency ambulance corps. Preliminarily-identified communities include: Town of Conesville, Hamlet of Grand Gorge (located in the Town of Roxbury), Town of Jefferson, and Town of Middleburgh. The final list of Neighboring Communities will be derived from the analysis of entities providing first responder support to the Project, as described in Task 4 of this study plan.

¹ Project lands include those lands within the FERC Project Boundary.

2.6.3 STUDY GOALS AND OBJECTIVES

The objective of the Socioeconomic Study is to evaluate the socioeconomic effects of the Blenheim-Gilboa Project on the local and neighboring communities, as well as on the region and State. The study's specific objectives are:

1. To develop a demographic and economic profile of the current conditions of the Local and Neighboring Communities and to describe the socioeconomic character of those communities.
2. To evaluate potential socioeconomic effects on the Local and Neighboring Communities resulting from the Project's operations and the Power Authority's tax-exempt status.
3. To evaluate potential economic effects associated with the Local and Neighboring Communities providing first responder services.
4. To evaluate potential socioeconomic effects on the Local and Neighboring Communities, the region, and the State resulting from the operation of the Project.

2.6.4 RELEVANT RESOURCE MANAGEMENT GOALS AND PUBLIC INTEREST CONSIDERATIONS

At public scoping meetings, the meeting on the Proposed Study Plan, and via written submittals, several local stakeholders and representatives of the Local and Neighboring Communities indicated an interest in certain socioeconomic issues related to the Project and its operation. This socioeconomic study plan seeks to address specific socioeconomic aspects of the Project on a State, regional, and/or local basis.

2.6.5 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

Much of the data used for the Socioeconomic Study will be obtained from various published sources. Information for the demographic and economic profiles has been compiled by and can be readily obtained from governmental agencies, such as the US Census Bureau and the Bureau of Labor Statistics. Available data of this type include population, age, race and ethnicity, housing, income, poverty rates, labor force participation, and unemployment rates. Demographic data are available at the town and county level. It is anticipated that data for the Gilboa-Conesville School District will need to be compiled from Census tract or block level data. Bureau of Labor Statistics data, such as labor force and unemployment rate, are compiled at the county level. Comprehensive plans and other planning and development reports prepared by local entities, to the extent they are available, also will be used to frame the socioeconomic background evaluation. Data related to Project economics and the impact of the Project on electric generation regionally and in the State will be obtained from the Power Authority. Additional information related to property tax rolls, tax revenues, tax rates, and expenditures will be

compiled from the taxing authorities of the Town of Blenheim, the Town of Gilboa, the Gilboa-Conesville School District, Schoharie County, and the State of New York, as appropriate.

2.6.6 PROJECT NEXUS

The operation of the Blenheim-Gilboa Project has the potential to affect socioeconomic resources of the surrounding communities, as well as those communities that provide the Project with first responder support. The analysis will be the basis for understanding the Project's potential socioeconomic effects on the Local and Neighboring Communities, as well as regionally and on the State.

2.6.7 METHODOLOGY

The Socioeconomic Study for the Blenheim-Gilboa Project will involve five primary tasks. These tasks are to:

1. Analyze the effects of the Project at the State, regional, and local level using Regional Economic Models, Inc.'s REMI model;
2. Establish the baseline through demographic, housing, and economic profiles of the Local and Neighboring Communities;
3. Analyze the potential effects of the Power Authority's tax-exempt status on the Local Communities by examining current development values from the Blenheim and Gilboa tax rolls and evaluating the potential revenue effects in the REMI model;
4. Evaluate the potential effects of the Local and Neighboring Communities providing first responders support to the Project; and,
5. Prepare the Socioeconomic Study Report.

Each of these tasks is described in detail below.

Task 1. Analyze the Economic Effects of the Blenheim-Gilboa Project

Under Task 1, the economic effects of the Blenheim-Gilboa Project will be investigated and analyzed. The Project serves two vital functions for the State's electric consumers: it saves money for New York consumers by providing low-cost electricity when they need it most; and, it stores water for emergency power production. If necessary, this Project can be up and running within minutes. It can "pinch hit" if another plant or line suddenly goes out of service. One significant component of the Project's direct impacts on the local economy is its direct employment, that is, employees working for the Project and their associated wage income and benefits. As requested by stakeholders, Task 1 will provide a summary of the number of employees by zip code. Project-related expenditures by the Power Authority on goods

and services in the area also have an impact on the economy and will be presented. In addition, the Power Authority assists the communities through monetary and in-kind contributions. First responders, in particular, have been recipients of such contributions. First responder support will be addressed in detail in Task 4.

While Project employment, expenditures, contributions to the local communities, and property tax rates are direct impacts from the Project, indirect and multiplier impacts also will be considered in a socioeconomic study. These impacts represent the effects of the direct impacts as well as the subsequent rounds of economic activity as the direct effects move through the economy. Key elements include the effects of employee spending in the region, as well as additional rounds of spending for those receiving income from Project expenditures. Task 1 will provide an understanding of these components of Project economic impacts through the use of the industry-accepted REMI model, developed by Regional Economic Models, Inc. The results of the modeling effort will be described in the study report for the socioeconomic study plan.

The REMI model, which has been in use since 1980, relies on four major modeling approaches: input-output, general equilibrium, econometric, and economic geography (Regional Economic Models, Inc., 2015). Changes in supply, demand, and prices are entered into the REMI model in order to identify the iterative economic and demographic effects of these changes. Input/output (“I/O”) relationships among different industries, form the core of the REMI model. Thus, the REMI model can be used to show how, for instance, expenditures related to the Project may affect demand for other industries. Impacts to electricity pricing can also be captured through the REMI model. In addition, the I/O model will be used to trace the effects that result from changes in the incomes of workers at the Project.

The REMI model, however, goes well beyond the standard I/O relationships to incorporate other important feedback effects. The model includes demographic components, because the population of an area over the longer run depends in part on the available economic opportunities. Changes in population in turn have feedback effects on the local economy, affecting the demand for housing and other goods. Other feedback effects include changes in wages as the result of changes in economic activity. If employment increases, for example, wages will tend to rise, affecting the competitive position of the region relative to other areas. The REMI model results will quantify the impacts associated with the Project operations on demographics, employment, income, and gross regional product (a measure of the value added in production by the labor and capital located in a region). These results will address each of the Local and Neighboring Communities, the region, and the State of New York as a whole.

Task 2. Establish the Baseline: Demographic, Housing, and Economic Profile

For Task 2, which requires the establishment of baseline socioeconomic conditions, a demographic, housing, and economic profile will be developed for each of the Local and Neighboring Communities. The demographic profile will include, at a minimum, the assessment of population (historical, current, and projected), age distribution, median household income and per capita income, poverty levels, racial and ethnic distribution, and educational attainment. It will also include an evaluation of trends and descriptions of anticipated changes over time. For comparison purposes, data from the State of New York and the United States also will be provided. Year 2010 decennial Census data will serve as the source for the majority of the demographic data. In addition, the most current Census population estimates will be provided, as available.

The housing profile will address characteristics such as housing units, median age, seasonal occupancy, vacancy rates, homeowner and rental status, value, and rent. Some housing data are collected by the Census Bureau as part of the American Community Survey, which is used to supplement decennial Census counts. Information from the most recent Survey for which data are available at the town-level will be used for the housing profiles. The economic profile of the Local and Neighboring Communities will be comprised of data on the labor force, unemployment rate, employment by industry, number of business establishments, and sources of employment. The majority of the economic data will be presented at the county-level, the lowest level for which data are compiled by the Bureau of Labor Statistics. Industry employment and occupation will be presented, however, at the town level, as the Census Bureau collects these statistics.

Available local planning documents will also be reviewed as part of Task 2 to provide additional background for the Local and Neighboring Communities. These planning documents will include but may not be limited to comprehensive plans, such as the Town of Blenheim's *Comprehensive Plan* ([Blenheim, 2013](#), currently in draft form), as well as other documents related to socioeconomics, such as the *Schoharie County Long Range Economic Development Strategy* ([MSB, 2004](#)) and the *Blenheim, New York Long-term Community Recovery Plan* ([Town of Blenheim, 2012](#)).

Task 3. Analyze the Impact of the Power Authority's Tax-Exempt Status on the Local Communities

The work effort for Task 3 is to analyze effects of the Power Authority's tax-exempt status on the Local Communities, which consist of the Towns of Blenheim and Gilboa, the Gilboa-Conesville School District, and Schoharie County. This will include a review and assessment regarding the relationship, if any, between the Power Authority's tax-exempt status and the economic health of municipal, commercial, and

business activity. Under Section 1012 of the New York State Public Authorities Law and other provisions of law, the Power Authority is exempt from state and local taxation. As a result, the Project does not pay New York State sales tax or local property taxes (although it does pay payroll taxes such as the unemployment tax). This task will identify both the direct effects of the tax-exempt status, in terms of revenues, and the indirect effects which impact economic health, as measured by the REMI model.

For Task 3, the impacts of the Project will be defined as the property tax revenue that may be realized had the land developed in the absence of the Project. Thus, the current mix of development in the towns of Blenheim and Gilboa within the Gilboa-Conesville School District will be considered in calculating the potential impacts of the Power Authority's ownership of the land. Average assessed land value per acre will serve as a proxy for development patterns that may have occurred in the absence of the Project.

The analysis of the impact of NYPA's tax-exempt status will require several steps. To start, the study will identify the amount of Project acreage in each of the Host Communities. Property taxes are levied independently by the towns, school district, and county. Therefore, a property owner in Blenheim would pay property taxes to the Town of Blenheim, the Gilboa-Conesville School District, and Schoharie County. The acreage owned by NYPA in each of the taxing jurisdictions will be determined.

The study will also identify applicable tax rates in each of the Host Communities. Information on current tax rates and the equalization rates in each of the Host Communities will be gathered. Tax rates are published annually in the Schoharie County budget.

Using existing tax rates, the study will calculate an average assessed value per acre of land in the Gilboa-Conesville School District in the Town of Blenheim and in the Town of Gilboa. Average assessed values per acre will be used as proxies to monetize the mix of development in the area. The tax rolls from the Town of Blenheim and the Town of Gilboa are readily available online through the County website. These tax rolls will be examined and the property within the School District will be identified. In this way, the average assessed value then will be calculated separately for each taxing entity. Three different averages will be developed for each town. For example, in the Town of Gilboa, average assessed values will be calculated for:

- the portion of the Town of Gilboa within the Gilboa-Conesville School District;
- the portion of the Gilboa-Conesville School District within the Town of Gilboa; and
- the portion of Schoharie County within both the Gilboa-Conesville School District and the Town of Gilboa.

To calculate the hypothetical property taxes, first the acreage of the Project lands will be combined with (multiplied by) the average assessed value per acre for each taxing entity. For the Gilboa-Conesville School District and Schoharie County, separate figures will be developed for the Town of Blenheim and the Town of Gilboa. These figures then would be combined with the current tax rates in each of those taxing entities to yield hypothetical annual tax revenues assuming development of the Project lands consistent with local development patterns.

As a final step in the study, the potential impact of the hypothetical taxes will be evaluated using the REMI model. The REMI model analysis will incorporate tax impacts, described above, to assess the effect of NYPA's tax-exempt status. Complex economic impact models include in these multiplier effects the impacts on local wage rates, prices, and other economic variables. The results of these multiplier effects are estimates of the additional effects of the NYPA's tax-exempt status on overall economic activity.

Task 4. Analyze the Impacts Related to Providing First Responders

The Project facilities are located within the jurisdictions of the Local Communities, meaning that the Local Communities are responsible for providing first responder services to the Project. Additionally, some nearby Neighboring Communities also provide first responder services to the Project. Task 4 will include identifying those communities and describing the impacts associated with providing first responder services to the Project.

The Power Authority is currently conducting an analysis of first responder services provided to many of its generation and transmission facilities in the State, including the B-G Project. With respect to the Project, the analysis will include information from on-site interviews with Power Authority staff, as well as the first responders supporting the Project. Existing documentation related to prior Power Authority payments and donations will be reviewed. The results will include the cost and benefits of providing recurring payments for the services of first responder units. The analysis will also establish and specify the types and levels of first responder service that are required for the Project. Results of the analysis will be described in the study report.

Task 5. Prepare the Socioeconomic Study Report

After Tasks 1 through 4 have been completed, a comprehensive socioeconomic report, incorporating the analyses conducted in Tasks 1 through 4, will be developed. The report will describe the economic effects of the Project at the state, regional and local levels; present demographic, housing, and economic

profiles of the Local and Neighboring Communities; evaluate the effects of the Power Authority’s tax-exempt status; and address any Project-associated effects on first responders.

The Power Authority will file an Initial Study Report regarding the progress of the socioeconomic study within one year of FERC’s Study Plan Determination. The Power Authority will also file an Updated Study Report (USR) within two years of FERC’s Study Plan Determination; to the extent a USR is needed.

The Power Authority will file a progress report within six months of FERC’s Study Plan Determination letter, containing an update on the status of tasks being conducted as part of the survey.

2.6.8 PROPOSED DELIVERABLES AND SCHEDULE

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Establishment of Baseline: Demographic and Economic Profile	Spring and Summer 2015
Task 2. Analyze the Economic Effects of the Blenheim-Gilboa Project	Spring and Summer 2015
Task 3. Analyze the Impact of the Power Authority’s Tax Exempt Status on Local Communities	Summer and Fall 2015
Task 4. Analyze the Impacts to Related Providing First Responders	Summer and Fall 2015
Task 5. Initial Study Report Updated Study Report	Within one year of Study Plan Determination (Likely February 19, 2016) Within two years of Study Plan Determination

2.6.9 LEVEL OF EFFORT AND COST

The estimated cost for the Socioeconomic Study is approximately \$150,000 to \$250,000. The Power Authority believes that the proposed level of effort is adequate to develop a socioeconomic study that addresses the key socioeconomic issues associated with the Blenheim-Gilboa Project.

2.6.10 REFERENCES

Moran, Stahl & Boyer, LLC (MSB). 2004. *Schoharie County Long Range Economic Strategy*. October 2004.

Regional Economic Models, Inc. 2015. The REMI Model. [Online] URL: <http://www.remi.com/the-remi-model> Accessed January 8, 2015.

Town of Blenheim. 2012. *Blenheim, New York May 2012 Long-term Community Recovery Plan*. May 2012.

Town of Blenheim. 2013. *Town of Blenheim Comprehensive Plan -Draft*. Town of Blenheim Comprehensive Plan Committee. October 2013.

3.0 KEY ISSUES IDENTIFIED IN COMMENT LETTERS AND RESPONSES BY STUDY

3.1 HISTORIC STRUCTURES SURVEY

3.1.1 Area of Potential Effects (APE):

Several stakeholders raised comments related to the Area of Potential Effects (APE). First, the Federal Energy Regulatory Commission (FERC) requested that the Power Authority develop and define the APE in consultation with the New York State Office of Parks, Recreation and Historic Preservation, which serves as the State's Historic Preservation Office (SHPO) under Section 106 of the NHPA. In addition, several stakeholders asserted that the APE, as proposed by the Power Authority, is too confined and should be expanded to encompass large areas downstream of the Project.

With regard to FERC's request, the Power Authority has consulted with the SHPO regarding the establishment of the APE. Consistent with NHPA regulations, 36 C.F.R. § 800.16(d), the Power Authority proposed to define the APE as "the lands enclosed by the Project's boundary and lands or properties outside of the Project's boundary where Project construction and operation or Project-related recreational development or other enhancements may cause changes in the character or use of historic properties, if any historic properties exist." A map of the APE, which appears in [Figure 2.1-1](#), accompanied the Power Authority's proposal to the SHPO. By letter dated January 2, 2015, New York SHPO endorsed this proposed APE, stating that it has "no concern with the proposed Area of Potential Effects (APE)." (Letter from Dr. Nancy Herter [NYSHPO] to Mr. Robert Panepinto [NYPA] dated January 2, 2015, included in [Appendix B](#) of the RSP).

The Power Authority does not propose, and the SHPO did not require, a more expansive APE as requested by several stakeholders. Under Section 106 of the National Historic Preservation Act (Section 106) and Section 14.09 of the New York State Historic Preservation Act, the New York SHPO's role is to ensure that effects or impacts on properties eligible or listed in the National Register of Historic Places are considered and avoided or mitigated during the project planning process. In addition, Section 106 requires that FERC take into account the effect of its undertakings on historic properties.

Here, FERC's undertaking is the relicensing of the B-G Project. As such, Section 106 requires FERC to evaluate the effects, if any, on the continued operation and maintenance of the Project on historic properties. Thus, the APE is appropriately confined to areas of Project-related effects authorized by the new license. With regard to the downstream terminus of the APE, the SHPO-approved APE does not

encompass the large areas requested by stakeholders because Project operations, as authorized by the license, do not have the potential to affect historic properties that may exist downstream of the Project.

As explained in the PAD, the license requires releases at the Lower Reservoir to essentially equal Schoharie Creek inflows to the Lower Reservoir. The Power Authority does not have the ability to sustainably pass more water below the Project than what is received as inflow from upstream. Neither the Power Authority nor FERC has control over the quantity of flow being released from the Schoharie Reservoir upstream of the Project. Thus, any downstream effects to historic properties are not attributable to Project operations, and the APE established by the Power Authority and SHPO is exactly consistent with the Commission's approach at other pumped storage projects of declining requests to extend the APE downstream to locations beyond Project-related effects (*e.g.*, FERC Study Plan Determination, Project No. 2280 (May 3, 2013); FERC Study Plan Determination, Project No. 2351 (Jan. 4, 2010).)

Extension of the APE to encompass large areas downstream of the Project that would be affected by a dam failure, as requested by stakeholders, is an event that is beyond the scope of FERC's undertaking. Moreover, in light of FERC's comprehensive dam safety program under Part 12 of its regulations, dam failure is not a reasonably foreseeable consequence of FERC's undertaking. Stakeholders seeking such a broad designation of the APE cite to no instance in which FERC has required the APE to account for events that are remote and speculative, at best. Courts have ruled that a federal agency such as FERC "need not speculate about all conceivable impacts but it must evaluate the reasonably foreseeable effects of the proposed action." *Dubois v U.S. Dept. of Agriculture*, 102 F.3d 1273, 1286 (1st Cir 1996); *see also Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992) (finding that indirect impacts are those that are "sufficiently likely to occur, that a person of ordinary prudence would take it into account in making a decision").

3.1.2 Blenheim Covered Bridge:

The Blenheim Covered Bridge, built in 1855 to span Schoharie Creek in North Blenheim, New York, was at one time one of the longest single-span covered bridges in the US and was recognized as a National Historic Landmark by the US Department of the Interior. The bridge was destroyed on August 28, 2011, as a result of flooding from Tropical Storm Irene. Several stakeholders commented that the remains of the Blenheim Covered Bridge should be included in the Historic Structures Survey conducted by the Power Authority. In addition, it was requested that attention and consideration should be given to the effects the B-G facility has on the design of any future replicated bridge structure at the old Blenheim Covered Bridge site.

The site of the former Blenheim Covered Bridge is not within the APE because, as explained in Section 3.1.1 above, this downstream reach of Schoharie Creek is not affected by operation or maintenance of the Project. For this reason, the Power Authority is not proposing to include the site of the former Blenheim Covered Bridge within the Historic Structures Survey.

3.1.3 Additional Research and Sources:

Several stakeholders commented that research for the Historic Structures Survey should include consultation with Town historical societies, Town Historians, the Schoharie County Historical Society, and other local historic preservation groups and their repositories. FERC has also requested that the Power Authority include more detail in the individual tasks of the Historic Structures Survey.

The Power Authority has revised the study plan to make clear that it will conduct further historical research by meeting with the Town Historians for the Towns within the Project boundary (Blenheim [Rebecca Littlejohn] and Gilboa [Richard M. Lewis]); meeting with the Schoharie County Historical Society; conduct research at the local history rooms of the Schoharie, Gilboa, and Cobleskill Public Libraries; conduct research at the New York State Museum relating to the items on loan to Lansing Manor; research back issues of engineering journals such as the Engineering News Record held at the Library of Congress; and conduct research at the County courthouse for probate and inventory records for the Lansing family.

3.1.4 NRHP-Eligibility of the Blenheim Gilboa Project:

Some stakeholders asked about the eligibility of listing of the Project facility itself in the NRHP, and the implications for the future of the Project facility if it is determined NRHP-eligible. If it is determined NRHP-eligible, it was commented that certain components of the facility should not be included as contributing resources, due to safety concerns.

At this point no determination of NRHP eligibility has been made regarding the Project; this will occur during the research (Task 2), fieldwork (Task 3), and study report (Task 5) phases of the Historic Structures Survey. Information developed during the course of the survey will be used as the basis for preparing a Historic Properties Management Plan (HPMP) to cover those NRHP-listed and -eligible resources within the APE. Guiding the Licensee's actions relating to Section 106 during the term of the new license, the HPMP will detail how to avoid potential adverse effects and/or how they will be mitigated. It is not the intent of Section 106 or the HPMP to transform a hydroelectric powerhouse into a "museum" or to impact the ability of the licensee to produce hydroelectricity. Accordingly, the HPMP

recognizes the need to fulfill all of the terms and conditions of the Project license, and not impede the safe and efficient production of energy.

3.1.5 Methodology and Survey Detail:

FERC has requested that the study plan include more detail about when surveys and tasks would be completed. As set forth in the Historic Structures Survey (Section 2.1), the Power Authority has modified the study plan to include more detail as to methodology and survey detail.

3.2 PHASE IA ARCHAEOLOGICAL SURVEY

There are three categories of comments pertaining to the Phase IA archaeological survey that are discussed here. The first is a request from the FERC to add more detail to the section on how an archaeological sensitivity model will be constructed. The second category pertains to the definition of the Project's APE. The third set of comments relates to the types of data that will be collected from the Project's APE. Stakeholders also commented on the presence of fossils at the Project.

3.2.1 Sensitivity Model

As requested by FERC, the RSP has been modified to provide more detail on the development of the sensitivity model. Archaeologists regularly construct sensitivity models in order to determine whether sites may be present within a project's APE. This modelling typically involves selection of environmental variables that have been shown to correlate with archaeological site locations. Variable attributes are scored "high" and "low." Their location within a project's APE is mapped and then there is usually a fieldwork component to verify the desktop sensitivity analysis with ground truth. Selection of the appropriate environmental variables for the Project will be accomplished in consultation with the New York SHPO.

3.2.2 Definition of the Area of Potential Effect

As detailed in Section 3.1.1 above, at FERC's request the Power Authority consulted with SHPO to define the applicable APE for the relicensing of the Project. Consistent with NHPA regulations, 36 C.F.R. § 800.16(d), the Power Authority proposed to define the APE as "the lands enclosed by the Project's boundary and lands or properties outside of the Project's boundary where Project construction and operation or Project-related recreational development or other enhancements may cause changes in the character or use of historic properties, if any historic properties exist." A map of the APE, which appears in [Figure 2.1-1](#), accompanied the Power Authority's proposal to SHPO. By letter dated January 2, 2015,

New York SHPO endorsed this proposed APE, stating that it “has no concerns with the proposed Area of Potential Effects (APE)” for the Project (letter from Dr. Nancy Herter [NYSHPO] to Mr. Robert Panepinto [NYPA] dated January 2, 2015).

3.2.3 Data Gathered for Archaeological Investigations

Archaeological investigations, such as those proposed for this Project, are undertaken in compliance with federal law. In particular, the intent of the National Historic Preservation Act (1966 as amended) is to allow for the identification, recognition, and preservation of Historic Properties. Historic Properties are cultural resources; archaeological Historic Properties include Native American and Euroamerican sites more than 50 years old. The review of New York SHPO files is being undertaken specifically to determine whether there are known archaeological sites within the Project’s APE. NYPA is also undertaking the development of an archaeological sensitivity model to assess whether additional Native American and Euroamerican sites have the potential for being present in the Project’s APE. Further investigation to locate and evaluate archaeological sites within the APE will be initiated if that assessment demonstrates potential.

3.2.4 Comments regarding Fossils

Stakeholders have commented that Devonian age tree fossils should be assessed. There are no known continuing or proposed Project operation and maintenance tasks that have been identified that could adversely impact paleontological resources, such as Devonian age tree fossils, in the Project’s APE.

Such fossils, however, were discovered during Project construction, and at the time, they were donated to several institutions for study, including the American Museum of Natural History in New York City, the New York State Museum in Albany, the State University of New York at Stony Brook, and Hartwick College in Oneonta. These fossils are also on display at the Gilboa Museum.

3.3 FISH ENTRAINMENT/PROTECTION ASSESSMENT STUDY

3.3.1 Geographic Scope

Several comments were received on the PSP relative to investigation of areas downstream of the Project. There are no turbines at the lower dam and therefore no potential for fish to be entrained into any turbine. The objectives of the entrainment study are to evaluate potential Project effects of fish entrainment and turbine passage mortality on the fish community of the upper and lower reservoirs. The geographic scope is defined at the pump-turbine intakes in the Upper and Lower Reservoirs.

The Town of Blenheim's recommended that the study include information on water quality conditions, temperature and dissolved oxygen of the Schoharie Creek below the Project. NYPA conducted a water quality study from April through October 2012 to quantitatively characterize the effects of Project operation on water resources at the Project and this information is provided in the PAD (New York Power Authority (NYPA) 2013) and on the BG relicensing webpage at <http://www.bg.nypa.gov/Pages/Document.aspx> in the report Water Quality Study, Blenheim-Gilboa Pumped Storage Project (FERC No. 2685). This study examined seasonal water quality within both the Upper and Lower Reservoirs, tributaries, and in Schoharie Creek upstream and downstream of the Project. Based on the results of this prior study, the Power Authority does not believe that additional studies are needed to evaluate water quality conditions downstream of the Project.

3.3.2 Impingement

The study plan has been revised to remove the evaluation of fish impingement from the study scope based on comments received from the USFWS (letter dated December 16, 2014). Because the Project contains intake protection racks spaced 5.25 to 5.625 inches apart, very few, if any, fish found in Project waters are likely to be large enough to get impinged. The NYSDEC agreed with this approach (pers. comm., R. Daly (NYPA) with C. VanMarren (NYSDEC), January 6, 2015). Therefore, the analysis of fish impingement at the Project was removed from the Revised Study Plan.

3.3.3 Field Study to Evaluate Potential PM&E Measures

Schoharie County commented that the Commission should require the completion of a field study that more fully evaluates technologies that are available to prevent or mitigate negative entrainment/impingement impacts to fisheries caused by large volume industrial water intakes and suggested that the objective of the study "should be to improve the level of understanding of technologies that are available to mitigate fish mortality at the project site and to require as a condition of re-licensure of the facility the incorporation of best technologies available ("BTA") into the BG Project's future operation."

The objectives of NYPA's study as proposed are to qualitatively evaluate which fish species and life stages have the potential to be entrained during generation and pumping phases of operation, based on habitat preferences and behavior; and to develop an estimate of turbine passage survival based on available information. The study was designed to determine if impacts to the fish community are occurring. Any study to mitigate fish mortality is premature because the potential impacts of the Project are not known until the proposed study is completed.

Furthermore, the language cited in the comment relative to Best Technology Available refers to “facilities operating a cooling water intake structure (CWIS) in connection with a point source thermal discharge.” The B-G Project intakes are not used for cooling water and the intakes have relatively wide-spaced intake protection devices. Mortality due to impingement or cooling processes is not a concern at the B-G project. The comment “The NYS DEC’s Bureau of Fishery Habitat maintains a team of biologists who work to mitigate the adverse aquatic impacts resulting from the operation of industrial and commercial water intakes” was used out of context from the NYSDEC’s website. This language refers to the Bureau of Habitat’s Steam-Electric Unit. Steam-electric stations refer to fossil fuel and nuclear generating plants; NYPA’s B-G Project is a hydropower project and therefore the cited BTA requirement does not apply to the B-G Project.

3.4 RECREATION USE/USER CONTACT STUDY AND ASSESSMENT OF EFFECTS THE PROJECT HAS ON RECREATION USE

3.4.1 Non-User and Whitewater Boater Surveys

AWWA has requested that the Power Authority conduct user contact surveys of whitewater boaters at the annual Esopus Whitewater Funfest, Esopus Challenge, and at other times to determine boater interest in paddling on the Schoharie if sufficient and predictable flows were provided and whether the lack of adequate facilities deters or prevents them from utilizing the Project area.² AWWA also requests that the Power Authority perform a non-user survey to determine if a lack of amenities could serve as a deterrent to potential users.

The Power Authority is not proposing to conduct user contact surveys outside the Project Boundary, at non-Project recreation sites, or of non-Project recreation opportunities. As noted elsewhere, the Project does not control the quantity of water in Schoharie Creek. Releases of the Lower Reservoir are dictated by the upstream Gilboa Dam owned by the New York DEP. Because the Lower Reservoir has no appreciable storage capacity, there is little ability for the Power Authority to time and shape flows to accommodate whitewater events. Accordingly, there is no nexus to the Project and as such, user contact

² The Power Authority notes that the availability of flows in Esopus Creek sufficient to allow whitewater boating in Esopus Creek and events such as the Esopus Challenge and Esopus Whitewater Fun Fest most likely results from the operation of the New York DEP’s Gilboa Dam and Schoharie Reservoir, which are located approximately five miles upstream of the B-G Project. Under normal operation, New York DEP diverts water from the Schoharie Reservoir through the 18-mile long Shandaken Tunnel, also located upstream of the B-G Project, to Upper Esopus Creek, which is then eventually delivered into the New York City drinking water supply system. See PAD Section 4.1.2. In addition, [Figure 4.5.2-1](#) depicts the location of the diversion of water from the NY DEP’s Gilboa dam in relationship to the location of B-G’s Lower Reservoir. This diversion of water from New York DEP’s Schoharie Reservoir through the Shandaken Tunnel likely allows sufficient flow in Esopus Creek for whitewater boating.

surveys to determine whitewater boaters views on the adequacy of facilities for whitewater boating would not yield useful information to this relicensing effort.

The Power Authority is also not proposing to conduct a survey of non-users regarding their reasons for not using the recreational opportunities associated with the Project. The intent of the user contact survey is designed to determine what recreational activities are taking place at the Project and the recreational user's opinion of the recreational experience that he/she has encountered. Surveying those who do not use the Project's recreation sites will not lead to information useful in informing future license conditions.

3.4.2 Adequacy of Recreation Sites

Stakeholders have commented that the Power Authority be required to study the adequacy of the recreation sites in the Project area to support non-motorized boating.

The Power Authority conducted a recreation inventory in June of 2012, which included all Project recreation sites and a review of available roads surrounding the Project to determine access to the Project lands and shoreline. As part of the recreation use/user contact study, the Power Authority will update information from the 2012 inventory to note significant changes, if any, to the sites. While an inventory is designed to review existing recreation sites within the Project, the user contact survey will be utilized to determine the adequacy of the current recreation sites and their amenities within the Project. As set forth in the study plan for the recreation use/user contact study, the Power Authority will collect water depth information at the Minekill State Park boat launch and at the Upper Reservoir carry-in launch to determine the usability of the boat launches with regard to access to Project waters.

3.4.3 User Contact Survey

In accordance with FERC's and other stakeholder comments, the Power Authority has developed a proposed user contact survey instrument, which is included as [Figure 2.4-2](#). The survey will be administered to users on a random basis. The survey is not designed to target specific user groups but to determine what recreational activities are taking place at the Project and the recreation user's opinion of their recreational experience. Specifically targeting and surveying members of local, regional and national boating organizations to determine their opinions will produce a survey bias.

3.4.4 Geographic Scope

Several stakeholders commented that the geographic scope should be expanded beyond the Project boundary. They express an interest in including areas and activities downstream of the lower Project boundary stating that there is an impact on the water levels based on the Power Authority's operations.

The geographic scope of the study encompasses lands and waters within the Project boundary that are available for public recreation. The Power Authority does not propose to conduct recreational counts or contact surveys beyond the Project boundary. As noted above, releases at the Lower Reservoir are dictated by the upstream Gilboa Dam owned by New York DEP and inflows from upstream tributaries. Thus, expansion of the survey to below the Project boundary would not yield any meaningful information to inform potential future license conditions.

3.4.5 Expanded Traffic Study

Stakeholders have requested that traffic studies be done on Route 30S, Route 30N and Route 990V to identify what direction attendees are coming from and how marketing/advertising can be used to better maximize attendance for BG events.

The Power Authority proposes to conduct traffic counts at Project recreation sites at which utilization of a tube counter is feasible. This information will allow the Power Authority to determine Project recreation use. In addition, the user contact survey will request users' zip codes. This information will allow a determination as to where recreational users are coming from. The information from the user contact survey will be included in the study report, which can then be used by local and regional recreation planners, as needed.

3.4.6 Security and Woody Debris

Stakeholders have commented that use of the Project for recreation has been on the decline due to the Power Authority's increased security efforts post 9/11 and as result of the Power Authority's discontinuation of woody debris removal.

In response to comments expressed by recreational users over a period of time, on May 19, 2014, the Power Authority instituted a new security procedure for recreational boating. For access to the Upper Reservoir, boaters are asked to check in at the Power Authority's south gate on Valenti Road on the day they plan to use the reservoir. For access to the Lower Reservoir, boaters are asked to stop at the toll booth or park office at Minekill State Park on the day they intend to use the Lower Reservoir. The Power

Authority has reserved the right to inspect all vehicles and person entering or leaving the premises. As noted in the PSP, the Power Authority discontinued removing driftwood from the Lower Reservoir due to liability concerns. The Authority was concerned that its debris removal program had the potential to provide a false sense of safety for the recreating public because it is impossible to remove every piece of driftwood from the reservoir. Signs posted at the MineKill boat launch caution users to be aware of floating debris. However, in order to assess the impact of debris accumulation in the Lower Reservoir, the user contact survey instrument does include a question requesting user's opinions as to whether floating debris impacts their use of the Project's recreation sites.

3.4.7 Recreation Protection, Mitigation and Enhancement

Several stakeholders have requested that the Power Authority implement new or improved recreation sites or amenities. These requests are considered protection, mitigation and enhancement measures and are not addressed as part of a study of effects of continuing Project operation on recreational resources. Potential protection, mitigation, and enhancement measures to address any significant adverse impacts of continued Project operation, if any, will be considered later in the relicensing process.

3.5 EFFECTS OF PROJECT OPERATIONS ON DOWNSTREAM FLOODING STUDY

3.5.1 Geographic Scope

The Towns of Blenheim and Fulton noted that flooding can occur along the entire length of Schoharie Creek to its confluence with the Mohawk. In the RSP, streamflows for existing and alternative Project operations, as well as a non-dam scenario, will be routed along the 58 mile length of Schoharie Creek from the Gilboa Dam to its confluence with the Mohawk River. This new routing will illustrate if Project operations influence the Schoharie Creek downstream of the Project.

3.5.2 Validation of HEC-HMS model with Tropical Storm Irene event

Based on a request by FERC in its letter dated December 17, 2014, the RSP includes evaluating the performance of the hydrologic model (*i.e.*, HEC-HMS) utilizing information from the August 2011 event (*i.e.* Tropical Storm Irene).

3.5.3 Addition of Operations Model

FERC in its letter dated December 17, 2014, requested that the "study plan should be modified to include real-time project operation modeling (including the lower and upper reservoirs) with the proposed hydrologic and hydraulic models to determine the effect (if any) that project operation may have on

flooding downstream of the project, and to provide recommendations for enhancing a forecasted and optimized project operation during flooding events if the study results indicate that project operation could be modified to attenuate the effects of flooding events downstream of the project.”

An additional task has been added to the RSP for the development of an operations model (*i.e.*, USACE's HEC-ResSim) to simulate operations of the Lower and Upper Reservoir in order to evaluate reasonable and prudent alternative operations during flood events to release water from the Project. The outflow hydrographs predicted by the HEC-ResSim model for these alternatives will be routed downstream with the hydraulic model (USACE's HEC-RAS) to evaluate whether alternative operations can alleviate downstream flooding.

A distinction should be made between a reservoir operations model which can simulate different Project operations such as pumping, generation, and gate operations and a hydrologic forecasting model which uses real-time data to predict inflows based on anticipated precipitation and snowmelt. The Power Authority does not propose to develop a hydrologic forecasting model. The New York State Canal Corporation is developing a hydrologic forecasting model for the Mohawk River Basin including Schoharie Creek.

In addition to FERC, the SCBS and the Towns of Blenheim, Fulton, and Middleburgh requested that the Power Authority study alternative operating procedures to alleviate downstream flooding. As discussed above, the RSP includes an operations model (*i.e.*, USACE's HEC-ResSim) and operations protocol to simulate operations of the Lower and Upper Reservoir in order to evaluate whether reasonable, credible and prudent alternative operations during flood events can alleviate downstream flooding. It should be noted that any decrease in outflow from the Project does not directly correlate to a decrease in downstream water surface elevations.

3.5.4 Hydraulic Model Scope Changes

Based on a request by FERC in its letter dated December 17, 2014, the RSP includes calibration and verification of the updated hydraulic model (*i.e.*, HEC-RAS).

The Town of Middleburgh in its comments on the PSP requested that the Flooding Study “look at any impingement points downstream to see what effect these have and under what different flow rates.” Evaluating areas with limited channel capacity (*i.e.*, “impingement points”) downstream of the Project is not related to continued Project operations and therefore is not included within the scope of the Flooding Study.

3.5.5 Probable Maximum Flood

The DCC, SCBS, and Towns of Blenheim and Fulton expressed concern about whether the Probable Maximum Flood (PMF) analysis for the Project needs to be redone and the reason why the PMF is lower at the Project than at the Gilboa Dam which is located approximately five miles upstream.

As a FERC licensed project, the B-G Project is subject to a comprehensive dam safety program that continuously addresses issues related to dam safety as they arise including changes in design criteria and site conditions such as climate change. The current Site Specific Probable Maximum Precipitation (PMP) and Probable Maximum Flood (PMF) analyses were completed in 2009 as part of the FERC Part 12 Dam Safety Program by a qualified engineer pre-approved by FERC; facilitated by a Board of Consultants, which consisted of three independent experts in the fields of meteorology, hydrology, and hydraulics approved by the FERC; and overseen and approved by the FERC. The current PMP analysis seems relevant in light of what was observed during Tropical Storm Irene as the predicted extreme rainfall for the PMP is that which would occur from a hurricane or tropical system. Likewise, the PMF analysis used conservative assumptions for routing streamflows such as a starting water level for the three reservoirs as the normal maximum pool elevations which for Schoharie Reservoir is El. 1130 ft., for the Lower Reservoir is El. 900 ft., and for the Upper Reservoir is El. 2003 ft. It was also assumed that the Project was neither pumping nor generating.

The reason the PMF estimates differ significantly between the B-G Project (174,099 cfs) and Gilboa Dam (312,000 cfs) is likely because the analyses were done by two different consulting firms who likely utilized hydrologic models that were different. Among other things, the hydrologic models may have had different sub-basin delineations, different methodologies for runoff and routing, different storms for calibration and verification, and different methodologies to determine the Probable Maximum Precipitation (PMP). It should be noted that the BG site-specific PMP and PMF studies were conducted by a FERC-approved independent Board of Consultants, and the study results were approved by the FERC.

The biggest factor that may have contributed to difference in the PMF values is the methodology used to determine the PMP. The Schoharie Creek drainage basin is located within the stippled region of the PMP maps presented in Hydrometeorological Report No. 51, "Probable Maximum Precipitation Estimates, United States East of the 105th Meridian" (HMR-51). HMR-51 was developed jointly by the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Army Corps of Engineers (USACE). HMR-51 indicates that the estimates within this stippled region may be deficient due to orographic

influences. The HMR-52 entitled "Application of Probable Maximum Precipitation Estimates - United States East of the 105th Meridian" was also developed by NOAA and USACE. The HMR-52 manual states that: "Major projects within the stippled area should be considered on a case-by-case basis and expert hydrometeorological guidance should be sought." The PMP estimate for the Blenheim-Gilboa Project was a site-specific analysis which accounted for the orographic influences. It is unknown whether the PMP analysis for Gilboa Dam corrected for orographic influences or if a site-specific PMP was determined.

3.5.6 Coordination with NYCDEP during Storm Events

In its letter, dated December 22, 2014, the Town of Middleburgh requested that the Power Authority work with the NYCDEP to coordinate operations in anticipation of a major flood event. Although this item is not related to the relicensing process, the comment is noted. Pursuant to its current license requirements, the Project is operated so releases from the Lower Reservoir to Schoharie Creek equal inflows from Schoharie Creek upstream of the Project. As such, if the NYCDEP draws down Gilboa Reservoir in anticipation of a major precipitation event, these flows will be passed downstream of the Project and not stored in the Project's reservoirs.

3.5.7 Protection, Mitigation, and Enhancement Measures for Downstream Flooding

The Town of Middleburgh requested that the Power Authority fund three new stream gages that are being installed in the Schoharie Creek Basin and fund maintenance of the existing Schoharie Valley flood siren and flood warning system from Blenheim to Esperance. These are funding requests and are not related to assessing potential impacts from continued operations. It should be noted that under its current license the Power Authority funds the maintenance and operation of eight USGS stream gages: at Schoharie Creek at Prattsville, Manor Kill at West Conesville near Gilboa, Schoharie Reservoir near Grand Gorge, Schoharie Creek at Gilboa, Mine Kill near North Blenheim, Platter Kill at Gilboa, Schoharie Creek at North Blenheim, and Schoharie Creek at Breakabeen. In the past, the Power Authority has also provided funding for the Schoharie County sirens.

3.6 SOCIOECONOMICS STUDY

3.6.1 Geographic Scope

Schoharie County and the Towns of Fulton and Middleburgh submitted requests that the Socioeconomic Study be expanded to include additional neighboring towns, such as Fulton, Schoharie, Esperance, and Broome. The Power Authority will examine multiple geographic levels. These include the communities

in which Project lands are located, the surrounding county or counties, and the encompassing state. In addition, the Power Authority will examine communities that provide first responder support. These communities include the Town of Conesville, Hamlet of Grand Gorge (located in the Town of Roxbury), Town of Jefferson, and Town of Middleburgh. Additional communities may be added based on the first responder study effort. A regional socioeconomic analysis will also be included.

The towns requested for inclusion in the geographic scope do not have a connection to the Project either in terms of first responder support or real estate/property tax impacts. Any impacts to these communities would be included in the county-level analysis. More detailed analyses will be made for communities with Project lands (Local Communities) and those providing first responder services (Local and Neighboring Communities). These Local and Neighboring Communities are connected to the Project in ways that are different from other communities within the County.

Schoharie County and the Blenheim Long Term Community Recovery Committee both requested that the Socioeconomic Study address county-wide impacts. As described in the RSP, Schoharie County will be considered a Local Community. As such, potential impacts related to Project economics will be modeled in the REMI model and presented for all Local and Neighboring Communities, including Schoharie County. The baseline demographic, housing, and economic profiles will also be presented for the County. As with the other Local Communities, both direct (in the form of tax revenues) and indirect impacts (as measured by the REMI model) to Schoharie County will also be addressed in the Socioeconomic Study.

3.6.2 Allocation of Low Cost Hydropower

The Town of Fulton, in a letter dated December 18, 2014, requested that the Socioeconomic Study include the impacts of an allocation of low cost power to the local economy. Such an allocation is beyond the scope of FERC's relicensing of the Project, and therefore would not inform the development of any license requirements. However, the proposed socioeconomic study will examine the economic impact the Project currently has on the Local and Neighboring Communities, Schoharie County, the region, and the State of New York. While the study will not specifically evaluate the impact that a direct allocation of hydropower would have on the economy of Schoharie County, the study will examine the direct economic impacts of the Project on the County in several ways, including effects on first responder services and property tax revenues.

3.6.3 Property Tax Scenarios

Many stakeholders, both in writing and at the public meeting, requested that the analysis of the Power Authority's tax-exempt status should not be based on the value of Project lands as unimproved, or vacant land, but should instead be based on the value of Project lands having been developed. Some stakeholders noted that the land was not vacant prior to the construction of the Project. In response to stakeholder comments, the study plan has been revised in two key ways: the proposal to use the REMI model and the treatment of Project lands for the property tax analysis.

The RSP clarifies that the Power Authority will use the REMI model to analyze the impacts of the Project on the affected economies (Local³ and Neighboring⁴ Communities, the region, and the State of New York) and the impacts of the Power Authority's tax-exempt status on the Local Communities, which includes the County. The REMI model will serve as the basis for the analysis of the Project's impacts on the local economies and for the analysis of the effects of the Power Authority's tax-exempt status on the taxing entities.

The study plan has been revised to clarify that potential tax revenues, in the absence of the Project, will not be based on an unimproved land value, but instead will be based on the assumption that the land would have been developed in a manner consistent with the local development patterns. As a proxy for this development mix, the average value of taxable land within the study area will be used⁵. All Project lands will be considered taxable, regardless of the status of the lands prior to construction of the Project.

A property tax scenario based on the existing hydropower facilities, however, is not appropriate for use at the B-G Project. Unlike other hydropower projects, which were subject to competitive development proposals, there is no indication that a developer other than the Power Authority proposed to develop the Project and had the means of doing so. As a pumped storage facility, the Project serves a specific and unique purpose that is significantly different in terms of economics than other hydropower projects (or other generating facilities). The B-G Project was designed by the Power Authority to serve two vital functions. It saves money for New York consumers by providing low-cost electricity when they need it

³ Local Communities include the Towns of Blenheim and Gilboa, Schoharie County, and the Gilboa-Conesville School District.

⁴ Neighboring Communities include Town of Conesville, Hamlet of Grand Gorge (located in the Town of Roxbury), Town of Jefferson, and Town of Middleburgh. The final list of Neighboring Communities will be derived from the analysis of entities providing first responder support to the Project.

⁵ The taxable land within the Gilboa-Conesville School District in each Blenheim and Gilboa will be identified and the average assessed value for each taxing entity will be calculated.

most. It also stores water for emergency power production. If necessary, the Project can be up and running within minutes. It can "pinch hit" if another plant or line suddenly goes out of service. With this focus on peak demand and emergency power, there is no indication that any other entity would have built such a project at the site. Finally, use of the current development mix of the local area to analyze the Power Authority's tax exempt status is fully consistent with FERC precedent. Recognizing that the assessment of non-power resources is generally conducted qualitatively,⁶ FERC has not prescribed a valuation method that is appropriate for all projects. Instead, FERC has considered—and enabled license applicants to use—a wide variety of methods to calculate the value of a project's lands when analyzing an individual project's impacts.⁷

3.6.4 Roads and Bridges

In a letter dated December 21, 2014, Gail Shaffer, on behalf of the Town of Blenheim, requested that the Socioeconomic Study include a thorough study of the impacts on roads and bridges. While there may be cause to evaluate impacts to roads and bridges during the construction phase of a hydropower project, ongoing impacts are consistent with those of other commercial and industrial businesses. As such, any impacts attributable to the Project would be indistinguishable from impacts from general traffic.

⁶ See, e.g., *City of Tacoma*, 84 FERC ¶ 61,107, 61,572 n.164; *order on reh'g*, 84 FERC ¶ 61,317, *reh'g dismissed*, 85 FERC ¶ 61,209 (1998); see also *City of Spearfish*, 136 FERC ¶ 61,042 at P 6 (2011); *Great Northern Paper, Inc.*, 85 FERC ¶ 61,316 at pp. 62,244-45 (1998); *Susitna-Watana Study Plan Determination at B-72 to B-73*, Project No. 14241-000 (issued Feb. 1, 2013).

⁷ For example, in the environmental analyses for the Oroville Facilities, FERC Staff considered and applied a variety of estimates and assumptions to review the impacts of the licensee's tax-exempt status. See *Draft Environmental Impact Statement for the Oroville Project*, Project No. 2100-134 (issued Sept. 29, 2006); *Final Environmental Impact Statement for the Oroville Project*, Project No. 2100-052 (issued May 18, 2007).

4.0 OTHER COMMENTS

This section discusses the other comments were raised that were not specific to a single study.

4.1 PROGRESS STUDY REPORT

FERC requested that the Power Authority include provisions for periodic progress reports for studies, particularly those that will take longer than a year to complete. The Power Authority is proposing to prepare a six-month progress report for all studies within six months of FERC's final approval of the Revised Study Plan. This report will be provided to all stakeholders and will report on progress to date for each of the approved studies.

4.2 EMERGENCY ACTION PLAN AND FLOOD INUNDATION MAPS

In its letter dated December 18, 2014, the Town of Fulton stated that NYPA cites development of the Project's Emergency Action Plan (EAP) and flood inundation maps as proof that it takes dam issues seriously, but these documents are unavailable to the public because they were labeled critical energy infrastructure information (CEII).

As explained in the Proposed Study Plan, as part of FERC's dam safety program, in accordance with FERC Part 12 regulations (18 CFR § 12.20), the Power Authority is required to prepare EAPs and conduct training sessions on the contents and testing of these plans. The Project's EAP is designed to serve as an early warning system when there is the potential for, or a sudden release of water from the dam, in the event of dam failure, accident to the dam, or major flood event. The Power Authority shares the EAP and inundation maps with the local emergency authorities and 911 centers that have jurisdiction to evacuate the public (Schoharie County Sheriff, Schoharie County Emergency Management Office, and Schoharie County Communications Center). FERC designates any document that could be useful to a person planning an attack on a critical infrastructure, including EAPs, as CEII.

Emergency Action Planning and implementation is a FERC Part 12 dam safety activity, and therefore the review of such measures is not a relicensing activity. However, as noted in the Proposed Study Plan, separate from the relicensing process, the Power Authority is willing to discuss with the Towns, first responders, Schoharie County Emergency Management Office, and the NYCDEP ways to improve emergency planning and implementation including assisting with emergency preparedness training and improving EAP activation notification to towns and residences located in the inundation mapping zones downstream of the NYCDEP's Gilboa Dam and the Power Authority's Lower Dam.

4.3 SULFUR HEXAFLUORIDE

The Town of Fulton raised a concern regarding sulfur hexafluoride (SF₆) gas that is used in switchyard breakers. SF₆ is a highly potent greenhouse gas commonly used in the electric industry for insulation and current interruption in electric transmission and distribution equipment. Issues concerning SF₆ are being dealt with by the EPA on a national basis and this is clearly not a relicensing issue, but the Power Authority has long implemented and maintained a robust SF₆ management program. Over a decade ago the Power Authority was one of the first signatories to the EPA's Voluntary Emission Reduction Partnership for Electric Power Systems which specifically deals with management and reporting of SF₆. Additionally, the Power Authority annually reports emissions in the voluntary Climate Registry Program and under the EPA 40 CFR 98 Subpart DD program. In 2014, NYPA received an EPA award for its Contribution to Global Environmental Protection and Commitment to the SF₆ Voluntary Emission Reduction Partnership for Excellence in SF₆ Inventory and Data Collection Systems.

4.4 INVASIVE SPECIES/ZEBRA MUSSELS

The Town of Middleburgh requested that the Power Authority take proactive steps to avoid introduction of zebra mussels at the Project. The Power Authority's reservoirs are subject to New York State regulations intended to limit distribution of invasive species such as zebra mussels. Title 6 NYCRR Section 59.4 prohibits certain activities that could promote the spread of invasive species, such as leaving a site without draining the watercraft including the bilge areas, livewells, bait wells, and ballast tanks.

The Town of Middleburgh also recommended that the Entrainment Study should address the identification of invasive species. A task within the Entrainment study is to summarize the fish species present in the reservoirs. Should any records indicate the presence of invasive fish species, that information would be included in the list in the report. In addition, data related to invasive species was collected as part of a baseline study at the Project. This information is provided in the PAD (New York Power Authority (NYPA) 2013) and on the BG relicensing webpage at <http://www.bg.nypa.gov/Pages/Document.aspx> in the report Land Cover, Land Use, and Terrestrial Habitat Assessment - Blenheim-Gilboa Pumped Storage Project (FERC No. 2685).

The Town of Middleburgh also asked how invasive species and hybrid species, such as tiger trout, may affect native fish populations. The Power Authority does not believe that there is a clear nexus between interactions between native species and non-native/hybrid species and Project operations. As such, the Power Authority is not proposing to study this issue as part of the relicensing process.

4.5 DOWNSTREAM FLOWS

4.5.1 Water Resources

The Schoharie County Board of Supervisors requested in its comment letter that NYPA compensate for diminished stream flow in the Schoharie Creek resulting from evaporative losses from operations at the Project. As explained in the PSP, the Power Authority already operates the Project to compensate for evaporative losses during times of low flow. As discussed in FERC's July 30, 1975 Order Approving Settlement Agreement with the Towns of Fulton and Blenheim, the Power Authority operates the Project during low flows (*i.e.*, no inflow from Schoharie Reservoir) to account for evaporative losses and releases water from storage to result in flows comparable to those which would have occurred if the Project had not been built. At other times, the Project outflows essentially equal Project inflows.

4.5.2 Aquatic Resources

The Schoharie County Board of Supervisors requested that the Commission should order the study of the feasibility of implementing a regime of conservation/recreation releases during the periods of traditionally low flow to improve water quality, and fish, macroinvertebrates, and plankton populations downstream of the Project. As noted above, during periods of low inflow, the Project operates to account for evaporative losses. At other times, releases from the Lower Reservoir to Schoharie Creek must equal inflows from Schoharie Creek upstream of the Project. As shown in [Figure 4.5.2-1](#), flows in Schoharie Creek downstream of Gilboa Dam are altered by the diversion of 316 square miles of drainage for the New York City water supply by the Shandaken Tunnel to Esopus Creek. Flows downstream of the Project are from the intervening 40 square miles. The Project does not control the quantity of water in Schoharie Creek as it is operated so that outflow to Schoharie Creek from the Project equals inflow to the Project. The Power Authority does not have the ability to sustainably pass more water below the Project than what is received as inflow from upstream. Neither the Power Authority nor FERC has control over the quantity of flow being released from the Schoharie Reservoir upstream of the Project. As such, the Power Authority is not proposing to study the feasibility of low flow releases as they relate to downstream aquatic resources.

4.5.3 Downstream Sedimentation

Schoharie County requested that the Commission mandate a study on the effect that the Project has had on natural functions of Schoharie Creek, including any buildup of material in the bed and along the banks of the Schoharie Creek and its tributaries. The buildup of material in a streambed during low flow periods and subsequent scour during high flow periods is normal. The transport processes for these phenomena are affected by the timing, volume, and duration of flows. These processes in Schoharie Creek

downstream of Gilboa Dam are altered by the diversion of 316 square miles of drainage for the New York City water supply. The Project does not control the quantity of water in Schoharie Creek as it is operated so that outflow to Schoharie Creek from the Project equals inflow to the Project. Therefore, the Project does not contribute to the buildup or scour of material in Schoharie Creek and as such, the Power Authority is not proposing a related study.

4.5.4 Recreation

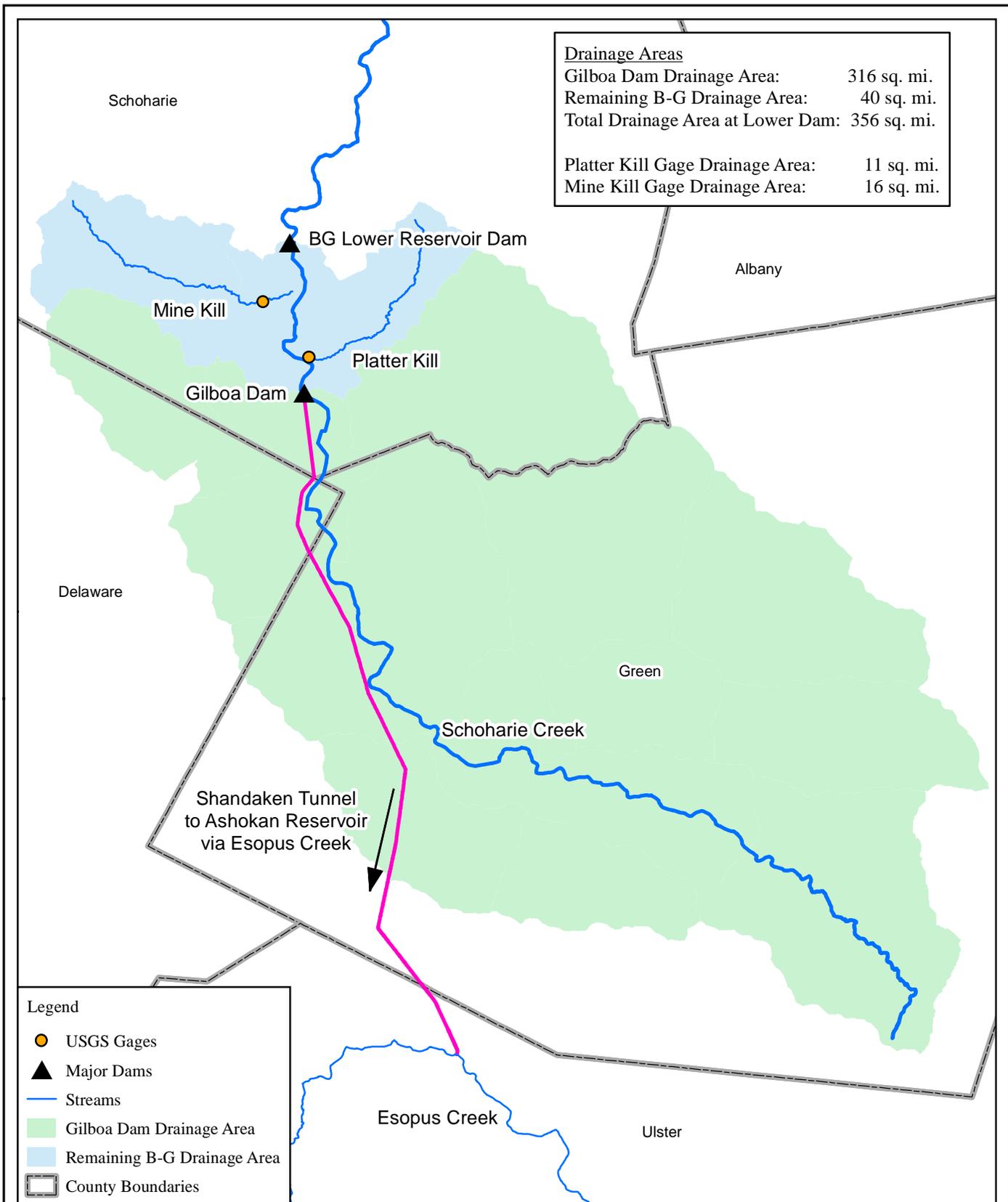
Several stakeholders have asked that the Power Authority study flows below the Lower Dam to determine if there are potential recreational opportunities; analyze if there are recreational impacts from Project operation; and explore possibilities for mitigating the loss of whitewater boating opportunities. Requests for additional information include: studying the impact of Project operation on the ability to engage in whitewater boating on Schoharie Creek and the feasibility of implementing a regime of conservation/recreation releases during periods of traditionally low flow. The suggested goals include: assessing the presence, quality, access, flow information and flow ratings for paddling opportunities in a stepwise manner.

The Power Authority does not plan to study whitewater boating downstream of the Lower Dam as it does not control the amount of water available for release. Releases at the Lower Reservoir are dictated by inflow from the upstream Schoharie Reservoir owned by New York DEP and inflows from upstream tributaries.⁸ Thus, neither the Power Authority nor FERC has control over the quantity of flow being released from the Schoharie Reservoir upstream of the Project. The Lower Reservoir has no storage capacity. Because the Power Authority does not have the ability to sustainably pass more water below the Project than what is received as inflow from upstream, the Power Authority has no ability to provide releases for whitewater boating.

In addition, because the objective of the relicensing is to assess the impacts of continued Project operation and maintenance on various resources, mitigation for the loss of whitewater boating opportunities that may or may not have existed prior to the construction of the Project is not being considered. As set forth above, the Power Authority has proposed to conduct a recreational use/user survey study to assess if there are any recreational impacts from continued Project operation. This study will include a survey of the

⁸ New York DEP's Gilboa Dam and Schoharie Reservoir are located approximately five miles upstream of the B-G Project. Under normal operation, New York DEP diverts water from the Schoharie Reservoir through the 18-mile long Shandaken Tunnel, also located upstream of the B-G Project, to Upper Esopus Creek, which is then eventually delivered into the New York City drinking water supply system. See [Figure 4.5.2-1](#).

amount of recreation use taking place at the Project and recreation users' opinions as to the recreational experience provided at the Project.



Blenheim-Gilboa
Pumped Storage Power Project
(FERC No. 2685)



REVISED STUDY PLAN

Figure 4.5.2-1:
Project Drainage

4.6 DAM SAFETY

The Schoharie County Board of Supervisors (SCBS) requested that NYPA conduct a “separate study to identify areas of concern related to dam safety.” A separate dam safety study is unnecessary because the B-G Project is a FERC-licensed project and is already subject to a continuous, comprehensive dam safety program that is administered by the FERC Division of Dam Safety and Inspections. In the SD2, FERC agreed with this assertion and stated that public safety at licensed projects is of the utmost importance to the Commission and that they would continue to require the Project to meet the Commission’s dam safety criteria.

The Town of Middleburgh requested that Schoharie County and the host towns of Blenheim and Gilboa should be notified when safety inspections of the BG facility are being performed and should have a chance to provide input. This comment is not related to the relicensing process, which is to assess the impacts of continued project operations.

4.7 PM&E MEASURES

Several commenters expressed interest in specific funding measures. For instance, the Town of Middleburgh requested specific funding measures for maintenance of stream gauges, and the Town of Blenheim requested funding for local fire and ambulance companies. In addition, the Town of Middleburgh and the SCBS requested that FERC require the Power Authority to mitigate for flooding in the new license. FERC notes in SD2, “A proposed environmental measure must be based on substantial evidence in the record of the licensing proceeding, consistent with the law, and enforceable by the Commission. It is also important to establish a specific relationship between the proposed measure and project effects or purposes.” Once studies are conducted and the results are analyzed, the Power Authority will be open to a dialogue regarding requests for protection, mitigation, and enhancement measures, including funding requests, and regarding whether specific measures are warranted per FERC’s guidance in SD2. However, as the studies to better understand Project effects have not been conducted, requests at this time are premature.

The Town of Middleburgh also requested that the Power Authority help maintain the siren and flood warning system from Blenheim to Esperance. In this case, the Power Authority notes that they have provided funding for this system.

4.8 EIS VS. EA

The Town of Blenheim requested a full Environmental Impact Study (EIS) as opposed to an Environmental Assessment (EA). It is FERC's decision on whether to prepare an EA or an EIS, and for both of these documents the process leading up to and including filing a License Application is the same for the Power Authority and for FERC. FERC explained in Scoping Document 2 that though its intent is to prepare an EA, the scoping process it has conducted would satisfy NEPA requirements irrespective of whether an EA or EIS is prepared. FERC further stated in SD2 that it will ultimately decide on whether to prepare an EA or EIS after completion of any required studies and the submittal of the Power Authority's preliminary licensing proposal.

Further, regardless of whether FERC ultimately prepares an EA or an EIS, the purpose of relicensing studies is to identify effects from continuing operation of the Project using current conditions as the baseline for evaluating Project effects and alternatives. This is consistent with FERC precedent⁹ and was confirmed in SD2. As such, the Power Authority is not proposing to conduct studies of pre-project conditions.

⁹*American Rivers v. FERC*, 201 F.3d 1186 (9th Cir. 1999) (The court found that it was reasonable for FERC to use an existing project baseline rather than use pre-project conditions as baseline conditions.)

APPENDICES

Appendix A. List of PSP Comment Letters

Name of Stakeholder/Agency	Date of Comment Letter
David Stilwell, US Fish and Wildlife Service	December 16, 2014
John Smith, FERC	December 17, 2014
Robert, Nasdor, American Whitewater	December 17, 2014
Richard Mix, Town of Fulton	December 18, 2014
Kevin Neary, Village of Richmondville	December 18, 2014
Don Airy, Blenheim Long-Term Community Recovery, Town of Blenheim	December 19, 2014
Melissa Graham, Citizen	December 19, 2014
Gail Shaffer, Citizen	December 21, 2014
James, Buzon, Town of Middleburgh	December 22, 2014
Gene Kelly and Steve Wilson, Harris Beach PLLC	December 22, 2014
Anne Mattice-Strauch, Town of Blethem	December 22, 2014

Appendix B. SHPO Correspondence



**New York State Office of Parks,
Recreation and Historic Preservation**

Division for Historic Preservation
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

January 2, 2015

Robert Panepinto
New York Power Authority
123 Main Street
White Plains, New York 10601-3170
(via email only)

Re: FERC, NYPA
Blenheim-Gilboa Dam Relicensing
Town of Gilboa, Schoharie County
14PR05279

Dear Mr. Panepinto:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the proposed Area of Potential Effects (APE), provided in an email dated December 10, 2014, in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the SHPO has no concerns with the proposed Area of Potential Effects (APE). Please telephone me at ext. 3280 with any questions you may have.

Sincerely,

Nancy Herter
Archaeology Unit Program Coordinator

cc. Rob Daly, NYPA
Mark Slade, NYPA